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COMPLETE METALWORKING SOLUTIONS
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Serving the Metalworking Industry since 1960.

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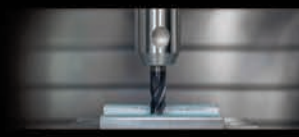
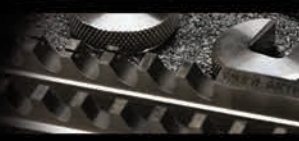
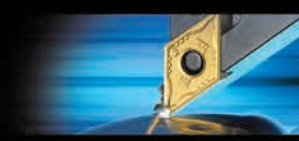


Sowa Tool has been serving the metalworking industry since 1960.

Your world is full of challenges and worrying about having the right tools for the job should not be one of them. With a three-generation legacy of family-style customer service, Sowa Tool & Machine has been trusted by manufacturers and distributors throughout North America to supply some of the industry's best metalworking solutions since 1960.

Our mission has been and continues to be to provide the broadest range of metalworking solutions in the industry. We accomplish this through the continuous development of our family of brands that include items within the Tool Holding, Workholding, Measuring & Inspecting, and Cutting Tool categories. This allows you to secure all these solutions from one place, reducing your total number of purchase orders and consolidating your freight charges in this increasingly expensive market.

Our wide array of metalworking products come in stock with same-day shipping if ordered before 3:00 pm EST. Our customer service team is just a call or click away, available to offer technical help or source hard-to-find products. Over the decades we've fine-tuned the balance between inventory, pricing and customer service, and can help you select precisely what you need to get the job done right. Our manufactured products are designed to meet the highest quality standards or provide the best price on the market, sometimes both!

26,000+
INDUSTRIAL PRODUCTS

6
INDUSTRY BRANDS

1960
YEAR FOUNDED

5
WAREHOUSES

90+
ASSOCIATES

23,000+
STOCKED SKU's IN THE USA

Depend on us to tool your world and deliver
the competitive edge your business needs to stay ahead!

What you can expect with Sowa.

Same Day Shipping

We never want you to wait for your order, so we ship it same day when you order before 3:00pm EST on all in-stock products.

Uniquely Diverse Offering

Find a wide offering of products for a range of needs, specs, tolerance thresholds and budgets, all under one roof.

Order 24/7

Get a 1% rebate for all orders placed at www.SowaTool.com. See live inventory levels and your pricing while you shop.

Buy More, Save More!

Ask about our volume pricing, available on top of our already competitively market priced stock.

Request A Quote

Our online quoting capabilities allow you to request a quote at anytime. Visit www.SowaTool.com and try it out!

Always In-Stock

Sowa carries everything for under your spindle, and more! Our 90% first pass fill rate ensures we will have what you need.

Expert Customer Service

Don't have a part number? Not sure what you need? That's ok! Our Customer Service Reps are second to none and are here to get you what you need, when you need it. You can contact them at 1-800-265-8221 or at sales@sowatool.com

Consolidated Experience

Shop at Sowa to consolidate your freight charges, reduce your total number of purchase orders, and decrease the number of relationships you will need to maintain your business.

Welcome to the Sowa family!

Sowa Tool began when founder, Gerhard Sowa Sr., immigrated from Germany to Canada to start a new life in 1960. Perceiving the need for quality metalworking solutions, he began to import tools and offer them to local manufacturers. Sowa Tool was born. As the business grew, he opened an office and built a strong team, including his son and current CEO, Gerhard Sowa Jr. Recognizing that their customers ability to compete relied on identifying better solutions, the Sowa team turned their focus to developing their own line of unrivaled tooling through a combination of acquisition and continuous product development.

The Sowa brands include:

G3 TOOLING

Superior performance tool holding and workholding solutions when speed and accuracy matter most.

ASIMETO

High-performance precision measuring and inspecting solutions.

Sowa

High-performance cutting tools including end mills, drills, taps and indexables.

SKODA

High Value production grade live centers.

narex

Exclusive line of value boring heads.

STM

A wide product range of economic tooling for general purpose applications.

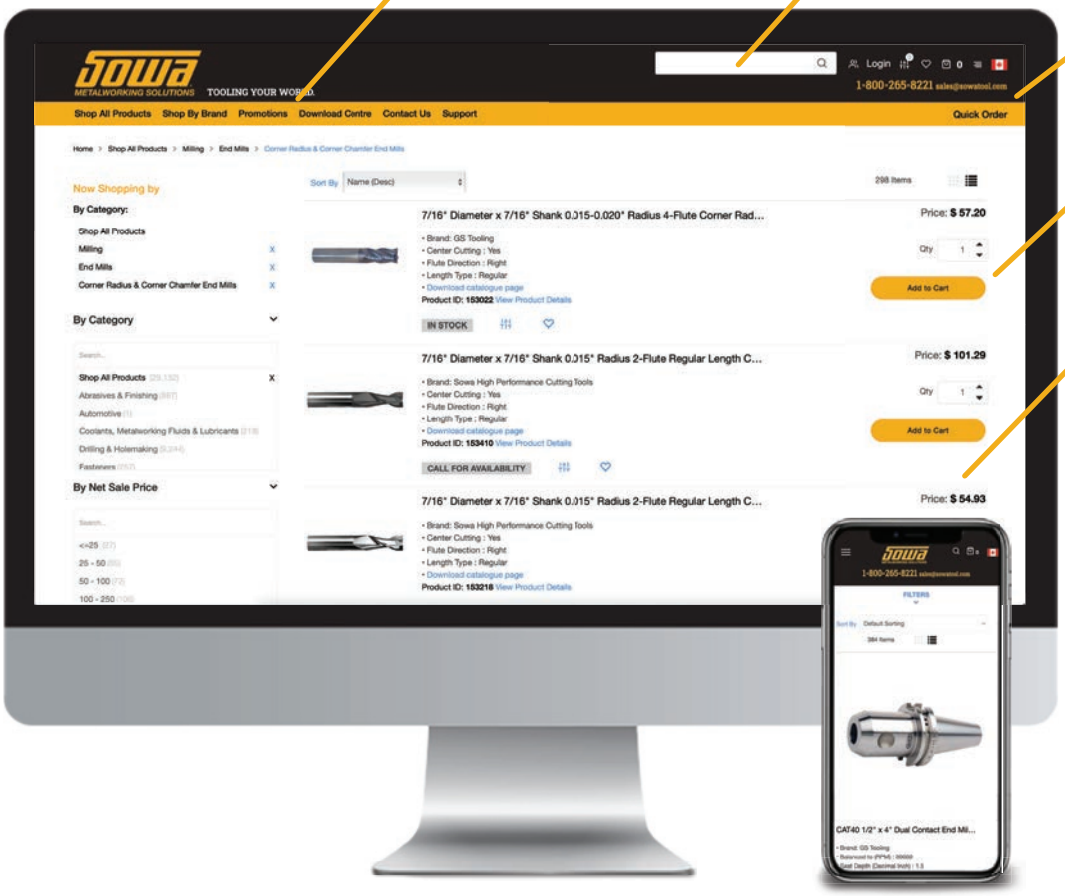
With this line-up, Sowa Tool is uniquely qualified to serve all your needs under one roof. Ask us how Sowa can tool your world and provide the competitive edge for your business.

Buy online and get a 1% credit to your account!

WWW.SOWATOOL.COM

View Our Promos & Catalogues
You can find all of our catalogues, brochures and promotional flyers on our website to view or download.

Enhanced Search Capability
Whether you know the exact part number of a product, or just have an idea of what you need, our search function will help you find exactly what you're looking for.



Quick Order
Already know what you need? Add products directly to your cart using just the part number and order what you need in record time.

Add To Your Cart As You Go
Speed up your process by adding product directly to your cart from the product list.

Check Prices & Stock
See if something is in stock from the product page, and view your own personal pricing without having to contact a product specialist.

Order Templates
If you're often ordering the same items, create an order template. You can quickly add these items to your cart whenever you need to re-order.

Order History
View your order history and search for past purchases quickly and easily.

View Your Special Offers
See your monthly special offers and flyer promotions as well as our current clearance items.

Mobile Friendly
Shop from anywhere with confidence on the new mobile friendly version of SowaTool.com.

New Features

Updated User Experience
SowaTool.com has been updated with a fresh coat of paint and new user experience. Finding what you need is faster and easier than ever before. Check it out for yourself!

Request a Quote Online
You no longer need to call in to receive a quote. You can now submit quote requests online directly from our website. Once we approve your quote, you are able to add to your cart and checkout with the new quoted price.

Upload Order as CSV
Do you have a larger order that would take a long time to input? You now have the ability to upload a CSV or Excel file containing your order and have items and quantities added directly to your cart with ease.

Account Personalization
Our account management now allows you to add, delete, and modify users associated with your business directly from our website.

NEW STM Holders

Our STM Premium line is now offering competitive End Mill Holders and ER Collet Chucks at industry best prices. These holders provide DIN coolant option as standard and are factory balanced for increased tool life and productivity.

STM CAT40/50 End Mill Holders
pg. G4 & G6

STM CAT40/50 ER Collet Chucks
pg. G18 & G19

Shrink Fit Holders

Our new and improved Shrink Fit Holders have been redesigned from the ground up. They've been re-engineered with new stand-out features including 4 coolant ports in the nose with the ability to be closed off to direct coolant through the centre of the holder. We include threaded holes in order to fine balance the holders.

CAT40 Shrink Fit Holders With Coolant Ports
pg. G44

CAT50 Shrink Fit Holders With Coolant Ports
pg. G44

HSK 63A/100A Shrink Fit Holders With Coolant Ports
pg. G46

BT30/40 Shrink Fit Holders With Coolant Ports
pg. G45

Collets

GS Tooling is introducing Extreme Precision 5 Micron Collets. Nothing else compares! Our new GS Extreme Precision AA Collets offer 5 micron runout. We are also now offering Tap Collets for synchronous, rigid tapping operations using our ER collet chuck.

ER20 Tap Collets
pg. G25

5 Micron AA ER Collet Sets
pg. G22

Live Centres

The GS Tooling brand has added Live Centres to their lineup. When precision is paramount and high accuracy is a necessity, our new line of Live Centres are the perfect choice. With 8 different varieties available for a range of rpm thresholds and bearing systems, you're sure to find the perfect one for you.

CNC High Speed Live Centres — Standard Point
pg. H30

60° Bull Head Live Centres — Extended A Type Point
pg. H30

High Speed Live Centres — Extended A Type Point
pg. H30

High Performance Live Centres
pg. H31

High Speed Live Centres
pg. H31

CNC High Speed Live Centres — Extended A Type Point
pg. H32

80° Bull Nose Live Centres — Standard Point
pg. H33

Interchangeable Points Live Centres
pg. H34

Driven Tools

GS Tooling now carries Driven Tools for CNC turning centres. This allows milling, drilling, and tapping operations on the lathes without additional parts handling. GS Tooling also supplies a wide range of types in order to equip the CNC lathes and turrets of the most popular builders on the market with an unbeatable price to quality ratio.

Driven Tools For DMG MORI Lathes
pg. G48

Driven Tools For DOOSAN Lathes
pg. G48

Driven Tools For HAAS Lathes
pg. G48

Driven Tools For MAZAK Lathes
pg. G48

Vises

GS Tooling's new Multi-Tasking range of modular vises have been specially designed for 5-axis machines. Working on five sides of the workpiece, it allows the best optimization of the machining cycle. New GS Precision Milling and Versatile Vises are also available under the GS line. All of our vises offer the same or better specs as compared to our competitors, the biggest difference you'll find is the price!

Type 1 & 2

Vise shown with riser

Type 3

GS Multi-Tasking Modular Vises for 5-Axis Machining Centers
pg. H7

GSV60 6" Versatile Vise
pg. H2

GS160G 6" x 9.13" Precision Milling Machine Vise
pg. H2

Countersinks/Drills

Our countersink and drill lineups are ever expanding. We've added 6 new Cobalt Countersinks offering both a standard and TiN coated option. We've also added 2 new HSS Stub NC Spot Drills.

82° & 90° Cobalt 3 Flute Countersinks
pg. B52

82° & 90° Cobalt 3 Flute Countersinks - TiN Coated
pg. B52

60° HSS Combined Drill & Countersinks
pg. B38

60° HSS Combined Drill & Countersinks - TiN Coated
pg. B38

60° Combined Drill & Countersinks - Long Series
pg. B38

90° HSS Stub NC Spot Drills
pg. B41

Dual Contact Collet Chucks

GS Dual Contact ER Collet Chucks are the perfect solution for when high rigidity and increased feed rate are paramount. With tight tolerance to the Big Plus standard, GS Tooling offers these high-performance tools at industry leading pricing.

CAT40/50 DUAL CONTACT ER Collet Chucks
pg. G18 & G19

Icon Legend

Surface Treatments

Black/Gold Finish
Black Oxide on the grooves for greater lubricity and chip removal, special coating on the lands for greater tool life.

Typhoon Coating
The hard PVD coating allows effective machining of hard mold, die, and tool steels up to 60HRC in dry or wet conditions.

Titanium Carbon Nitride
TiCN coated tools have a very high surface hardness of approx. 90HRC. This coating is recommended for use in all steels, cast iron and aluminum.

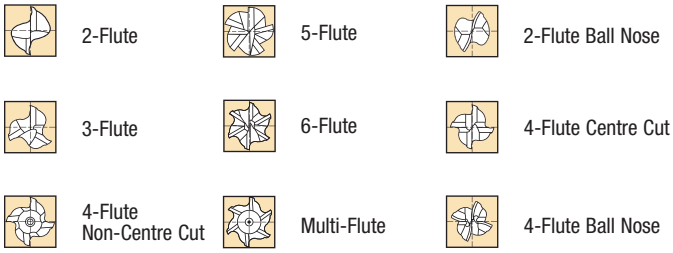
Black Oxide Surface
Reduces adhesion of chips to the surface of tool.

Titanium Aluminum Nitride
This coating is applied by the PVD process and has a higher hardness than TiN and TiCN. This greatly increases the service life of the tool and can stand higher temperatures when machining cast iron and tough steels.

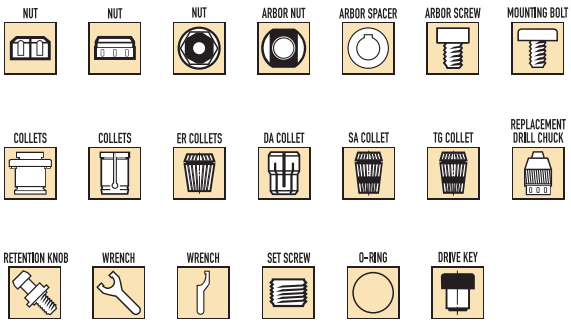
Titanium Nitride
A gold coloured film with a hardness of approx. 85HRC is deposited on the tool which extends tool life by reducing friction and enables the tool to be operated at higher speeds and feeds.

Bright Finish

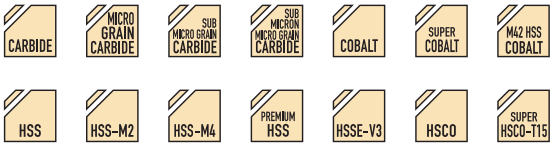
Flutes



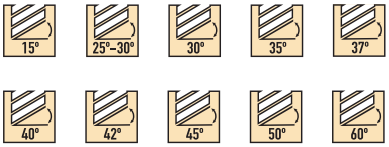
Rotary



Tool Materials

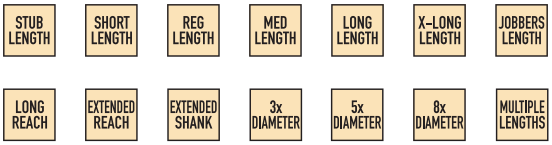


Helix Angles

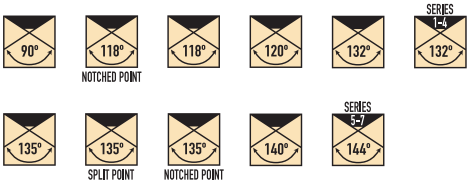


Hole Types

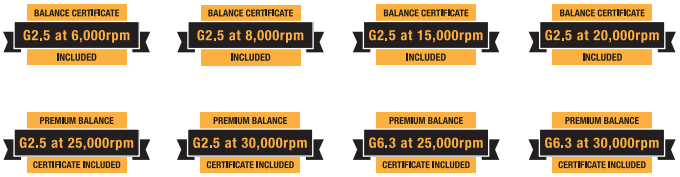
Tool Dimensions



Drill Point Angles



Balance Ratings



Milling

Milling

SOWA HIGH PERFORMANCE END MILL SELECTION A2

CARBIDE END MILLS - BRIGHT FINISH & TiAlN COATED

2-Flute A3-6
End Mill Dispenser Cabinets A4
End Mill Sheath Racks A4
Drill Mills A5
3-Flute A7-8
4-Flute A8-12
Multi-Flute A11
Roughers A11

TYPHOON END MILLS - RED SERIES

2-Flute A13-14
4-Flute A14-15
Multi-Flute A15
Roughers A16
4 & 5-Flute Variable Helix A16-17

CARBIDE END MILLS FOR ALUMINUM - GREEN SERIES

2-Flute A17-18
3-Flute A17-18

HSCO & HSS GENERAL PURPOSE END MILLS

2-Flute A18-21
3-Flute A21
4-Flute A22-24
Multi-Flute A23
Roughers A24-25
Tapered End Mills A26-28

SPEEDS & FEEDS A29-41

Bright – Starting at page A3

Micrograin Carbide Bright Finish — Cutting Conditions

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (SFM)
Low Carbon	1018, 1010, 1035	Normalized	<25	150-200
Medium Carbon	1045, 1050, 1065	Normalized	<25	150-200
Aluminum	Unalloyed, Cast	–	–	350-600
Brass/Bronze	–	–	–	350-400
Copper	–	–	–	250-300
Cast Iron	–	As Cast	<15	150-225

TiAlN Coated – Starting at page A3

Micrograin Carbide TiAlN Coated — Cutting Conditions

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (SFM)
Stainless Steels	300, 400 Series	Annealed	<29	200-350
Tool Steels	01, A-2, D-2, H-13, P-20	Annealed	<35	150-250
Medium Carbon	1030, 1035, 1038, 1040, 1045, 1050	Normalized	<28	190-275
Alloyed High Carbon	1065, 1070, 1080, 1090,1095, 1561,1572	Normalized	<32	150-250
High Strength	4140, 4340	Normalized	<32	150-250
Titanium	Commercially pure	Annealed	<32	150-250

TYPHOON – Starting at page A13

TYPHOON Sub-Micrograin Carbide Modified AlTiN — Cutting Conditions

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (SFM)
Stainless Steel	17-4PH, 15-5, 17-7PH, AM350	Hardened	<45	150-250
Tool Steels	01, A-2, D-2, H-13, P-20	Hardened	<60	80-270
High Strength	4140, 4340, 50100	Hardened	<60	80-270
Nickel Alloys	Inconel, Hastaloy, Waspaloy, Astraloy, Rene, Monel	Annealed and Hardened	<45	150-225
Titanium	6 AL 4	Annealed/Hardened	<42	175-275

Aluminum Series – Starting at page A19

Carbide Bright Finish for Aluminum — Cutting Conditions

Materials Main Group	Cutting Speed (SFM)
Aluminum	600-700
Die Cast Aluminum	600-700

2-Flute Regular Length Carbide End Mills

A general purpose carbide end mill with maximum chip clearance added.

For: End milling, Slotting, Sinking
On: Variety of Steels, Cast Iron, Non-Ferrous Metals, Plastics, Abrasive Type Materials

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	1/8	1-1/2	103770	**11.60**	102677	**14.38**
3/64	1/8	9/64	1-1/2	103772	**11.60**	102799	**14.38**
1/16	1/8	3/16	1-1/2	103848	**10.75**	102800	**13.55**
5/64	1/8	1/4	1-1/2	103773	**10.75**	102801	**13.55**
3/32	1/8	5/16	1-1/2	103849	**10.17**	102802	**12.95**
7/64	1/8	3/8	1-1/2	103775	**10.17**	102803	**12.95**
1/8	1/8	1/2	1-1/2	103850	**9.39**	102804	**12.18**
9/64	3/16	1/2	2	103776	**13.88**	102805	**16.66**
5/32	3/16	9/16	2	103851	**13.88**	102806	**16.66**
11/64	3/16	9/16	2	103777	**13.88**	102807	**16.66**
3/16	3/16	5/8	2	103852	**13.17**	102808	**15.94**
13/64	1/4	5/8	2-1/2	103778	**17.44**	102809	**23.21**
7/32	1/4	5/8	2-1/2	103853	**17.44**	102811	**23.21**
1/4	1/4	3/4	2-1/2	103854	**15.87**	102810	**21.63**
9/32	5/16	3/4	2-1/2	103855	**27.84**	102813	**36.46**
5/16	5/16	13/16	2-1/2	103856	**22.26**	102812	**30.89**
11/32	3/8	7/8	2-1/2	103779	**32.98**	102815	**41.58**
3/8	3/8	1	2-1/2	103857	**27.74**	102814	**36.34**
13/32	7/16	1	2-3/4	103780	**39.43**	102817	**49.24**
7/16	7/16	1	2-3/4	103858	**33.84**	102816	**43.64**
1/2	1/2	1	3	103859	**44.40**	102818	**54.22**
9/16	9/16	1-1/8	3-1/2	103886	**75.86**	102820	**90.00**
5/8	5/8	1-1/4	3-1/2	103887	**85.64**	102822	**99.82**
11/16	3/4	1-3/8	4	103888	**142.62**	102824	**159.34**
3/4	3/4	1-1/2	4	103889	**125.57**	102826	**142.28**
7/8	7/8	1-1/2	4	103890	**180.70**	102828	**205.39**
1	1	1-1/2	4	103891	**187.84**	102830	**212.53**
Metric							
0.5	3	1.5	39	101552	**19.06**	102819	**18.48**
1	3	3	39	101553	**12.18**	102821	**14.96**
1.5	3	5	39	101432	**12.18**	102823	**14.96**
2	3	7	39	102696	**11.29**	102825	**14.08**
2.5	3	7	39	102697	**10.67**	102827	**13.47**
3	3	9	39	102698	**9.87**	102829	**12.67**
3.5	4	12	51	102699	**14.60**	102853	**17.38**
4	4	14	51	102700	**13.84**	102855	**16.62**
4.5	5	14	51	102701	**16.93**	102857	**21.28**
5	5	16	51	102702	**16.14**	102859	**21.90**
6	6	19	64	102703	**16.66**	102861	**22.43**
7	8	19	64	102704	**22.89**	102863	**31.48**
8	8	21	64	102705	**23.37**	102865	**32.00**
9	10	22	70	102706	**29.11**	102867	**37.71**
10	10	22	70	102707	**33.74**	102869	**43.54**
11	11	25	70	102708	**35.53**	102871	**45.33**
12	12	25	76	102709	**46.64**	102873	**56.42**
14	14	30	89	102711	**79.64**	102875	**93.81**
16	16	32	89	102712	**89.93**	102881	**104.10**
18	18	35	102	102713	**131.85**	102883	**148.57**
20	20	38	102	102714	**167.65**	102885	**192.34**
22	22	38	102	101451	**186.30**	102887	**210.98**
25	25	38	102	102715	**194.76**	102889	**219.46**

2-Flute Stub Length Carbide End Mills

2-Flute Stub has added strength and stability with the same geometry of our standard length series. Stub end mills are specifically designed for shallow milling and slotting in a variety of materials.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101220	**11.60**	102202	**14.38**
3/64	1/8	3/32	1-1/2	101221	**11.60**	102221	**14.38**
1/16	1/8	1/8	1-1/2	101222	**9.19**	102222	**11.99**
5/64	1/8	1/8	1-1/2	101223	**9.19**	102223	**12.48**
3/32	1/8	3/16	1-1/2	101224	**8.69**	102224	**11.49**
7/64	1/8	7/32	1-1/2	101225	**8.69**	102225	**11.71**
1/8	1/8	1/4	1-1/2	101226	**8.47**	102226	**11.25**
9/64	3/16	9/32	2	101227	**11.88**	102227	**15.30**
5/32	3/16	5/16	2	101228	**11.88**	102228	**14.66**
3/16	3/16	3/8	2	101229	**11.25**	102229	**14.06**
7/32	1/4	7/16	2	101230	**14.91**	102203	**19.28**
1/4	1/4	1/2	2	101231	**14.69**	102231	**19.06**
5/16	5/16	1/2	2	101232	**20.11**	102204	**26.33**
3/8	3/8	5/8	2	101233	**24.85**	102233	**31.05**
7/16	7/16	5/8	2-1/2	101234	**30.72**	102206	**40.51**
1/2	1/2	5/8	2-1/2	101235	**40.98**	102235	**50.76**
5/8	5/8	3/4	3	101236	**78.31**	102207	**89.68**
3/4	3/4	1	3	101237	**112.65**	102237	**126.24**
Metric							
1	3	2	39	101640	**12.18**	102631	**15.00**
1.5	3	3	39	101641	**12.18**	102641	**15.00**
2	3	4	39	101642	**9.68**	102633	**12.48**
2.5	3	5	39	101643	**9.16**	102643	**11.95**
3	3	6	39	101644	**8.94**	102644	**11.71**
3.5	4	7	51	101645	**12.50**	102645	**15.30**
4	4	8	51	101646	**11.82**	102646	**14.63**
4.5	5	9	51	101647	**15.68**	102647	**20.04**
5	5	10	51	101648	**14.63**	102648	**18.96**
6	6	12	51	101649	**15.51**	102649	**19.83**
7	8	12	51	101650	**20.14**	102635	**26.35**
8	8	12	51	101651	**21.15**	102651	**27.38**
9	10	14	51	101652	**26.13**	102637	**32.34**
10	10	14	51	101653	**28.87**	102653	**35.91**
11	11	16	64	101654	**33.74**	-	**-**
12	12	16	64	101655	**74.37**	-	**-**

2-Flute 1/8" Shank Miniature Carbide End Mills

Designed for milling small precision components in a variety of materials.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
0.015	1/8	0.047	1-1/2	101210	**19.67**	102208	**19.67**
0.020	1/8	0.063	1-1/2	101211	**19.06**	102211	**19.06**
0.025	1/8	0.078	1-1/2	101212	**17.77**	102212	**17.77**
0.030	1/8	0.094	1-1/2	101213	**15.93**	102213	**15.93**
0.035	1/8	0.109	1-1/2	101214	**12.18**	102214	**14.96**
0.040	1/8	0.125	1-1/2	101215	**12.18**	102209	**14.96**
0.045	1/8	0.140	1-1/2	101216	**12.18**	102216	**14.96**
0.050	1/8	0.156	1-1/2	101217	**12.18**	102217	**14.96**
0.055	1/8	0.171	1-1/2	101218	**12.18**	102218	**14.96**
0.060	1/8	0.188	1-1/2	101219	**12.18**	102219	**14.96**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

2-Flute Long Length Carbide End Mills

Long length end mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	3/4	2-1/4	102961	**21.26**	102902	**24.68**
3/16	3/16	3/4	2-1/4	102962	**23.45**	102904	**27.79**
1/4	1/4	1-1/8	3	102963	**27.16**	102906	**32.93**
5/16	5/16	1-1/8	3	102964	**33.52**	102908	**42.15**
3/8	3/8	1-1/8	3	102965	**37.70**	102910	**46.33**
7/16	7/16	2	4	102966	**57.00**	102912	**69.66**
1/2	1/2	2	4	102967	**60.63**	102914	**73.30**
5/8	5/8	2-1/4	5	102968	**124.94**	102916	**145.98**
3/4	3/4	2-1/4	5	102969	**199.04**	102918	**223.40**
1	1	2-1/4	5	102970	**338.37**	102920	**369.97**
Metric							
3	3	19	57	101560	**13.17**	102921	**15.37**
4	4	19	57	101561	**13.84**	102923	**16.62**
5	5	25	64	101562	**24.70**	102925	**30.42**
6	6	28	76	101563	**28.62**	102927	**34.34**
8	8	29	76	101564	**35.32**	102929	**43.88**
10	10	32	76	101565	**40.95**	102931	**50.73**
12	12	51	102	101566	**64.27**	102933	**76.96**
14	14	57	127	101567	**115.05**	-	-
16	16	57	127	101568	**124.94**	102937	**145.98**
18	18	57	127	101569	**187.84**	102939	**187.84**
20	20	57	127	101570	**209.68**	-	-
25	25	57	127	101571	**323.09**	-	-

2-Flute Extra Long Length Carbide End Mills

Extra long length end mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1	3	102400	**21.26**	102500	**24.68**
3/16	3/16	1-1/8	3	102402	**23.45**	102502	**27.79**
1/4	1/4	1-1/2	4	102404	**28.68**	102504	**35.41**
5/16	5/16	1-5/8	4	102406	**37.43**	102506	**48.35**
3/8	3/8	1-3/4	4	102408	**41.39**	102508	**52.36**
7/16	7/16	3	6	102410	**75.77**	102510	**93.61**
1/2	1/2	3	6	102412	**105.47**	102512	**105.47**
5/8	5/8	3	6	102414	**124.94**	102514	**145.98**
3/4	3/4	3	6	102416	**199.04**	102516	**223.40**
1	1	3	6	102418	**338.37**	102518	**369.97**

Tolerances - Inch		
Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric		
Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

2-Flute Double End Stub Length

Double end end mills offer the same tool geometry as the single end stub end mill, but with two cutters in one tool. Economy is an added feature of this tool.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	102260	**20.83**	102360	**25.02**
1/16	1/8	1/8	1-1/2	102262	**20.83**	102362	**25.02**
3/32	1/8	3/16	1-1/2	102264	**20.83**	102364	**25.02**
1/8	1/8	1/4	1-1/2	102266	**12.91**	102366	**17.09**
5/32	3/16	5/16	2	102268	**22.93**	102368	**27.13**
3/16	3/16	3/8	2	102270	**18.72**	102370	**22.90**
7/32	1/4	1/2	2-1/2	102272	**26.74**	102372	**35.38**
1/4	1/4	1/2	2-1/2	102274	**24.35**	102374	**32.98**
5/16	5/16	1/2	2-1/2	102276	**30.31**	102376	**43.21**
3/8	3/8	1/2	2-1/2	102278	**32.23**	102378	**45.16**
7/16	7/16	9/16	2-3/4	102280	**54.78**	102380	**69.46**
1/2	1/2	5/8	3	102282	**54.78**	102382	**69.46**

2-Flute Double End Regular Length

With maximum chip clearance, 2-flute end mills are ideal for milling, sinking, profiling or slotting in a variety of materials.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	3/8	3/8	3-1/16	101300	**40.86**	102001	**53.78**
5/32	3/8	7/16	3-1/8	101301	**40.86**	102003	**53.78**
3/16	3/8	1/2	3-1/4	101302	**40.86**	102005	**53.78**
7/32	3/8	9/16	3-3/8	101303	**40.86**	102007	**53.78**
1/4	3/8	5/8	3-3/8	101304	**40.86**	102009	**53.78**
9/32	3/8	11/16	3-3/8	101305	**46.97**	102011	**63.36**
5/16	3/8	3/4	3-1/2	101306	**46.97**	102013	**63.36**
11/32	3/8	3/4	3-1/2	101307	**46.97**	-	-
3/8	3/8	3/4	3-1/2	101308	**46.97**	102017	**63.36**
7/16	1/2	7/8	4	101309	**57.00**	102019	**69.66**
1/2	1/2	1	4	101310	**60.63**	102021	**73.30**

End Mill Dispenser Cabinets

- Three drawer
- All steel

Description	Model No.	Code No.	Price $
Two flute single and double end for 1/16 to 1	CZD10	113905	**1,071.56**
Four flute single and double end for 1/16 to 1	CZD11	113906	**1,071.56**
Two and four flute single and double end for 1/8 to 1 x 8ths	CZD12	113907	**261.31**

End Mill Sheath Rack

- ABS plastic
- 62 sheaths

Model	Size Range (mm)	Dimensions	Code No.	Price $
VMS-2	Ø6-Ø42	205x205x80	326545	**40.95**

2-Flute Corner Radius Regular Length

2-flute carbide end mill with corner radius allows more strength and minimizes chipping on corners. Two-flute construction provides more chip space and clearance than three or four flute designs.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30
TiAlN: Speeds & Feeds ➤ P. A33

Cutting Dia.	Corner Radius	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch								
1/8	0.015	1/8	1/2	1-1/2	101140	**12.04**	102023	**14.83**
3/16	0.020	3/16	5/8	2	101141	**15.87**	102025	**18.66**
3/16	0.030	3/16	5/8	2	101142	**15.87**	102027	**18.66**
1/4	0.020	1/4	3/4	2-1/2	101143	**19.72**	102029	**25.45**
1/4	0.030	1/4	3/4	2-1/2	101144	**19.72**	102031	**25.45**
1/4	0.045	1/4	3/4	2-1/2	101145	**19.72**	102033	**25.45**
5/16	0.020	5/16	13/16	2-1/2	101146	**25.84**	102035	**34.48**
5/16	0.030	5/16	13/16	2-1/2	101147	**25.84**	102037	**34.48**
5/16	0.045	5/16	13/16	2-1/2	101148	**25.84**	102039	**34.48**
3/8	0.020	3/8	1	2-1/2	101149	**31.63**	102041	**40.28**
3/8	0.030	3/8	1	2-1/2	101150	**31.63**	102043	**40.28**
3/8	0.045	3/8	1	2-1/2	101151	**31.63**	102045	**40.28**
1/2	0.020	1/2	1	3	101152	**58.87**	102046	**68.69**
1/2	0.030	1/2	1	3	101153	**58.87**	102047	**68.69**
1/2	0.045	1/2	1	3	101154	**58.87**	102048	**68.69**
1/2	0.060	1/2	1	3	101155	**58.87**	102049	**68.69**
5/8	0.020	5/8	1-1/4	3-1/2	101156	**95.21**	102051	**109.35**
5/8	0.030	5/8	1-1/4	3-1/2	101157	**95.21**	102053	**109.35**
5/8	0.045	5/8	1-1/4	3-1/2	101158	**95.21**	102055	**109.35**
5/8	0.060	5/8	1-1/4	3-1/2	101159	**95.21**	102057	**109.35**
5/8	0.090	5/8	1-1/4	3-1/2	101160	**95.21**	102059	**109.35**
3/4	0.020	3/4	1-1/2	4	101162	**140.12**	102061	**156.83**
3/4	0.030	3/4	1-1/2	4	101163	**140.12**	102063	**156.83**
3/4	0.045	3/4	1-1/2	4	101164	**140.12**	102065	**156.83**
3/4	0.060	3/4	1-1/2	4	101165	**140.12**	102067	**156.83**
3/4	0.090	3/4	1-1/2	4	101166	**140.12**	102069	**156.83**
3/4	0.125	3/4	1-1/2	4	101161	**148.72**	-	**-**
1	0.020	1	1-1/2	4	101168	**243.04**	102073	**267.75**
1	0.030	1	1-1/2	4	101169	**243.04**	102075	**267.75**
1	0.045	1	1-1/2	4	101170	**243.04**	102077	**267.75**
1	0.060	1	1-1/2	4	101171	**243.04**	102079	**267.75**
1	0.090	1	1-1/2	4	101172	**243.04**	102081	**267.75**
1	0.125	1	1-1/2	4	101167	**243.04**	102083	**267.75**

Carbide Drill Mills

- Drill/Mills can be used for drilling, slotting, profile milling
- 2-Flute - 60° & 90° included point angle
- Made from submicron grain carbide
- Cutting diameter tolerance: +0.000 / -0.002

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Bright 60° Code No.	Price $	Bright 90° Code No.	Price $
1/16	1/8	3/16	1-1/2	153187	**11.04**	153186	**11.04**
3/32	1/8	3/8	1-1/2	153189	**11.04**	153188	**11.65**
1/8	1/8	1/2	1-1/2	153191	**11.04**	153190	**11.04**
3/16	3/16	5/8	2	153193	**14.54**	153192	**14.54**
1/4	1/4	3/4	2-1/2	153195	**18.08**	153194	**18.08**
5/16	5/16	13/16	2-1/2	153197	**23.69**	153196	**23.69**
3/8	3/8	1	2-1/2	153199	**28.99**	153198	**28.99**
7/16	7/16	1	2-3/4	153201	**35.68**	153200	**44.77**
1/2	1/2	1	3	153203	**53.97**	153202	**53.97**
5/8	5/8	1-1/4	3-1/2	153205	**92.18**	153204	**92.18**
3/4	3/4	1-1/2	4	153207	**167.04**	153206	**128.45**

2-Flute Ball Nose Regular Length

A general purpose carbide end mill with maximum chip clearance added.
For: End Milling, Slotting, Sinking, Contouring
On: Variety of Steels, Cast Iron, Non-Ferrous Metals, Plastics, Abrasive Type Materials

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1/2	1-1/2	103872	**12.04**	102862	**14.83**
3/16	3/16	5/8	2	103873	**15.87**	102864	**18.66**
1/4	1/4	3/4	2-1/2	103874	**19.72**	102866	**25.45**
5/16	5/16	13/16	2-1/2	103877	**25.84**	102868	**34.48**
3/8	3/8	1	2-1/2	103875	**31.63**	102870	**40.28**
1/2	1/2	1	3	103876	**58.87**	102872	**68.69**
9/16	9/16	1-1/8	3-1/2	103892	**85.73**	102874	**99.87**
5/8	5/8	1-1/4	3-1/2	103893	**95.21**	102876	**109.35**
11/16	3/4	1-3/8	4	103894	**158.49**	102877	**175.18**
3/4	3/4	1-1/2	4	103895	**140.12**	102878	**156.83**
7/8	7/8	1-1/2	4	103896	**224.47**	102879	**249.17**
1	1	1-1/2	4	103897	**243.04**	102880	**267.75**
Metric							
0.5	3	1.5	39	101460	**23.81**	102107	**19.24**
1	3	3	39	101461	**15.42**	102108	**18.22**
1.5	3	5	39	101462	**15.42**	102109	**18.22**
2	3	7	39	102740	**14.56**	102111	**17.36**
2.5	3	7	39	102741	**13.94**	102113	**16.73**
3	3	9	39	102742	**12.67**	102115	**15.42**
3.5	4	12	51	102743	**18.58**	102117	**21.36**
4	4	14	51	102744	**16.66**	102119	**19.45**
4.5	5	14	51	102745	**20.98**	102121	**25.31**
5	5	16	51	102746	**20.21**	102123	**25.96**
6	6	19	64	102747	**20.72**	102182	**26.46**
7	8	19	64	102748	**26.58**	102183	**35.17**
8	8	21	64	102749	**27.19**	102184	**35.78**
9	10	22	70	102750	**33.22**	102186	**41.82**
10	10	22	70	102751	**38.83**	102187	**48.62**
11	11	25	70	102752	**40.86**	102188	**71.59**
12	12	25	76	102753	**61.83**	102189	**71.59**
14	14	30	89	102755	**90.00**	102191	**104.16**
16	16	32	89	102756	**99.95**	102192	**114.12**
18	18	35	102	102757	**147.09**	102193	**163.82**
20	20	38	102	102758	**197.24**	102194	**221.95**
22	22	38	102	101481	**229.69**	102195	**243.81**
25	25	38	102	102759	**229.69**	102196	**254.38**

2-Flute Ball Nose Extra Long Length

Extra long length end mills combine added flute and overall lengths for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1	3	102420	**25.02**	102520	**28.42**
3/16	3/16	1-1/8	3	102422	**27.58**	102522	**31.92**
1/4	1/4	1-1/2	4	102424	**33.59**	102524	**40.36**
5/16	5/16	1-5/8	4	102426	**44.02**	102526	**54.97**
3/8	3/8	1-3/4	4	102428	**48.70**	102528	**59.64**
7/16	7/16	3	6	102430	**87.14**	102530	**104.98**
1/2	1/2	3	6	102432	**97.00**	102532	**114.80**
5/8	5/8	3	6	102434	**142.62**	102534	**163.65**
3/4	3/4	3	6	102436	**234.06**	102536	**258.40**
1	1	3	6	102438	**398.00**	102538	**429.64**

2-Flute Ball Nose Stub Length

This series has added strength and stability with the same geometry of our standard length series. Stub end mills are specifically designed for shallow milling, contour milling and slotting.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101240	**14.69**	102197	**17.50**
3/64	1/8	3/32	1-1/2	101241	**14.69**	102198	**17.50**
1/16	1/8	1/8	1-1/2	101242	**10.84**	102199	**13.62**
5/64	1/8	5/32	1-1/2	101243	**11.40**	102201	**14.18**
3/32	1/8	3/16	1-1/2	101244	**10.23**	102239	**13.03**
7/64	1/8	7/32	1-1/2	101245	**10.75**	102241	**13.55**
1/8	1/8	1/4	1-1/2	101246	**9.96**	102243	**12.76**
9/64	3/16	9/32	2	101247	**14.67**	102245	**17.48**
5/32	3/16	5/16	2	101248	**13.96**	102247	**16.74**
3/16	3/16	3/8	2	101249	**13.24**	102249	**16.04**
7/32	1/4	7/16	2	101250	**17.56**	102251	**21.91**
1/4	1/4	1/2	2	101251	**17.28**	102252	**21.66**
5/16	5/16	1/2	2	101252	**23.64**	102253	**29.86**
3/8	3/8	5/8	2	101253	**29.21**	102254	**35.41**
7/16	7/16	5/8	2-1/2	101254	**36.14**	102255	**45.93**
1/2	1/2	5/8	2-1/2	101255	**48.17**	102256	**57.97**
5/8	5/8	3/4	3	101256	**132.55**	102257	**103.52**
3/4	3/4	1	3	101257	**132.55**	102258	**146.14**
Metric							
1	3	2	39	101670	**15.42**	102259	**18.23**
1.5	3	3	39	101671	**15.42**	102261	**18.23**
2	3	4	39	101672	**11.40**	102263	**14.18**
2.5	3	5	39	101673	**10.75**	-	**-**
3	3	6	39	101674	**10.47**	102267	**13.27**
3.5	4	7	51	101675	**14.67**	102269	**17.48**
4	4	8	51	101676	**13.94**	102271	**16.73**
4.5	5	9	51	101677	**15.62**	-	**-**
5	5	10	51	101678	**17.37**	102275	**21.71**
6	6	12	51	101679	**18.23**	102277	**22.58**
7	8	12	51	101680	**23.85**	102279	**30.07**
8	8	12	51	101681	**24.91**	102281	**31.11**
9	10	14	51	101682	**30.74**	-	**-**
10	10	14	51	101683	**33.97**	102285	**41.02**
11	11	16	64	101684	**50.70**	-	**-**
12	12	16	64	101685	**50.70**	-	**-**

2-Flute Ball Nose Long Length

Long length end mills combine added flute and overall lengths for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	3/4	2-1/4	102971	**25.02**	102780	**28.42**
3/16	3/16	3/4	2-1/2	102972	**27.58**	102782	**31.92**
1/4	1/4	1-1/8	3	102973	**31.94**	102784	**37.69**
5/16	5/16	1-1/8	3	102974	**39.45**	102786	**48.08**
3/8	3/8	1-1/8	3	102975	**44.38**	102788	**53.00**
7/16	7/16	2	4	102976	**67.05**	102790	**79.75**
1/2	1/2	2	4	102977	**68.48**	102792	**81.19**
5/8	5/8	2-1/4	5	102978	**142.62**	102794	**163.65**
3/4	3/4	2-1/4	5	102979	**234.06**	102796	**258.40**
1	1	2-1/4	5	102980	**398.00**	102798	**429.64**
Metric							
3	3	19	57	101580	**26.33**	102085	**29.11**
4	4	19	57	101581	**26.89**	102086	**31.23**
5	5	25	64	101582	**29.03**	102087	**34.78**
6	6	28	76	101583	**33.60**	102089	**39.36**
8	8	29	76	101584	**41.53**	-	**-**
10	10	32	76	101585	**62.86**	-	**-**
12	12	51	102	101586	**72.15**	-	**-**
14	14	57	127	101587	**135.35**	-	**-**
16	16	57	127	101588	**142.61**	-	**-**
18	18	57	127	101589	**219.37**	-	**-**
20	20	57	127	101590	**241.20**	-	**-**
25	25	57	127	101591	**382.73**	-	**-**

2-Flute Ball Nose Double End Stub Length

These end mills offer the same tool geometry as the single end stub end mill, but with two cutters in one tool.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101331	**24.48**	102291	**28.65**
3/64	1/8	3/32	1-1/2	101332	**24.48**	102293	**28.65**
1/16	1/8	1/8	1-1/2	101333	**24.48**	102295	**28.65**
3/32	1/8	3/16	1-1/2	101334	**24.48**	102297	**28.65**
1/8	1/8	1/4	1-1/2	101335	**15.17**	102299	**19.36**
5/32	3/16	5/16	2	101336	**26.96**	102323	**31.14**
3/16	3/16	3/8	2	101337	**22.04**	102324	**26.21**
7/32	1/4	1/2	2-1/2	101338	**28.65**	102325	**37.29**
1/4	1/4	1/2	2-1/2	101339	**28.65**	102326	**37.29**
5/16	5/16	1/2	2-1/2	101351	**39.45**	102327	**48.57**
3/8	3/8	1/2	2-1/2	101352	**44.38**	102328	**50.83**
7/16	7/16	9/16	2-3/4	101353	**67.05**	102329	**79.17**
1/2	1/2	5/8	3	101354	**68.48**	102331	**79.17**

2-Flute Ball Nose Double End Regular Length

With maximum chip clearance, 2-flute ball nose end mills are ideal for milling, sinking, profiling or slotting various steels, non-ferrous materials, cast iron or highly abrasive materials.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	3/8	3/8	3-1/16	101320	**48.08**	102333	**60.98**
5/32	3/8	7/16	3-1/8	101321	**48.08**	102335	**60.98**
3/16	3/8	1/2	3-1/4	101322	**48.08**	102337	**60.98**
7/32	3/8	9/16	3-3/8	101323	**48.08**	102339	**60.98**
1/4	3/8	5/8	3-3/8	101324	**48.08**	102341	**60.98**
9/32	3/8	11/16	3-3/8	101325	**48.70**	102343	**71.63**
5/16	3/8	3/4	3-1/2	101326	**48.70**	102345	**71.63**
11/32	3/8	3/4	3-1/2	101327	**48.70**	102347	**71.63**
3/8	3/8	3/4	3-1/2	101328	**48.70**	102349	**71.63**
7/16	1/2	7/8	4	101329	**67.05**	-	**-**
1/2	1/2	1	4	101330	**68.48**	102352	**81.19**

3-Flute Regular Length Carbide End Mills

3-flute carbide end mills offer maximum chip clearance therefore reducing chip packing.
For: End milling, Slotting, Sinking
On: Steels, Cast Iron, Aluminum, Copper, Brass, Plastics, and Abrasive Type Materials

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A30

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/16	1/8	3/16	1-1/2	101080	**10.75**	102353	**13.55**
5/64	1/8	3/16	1-1/2	101081	**10.75**	102354	**13.55**
3/32	1/8	5/16	1-1/2	101082	**10.17**	102355	**12.95**
7/64	1/8	7/16	1-1/2	101083	**10.17**	102356	**12.95**
1/8	1/8	1/2	1-1/2	101084	**9.39**	102357	**12.18**
9/64	3/16	1/2	2	101085	**13.88**	102358	**16.66**
5/32	3/16	9/16	2	101086	**13.88**	102359	**16.66**
11/64	3/16	5/8	2	101087	**13.88**	102361	**16.66**
3/16	3/16	5/8	2	101088	**13.17**	102363	**15.94**
13/64	1/4	5/8	2-1/2	101089	**17.44**	102365	**23.21**
7/32	1/4	5/8	2-1/2	101090	**17.44**	102367	**23.21**
15/64	1/4	3/4	2-1/2	101091	**17.44**	102369	**23.21**
1/4	1/4	3/4	2-1/2	101092	**15.87**	102371	**21.63**
17/64	5/16	3/4	2-1/2	101093	**27.84**	102373	**36.46**
9/32	5/16	3/4	2-1/2	101094	**27.84**	102375	**36.46**
19/64	5/16	13/16	2-1/2	101095	**27.84**	102377	**36.46**
5/16	5/16	13/16	2-1/2	101096	**22.26**	102379	**30.89**
3/8	3/8	1	2-1/2	101097	**27.74**	102381	**36.34**
7/16	7/16	1	2-3/4	101098	**33.84**	102383	**43.64**
1/2	1/2	1	3	101099	**44.40**	102384	**54.22**
9/16	9/16	1-1/8	3-1/2	101100	**75.86**	102385	**90.00**
5/8	5/8	1-1/4	3-1/2	101101	**85.64**	102386	**99.82**
11/16	3/4	1-3/8	4	101102	**142.62**	-	**-**
3/4	3/4	1-1/2	4	101103	**125.57**	102388	**142.28**
7/8	7/8	1-1/2	4	101104	**180.70**	102389	**205.39**
1	1	1-1/2	4	101105	**187.84**	102390	**212.53**
Metric							
1	3	3	39	101490	**12.18**	102391	**14.96**
1.5	3	5	39	101491	**12.18**	102392	**14.96**
2	3	7	39	101492	**11.29**	102393	**14.08**
3	3	10	39	101494	**9.13**	-	**-**
3.5	4	12	51	101495	**14.60**	102396	**17.38**
4	4	14	51	101496	**12.81**	-	**-**
4.5	5	14	51	101497	**16.93**	102398	**21.28**
5	5	16	51	101498	**16.14**	102399	**21.90**
6	6	19	64	101499	**16.66**	102401	**22.43**
7	8	19	64	101500	**22.89**	102403	**31.48**
8	8	21	64	101501	**23.37**	102405	**32.00**
9	10	22	70	101502	**29.11**	102407	**37.71**
10	10	25	70	101503	**33.74**	102409	**43.54**
11	11	25	70	101504	**35.53**	-	**-**
12	12	25	76	101505	**46.64**	102413	**56.42**
14	14	30	89	101506	**79.64**	102415	**93.81**
16	16	32	89	101507	**89.93**	102417	**104.10**
18	18	35	102	101508	**131.85**	102419	**148.57**
20	20	38	102	101509	**167.65**	102421	**192.34**
22	22	38	102	101510	**186.30**	102423	**210.98**
25	25	38	102	101511	**194.76**	102425	**219.46**

3-Flute Ball Nose Regular Length

3-flute carbide end mills offer maximum chip clearance therefore reducing chip packing.
For: End Milling, Slotting, Sinking
On: Steels, Cast Iron, Aluminum, Copper, Brass, Plastics, and Abrasive Type Materials

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/16	1/8	3/16	1-1/2	101110	**13.88**	102455	**16.66**
5/64	1/8	3/16	1-1/2	101111	**13.88**	102457	**16.66**
3/32	1/8	5/16	1-1/2	101112	**13.27**	102459	**16.06**
7/64	1/8	7/16	1-1/2	101113	**13.27**	102461	**16.06**
1/8	1/8	1/2	1-1/2	101114	**12.04**	102463	**14.83**
9/64	3/16	1/2	2	101115	**17.66**	102465	**20.48**
5/32	3/16	9/16	2	101116	**17.66**	102467	**20.48**
11/64	3/16	5/8	2	101117	**17.66**	102469	**20.48**
3/16	3/16	5/8	2	101118	**15.87**	102470	**18.66**
13/64	1/4	5/8	2-1/2	101119	**20.55**	102471	**26.32**
7/32	1/4	5/8	2-1/2	101120	**20.55**	102472	**26.32**
15/64	1/4	3/4	2-1/2	101121	**20.55**	102473	**26.32**
1/4	1/4	3/4	2-1/2	101122	**19.72**	102474	**25.45**
17/64	5/16	3/4	2-1/2	101123	**30.86**	102475	**39.46**
9/32	5/16	3/4	2-1/2	101124	**30.86**	102476	**39.46**
19/64	5/16	13/16	2-1/2	101125	**30.86**	102477	**39.46**
5/16	5/16	13/16	2-1/2	101126	**25.84**	102478	**34.48**
3/8	3/8	1	2-1/2	101127	**31.63**	102479	**40.28**
7/16	7/16	1	2-3/4	101128	**38.92**	102481	**48.70**
1/2	1/2	1	3	101129	**58.87**	102483	**68.69**
9/16	9/16	1-1/8	3-1/2	101130	**85.73**	-	**-**
5/8	5/8	1-1/4	3-1/2	101131	**95.21**	102487	**109.35**
11/16	3/4	1-3/8	4	101132	**158.49**	-	**-**
3/4	3/4	1-1/2	4	101133	**140.12**	102491	**156.83**
7/8	7/8	1-1/2	4	101134	**224.47**	-	**-**
1	1	1-1/2	4	101135	**243.04**	102495	**267.75**
Metric							
1	3	3	39	101520	**15.42**	102497	**18.22**
1.5	3	5	39	101521	**15.42**	102499	**18.22**
2	3	7	39	101522	**14.56**	102501	**17.36**
2.5	3	8	39	101523	**13.94**	102503	**16.73**
3	3	10	39	101524	**12.67**	102505	**15.42**
3.5	4	12	51	101525	**18.58**	102507	**21.36**
4	4	14	51	101526	**16.66**	102509	**19.45**
4.5	5	14	51	101527	**20.98**	102511	**25.31**
5	5	16	51	101528	**20.21**	102513	**25.96**
6	6	19	64	101529	**20.72**	102515	**26.46**
7	8	19	64	101530	**22.53**	-	**-**
8	8	21	64	101531	**27.19**	102519	**35.78**
9	10	22	70	101532	**33.22**	102521	**41.82**
10	10	25	70	101533	**38.83**	102523	**48.62**
11	11	25	70	101534	**40.86**	-	**-**
12	12	25	76	101535	**61.83**	102527	**71.59**
14	14	30	89	101536	**90.00**	102529	**104.16**
16	16	32	89	101537	**99.95**	102531	**114.12**
18	18	35	102	101538	**147.09**	102533	**163.82**
20	20	38	102	101539	**197.24**	102535	**221.95**
22	22	38	102	101540	**219.11**	102537	**243.81**
25	25	38	102	101541	**229.69**	102539	**254.38**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

3-Flute 60° High-Helix

These end mills are designed for milling stainless steel, titanium, inconel and other similar metals where high cutting forces are generated. The high helix angle increases length of cutting edge engaged in the cut, reducing cutting load variations and prolonging tool life. Excellent surface finish with high speed and feed capabilities are features of these tools.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 60°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A3?

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1/2	1-1/2	101000	**16.71**	102427	**22.46**
3/16	3/16	5/8	2	101002	**16.71**	102429	**22.46**
1/4	1/4	3/4	2-1/2	101004	**16.71**	102431	**22.46**
5/16	5/16	13/16	2-1/2	101006	**23.44**	102433	**32.03**
3/8	3/8	1	2-1/2	101008	**29.19**	102435	**37.80**
7/16	7/16	1	2-3/4	101010	**35.63**	102437	**45.44**
1/2	1/2	1	3	101012	**46.76**	102439	**56.53**
5/8	5/8	1-1/4	3-1/2	101014	**90.15**	102440	**104.30**
3/4	3/4	1-1/2	4	101016	**132.19**	102441	**148.89**
1	1	1-1/2	4	101018	**197.73**	102442	**222.44**
Metric							
6	6	19	64	101730	**38.22**	-	-
8	8	21	64	101731	**45.75**	-	-
10	10	25	70	101732	**69.18**	-	-
12	12	25	76	101733	**82.30**	-	-
14	14	29	89	101734	**90.15**	-	-
16	16	32	89	101735	**162.83**	-	-
18	18	38	102	101736	**219.78**	-	-
20	20	38	102	101737	**255.97**	-	-
25	25	38	102	101738	**197.73**	-	-

STM

Contain and organize all your end mills.

See Page A4

4-Flute Regular Length Carbide End Mills

The industry standard. Wear resistance and minimal deflection for excellent size control.

For: Slotting, Production Milling, Profiling
On: Variety of Steels

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	1/8	1-1/2	103781	**11.60**	102899	**14.38**
3/64	1/8	9/64	1-1/2	103782	**11.60**	102831	**14.38**
1/16	1/8	3/16	1-1/2	103870	**10.75**	102832	**13.55**
5/64	1/8	1/4	1-1/2	103783	**10.75**	102833	**13.55**
3/32	1/8	5/16	1-1/2	103871	**10.17**	102834	**12.95**
7/64	1/8	3/8	1-1/2	103784	**10.17**	102835	**12.95**
1/8	1/8	1/2	1-1/2	103860	**9.39**	102836	**12.18**
9/64	3/16	1/2	2	103785	**13.88**	102837	**16.66**
5/32	3/16	9/16	2	103861	**13.88**	102839	**16.66**
11/64	3/16	9/16	2	103786	**13.88**	102841	**16.66**
3/16	3/16	5/8	2	103862	**13.17**	102838	**15.94**
13/64	1/4	5/8	2-1/2	103787	**17.44**	102843	**23.21**
7/32	1/4	5/8	2-1/2	103863	**17.44**	102845	**23.21**
1/4	1/4	3/4	2-1/2	103864	**15.87**	102840	**21.63**
9/32	5/16	3/4	2-1/2	103865	**27.84**	102847	**36.46**
5/16	5/16	13/16	2-1/2	103866	**22.26**	102842	**30.89**
11/32	3/8	7/8	2-1/2	103789	**32.98**	102849	**41.58**
3/8	3/8	1	2-1/2	103867	**27.74**	102844	**36.34**
13/32	7/16	1	2-3/4	103790	**39.43**	102851	**49.24**
7/16	7/16	1	2-3/4	103868	**33.84**	102846	**43.64**
1/2	1/2	1	3	103869	**44.40**	102848	**54.22**
9/16	9/16	1-1/8	3-1/2	103933	**75.86**	102850	**90.00**
5/8	5/8	1-1/4	3-1/2	103934	**85.64**	102852	**99.82**
11/16	3/4	1-3/8	4	103935	**142.62**	102854	**159.34**
3/4	3/4	1-1/2	4	103936	**125.57**	102856	**142.28**
7/8	7/8	1-1/2	4	103937	**180.70**	102858	**205.39**
1	1	1-1/2	4	103938	**187.84**	102860	**212.53**
Metric							
1	3	3	39	101550	**12.18**	102601	**14.96**
1.5	3	5	39	101551	**12.18**	102603	**14.96**
2	3	7	39	102716	**11.29**	102605	**14.08**
2.5	3	8	39	102717	**10.67**	102607	**13.47**
3	3	10	39	102718	**9.87**	102609	**12.67**
3.5	4	12	51	102719	**14.60**	102611	**17.38**
4	4	14	51	102720	**13.84**	102613	**16.62**
4.5	5	14	51	102721	**16.93**	102615	**21.28**
5	5	16	51	102722	**16.14**	102617	**21.90**
6	6	19	64	102723	**16.66**	102619	**22.43**
7	8	19	64	102724	**22.89**	102621	**31.48**
8	8	21	64	102725	**23.37**	102623	**32.00**
9	10	22	70	102726	**29.11**	102625	**37.71**
10	10	25	70	102727	**33.74**	102627	**43.54**
11	11	25	70	102728	**35.53**	102629	**45.33**
12	12	25	76	102729	**46.64**	102657	**56.42**
14	14	30	89	102731	**79.64**	102659	**93.81**
16	16	32	89	102732	**89.93**	102661	**104.10**
18	18	35	102	102733	**131.85**	102663	**148.57**
20	20	38	102	102734	**167.65**	102665	**192.34**
22	22	38	102	102736	**186.30**	102667	**210.98**
25	25	38	102	102735	**194.76**	102669	**219.46**

4-Flute Stub Length Carbide End Mills

Strength, rigidity and improved tool life can be obtained with this stub length end mill. The premium micrograin carbide makes these mills tough enough to machine the very hard metals.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101260	**11.60**	102540	**14.38**
3/64	1/8	3/32	1-1/2	101261	**11.60**	102541	**14.38**
1/16	1/8	1/8	1-1/2	101262	**9.19**	102542	**11.99**
5/64	1/8	5/32	1-1/2	101263	**9.68**	102543	**12.48**
3/32	1/8	3/16	1-1/2	101264	**8.69**	102544	**11.49**
7/64	1/8	7/32	1-1/2	101265	**8.94**	102545	**11.71**
1/8	1/8	1/4	1-1/2	101266	**8.47**	102546	**11.25**
9/64	3/16	9/32	2	101267	**12.50**	102547	**15.30**
5/32	3/16	5/16	2	101268	**21.87**	-	**-**
3/16	3/16	3/8	2	101269	**11.25**	102549	**14.06**
7/32	1/4	7/16	2	101270	**14.91**	102551	**19.28**
1/4	1/4	1/2	2	101271	**14.69**	102553	**19.06**
5/16	5/16	1/2	2	101272	**20.11**	102555	**26.33**
3/8	3/8	5/8	2	101273	**24.85**	102557	**31.05**
7/16	7/16	5/8	2-1/2	101274	**30.72**	102559	**40.51**
1/2	1/2	5/8	2-1/2	101275	**40.98**	102561	**50.76**
5/8	5/8	3/4	3	101276	**78.31**	102563	**89.68**
3/4	3/4	1	3	101277	**112.65**	102565	**126.24**
Metric							
1	3	2	39	101690	**12.18**	102567	**15.00**
1.5	3	3	39	101691	**12.18**	102569	**15.00**
2	3	4	39	101692	**9.68**	102570	**12.48**
2.5	3	5	39	101693	**9.16**	102571	**11.95**
3	3	6	39	101694	**8.94**	102572	**11.71**
3.5	4	7	51	101695	**12.50**	102573	**15.30**
4	4	8	51	101696	**11.82**	102574	**14.63**
4.5	5	9	51	101697	**14.23**	-	**-**
5	5	10	51	101698	**14.63**	-	**-**
6	6	12	51	101699	**15.51**	102577	**19.83**
7	8	12	51	101700	**20.14**	102578	**26.35**
8	8	12	51	101701	**21.15**	102579	**27.38**
10	10	14	51	101703	**28.87**	102583	**35.91**
11	11	16	64	101704	**33.74**	-	**-**
12	12	16	64	101705	**43.12**	-	**-**

4-Flute Long Length Carbide End Mills

Long length end mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill thicker material in one pass, eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	3/4	2-1/4	102981	**21.26**	102922	**24.68**
3/16	3/16	3/4	2-1/4	102982	**23.45**	102924	**27.79**
1/4	1/4	1-1/8	3	102983	**27.16**	102926	**32.93**
5/16	5/16	1-1/8	3	102984	**33.52**	102928	**42.15**
3/8	3/8	1-1/8	3	102985	**37.70**	102930	**46.33**
7/16	7/16	2	4	102986	**57.00**	102932	**69.66**
1/2	1/2	2	4	102987	**60.63**	102934	**73.30**
5/8	5/8	2-1/4	5	102988	**124.94**	102936	**145.98**
3/4	3/4	2-1/4	5	102989	**199.04**	102938	**223.40**
1	1	2-1/4	5	102990	**338.37**	102940	**369.97**
Metric							
3	3	19	57	101600	**13.17**	102901	**25.16**
4	4	19	57	101601	**13.84**	102903	**27.21**
5	5	25	64	101602	**24.70**	102905	**30.42**
6	6	28	76	101603	**28.62**	102907	**34.34**
8	8	29	76	101604	**35.32**	102909	**43.88**
10	10	32	76	101605	**40.95**	102911	**50.73**
12	12	51	102	101606	**64.27**	102913	**76.96**
14	14	57	127	101607	**88.25**	102915	**136.09**
18	18	57	127	101609	**187.84**	102919	**145.98**
20	20	57	127	101610	**209.68**	102917	**241.31**
25	25	57	127	101611	**323.09**	-	**-**

4-Flute Extra Long Length Carbide End Mills

Extra long length end mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1	3	102450	**21.26**	102550	**24.68**
3/16	3/16	1-1/8	3	102452	**23.45**	102552	**27.79**
1/4	1/4	1-1/2	4	102454	**28.68**	102554	**35.41**
5/16	5/16	1-5/8	4	102456	**37.43**	102556	**48.35**
3/8	3/8	1-3/4	4	102458	**41.39**	102558	**52.36**
7/16	7/16	3	6	102460	**75.77**	102560	**93.61**
1/2	1/2	3	6	102462	**87.66**	102562	**105.47**
5/8	5/8	3	6	102464	**124.94**	102564	**145.98**
3/4	3/4	3	6	102466	**199.04**	102566	**223.40**
1	1	3	6	102468	**338.37**	102568	**369.97**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

4-Flute Double End Regular Length

Four-flute configuration with centre cutting permits plunging and milling on many ferrous and non-ferrous materials. It also offers lower chip-load for size control and finish.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	3/8	3/8	3-1/16	101340	**40.86**	102589	**53.78**
5/32	3/8	7/16	3-1/8	101341	**40.86**	-	**-**
3/16	3/8	1/2	3-1/4	101342	**40.86**	102593	**53.78**
7/32	3/8	9/16	3-3/8	101343	**40.86**	102595	**53.78**
1/4	3/8	5/8	3-3/8	101344	**40.86**	102597	**53.78**
9/32	3/8	11/16	3-3/8	101345	**46.97**	102599	**63.36**
5/16	3/8	3/4	3-1/2	101346	**46.97**	102671	**63.36**
11/32	3/8	3/4	3-1/2	101347	**39.81**	-	**-**
3/8	3/8	3/4	3-1/2	101348	**46.97**	102675	**63.36**
7/16	1/2	7/8	4	101349	**48.31**	-	**-**
1/2	1/2	1	4	101350	**60.63**	102679	**73.30**

4-Flute Double End Stub Length

These end mills have a shorter flute length which provides greater rigidity with less deflection for shallow milling or slotting. This series is ideal for use on high tensile alloys and heat treated steels.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/16	1/8	1/8	1-1/2	102230	**20.83**	102330	**25.02**
3/32	1/8	3/16	1-1/2	102232	**20.83**	102332	**25.02**
1/8	1/8	1/4	1-1/2	102234	**12.91**	102334	**17.09**
5/32	3/16	5/16	2	102236	**22.93**	102336	**27.11**
3/16	3/16	3/8	2	102238	**18.72**	102338	**22.90**
7/32	1/4	1/2	2-1/2	102240	**26.74**	102340	**35.38**
1/4	1/4	1/2	2-1/2	102242	**24.35**	102342	**32.98**
5/16	5/16	1/2	2-1/2	102244	**30.31**	102344	**43.21**
3/8	3/8	1/2	2-1/2	102246	**32.23**	102346	**45.16**
7/16	7/16	9/16	2-3/4	102248	**54.78**	102348	**69.46**
1/2	1/2	5/8	3	102250	**54.78**	102350	**69.46**

4-Flute Corner Radius Regular Length

Four-flute carbide end mills with corner radius allows more strength and minimizes chipping on corners. Four-flute construction provides more strength than two or three-flute and will also result in excellent surface finishes.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A31
TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Corner Radius (in.)	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch								
1/8	0.015	1/8	1/2	1-1/2	101175	**12.04**	101833	**14.83**
3/16	0.020	3/16	5/8	2	101176	**15.87**	101834	**18.66**
3/16	0.030	3/16	5/8	2	101177	**15.87**	101835	**18.66**
1/4	0.020	1/4	3/4	2-1/2	101178	**19.72**	101836	**25.45**
1/4	0.030	1/4	3/4	2-1/2	101179	**19.72**	101837	**25.45**
1/4	0.045	1/4	3/4	2-1/2	101180	**19.72**	101838	**25.45**
5/16	0.020	5/16	13/16	2-1/2	101181	**25.84**	101839	**34.48**
5/16	0.030	5/16	13/16	2-1/2	101182	**25.84**	101862	**34.48**
5/16	0.045	5/16	13/16	2-1/2	101183	**25.84**	101863	**34.48**
3/8	0.020	3/8	1	2-1/2	101184	**31.63**	101864	**40.28**
3/8	0.030	3/8	1	2-1/2	101185	**31.63**	101865	**40.28**
3/8	0.045	3/8	1	2-1/2	101186	**31.63**	101866	**40.28**
1/2	0.020	1/2	1	3	101187	**58.87**	101867	**68.69**
1/2	0.030	1/2	1	3	101188	**58.87**	101868	**68.69**
1/2	0.045	1/2	1	3	101189	**58.87**	101869	**68.69**
1/2	0.060	1/2	1	3	101190	**58.87**	101892	**68.69**
5/8	0.020	5/8	1-1/4	3-1/2	101191	**95.21**	101893	**88.40**
5/8	0.030	5/8	1-1/4	3-1/2	101192	**95.21**	101894	**88.06**
5/8	0.045	5/8	1-1/4	3-1/2	101193	**95.21**	101895	**88.06**
5/8	0.060	5/8	1-1/4	3-1/2	101194	**95.21**	101896	**85.55**
5/8	0.090	5/8	1-1/4	3-1/2	101195	**95.21**	101897	**85.88**
3/4	0.020	3/4	1-1/2	4	101197	**140.12**	101898	**156.83**
3/4	0.030	3/4	1-1/2	4	101198	**140.12**	101899	**156.83**
3/4	0.045	3/4	1-1/2	4	101199	**140.12**	101990	**156.83**
3/4	0.060	3/4	1-1/2	4	101200	**140.12**	101991	**156.83**
3/4	0.090	3/4	1-1/2	4	101201	**140.12**	101992	**156.83**
3/4	0.125	3/4	1-1/2	4	101196	**140.12**	101993	**156.83**
1	0.020	1	1-1/2	4	101203	**243.04**	101994	**267.75**
1	0.030	1	1-1/2	4	101204	**243.04**	101995	**267.75**
1	0.045	1	1-1/2	4	101205	**243.04**	101996	**267.75**
1	0.060	1	1-1/2	4	101206	**243.04**	101997	**267.75**
1	0.090	1	1-1/2	4	101207	**243.04**	101998	**267.75**
1	0.125	1	1-1/2	4	101202	**243.04**	101999	**267.75**

GS TOOLING

GS Tooling
End Mill Holders

Unmatched precision and quality,
at a price point you'll love!

See Pages G4-10

4-Flute Ball Nose Stub Length

Strength, rigidity and improved tool life can be obtained with this stub length end mill.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101280	**14.69**	102681	**17.50**
3/64	1/8	3/32	1-1/2	101281	**14.69**	102683	**17.50**
1/16	1/8	1/8	1-1/2	101282	**10.84**	102685	**13.62**
5/64	1/8	5/32	1-1/2	101283	**10.23**	102687	**13.03**
3/32	1/8	3/16	1-1/2	101284	**10.23**	102689	**13.03**
7/64	1/8	7/32	1-1/2	101285	**10.47**	102691	**13.27**
1/8	1/8	1/4	1-1/2	101286	**9.96**	102693	**12.76**
9/64	3/16	9/32	2	101287	**13.96**	102694	**16.74**
5/32	3/16	5/16	2	101288	**13.96**	102695	**16.74**
3/16	3/16	3/8	2	101289	**13.24**	102781	**16.04**
7/32	1/4	7/16	2	101290	**17.56**	102783	**21.91**
1/4	1/4	1/2	2	101291	**17.28**	102785	**21.66**
5/16	5/16	1/2	2	101292	**23.64**	102787	**29.86**
3/8	3/8	5/8	2	101293	**29.21**	102789	**35.41**
7/16	7/16	5/8	2-1/2	101294	**36.14**	102791	**45.93**
1/2	1/2	5/8	2-1/2	101295	**48.17**	102793	**57.97**
5/8	5/8	3/4	3	101296	**132.55**	102795	**103.52**
3/4	3/4	1	3	101297	**132.55**	102797	**146.14**
Metric							
1	3	2	39	101710	**15.42**	102891	**18.23**
1.5	3	3	39	101711	**15.42**	102893	**18.23**
2	3	4	39	101712	**9.66**	-	-
2.5	3	5	39	101713	**9.11**	-	-
3	3	6	39	101714	**10.47**	102941	**13.27**
3.5	4	7	51	101715	**14.67**	-	-
4	4	8	51	101716	**11.82**	-	-
4.5	5	9	51	101717	**18.42**	-	-
5	5	10	51	101718	**17.37**	102935	**21.71**
6	6	12	51	101719	**18.23**	102945	**22.58**
7	8	12	51	101720	**23.85**	-	-
8	8	12	51	101721	**24.91**	-	-
9	10	14	51	101722	**30.74**	102943	**36.96**
10	10	14	51	101723	**33.97**	-	-
11	11	16	64	101724	**36.14**	-	-
12	12	16	64	101725	**50.70**	-	-

4-Flute Ball Nose Regular Length

The industry standard. Wear resistance and minimal deflection for excellent size control.
For: General Purpose Milling, Production Milling, Contouring
On: Steels, Stainless Steels

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1/2	1-1/2	103880	**12.04**	102882	**14.83**
3/16	3/16	5/8	2	103881	**15.87**	102884	**18.66**
1/4	1/4	3/4	2-1/2	103882	**19.72**	102886	**25.45**
5/16	5/16	13/16	2-1/2	103883	**25.84**	102888	**34.48**
3/8	3/8	1	2-1/2	103884	**31.63**	102890	**40.28**
1/2	1/2	1	3	103885	**58.87**	102892	**68.69**
9/16	9/16	1-1/8	3-1/2	103939	**85.73**	102894	**99.87**
5/8	5/8	1-1/4	3-1/2	103940	**95.21**	102896	**109.35**
11/16	3/4	1-3/8	4	103941	**158.49**	102895	**175.18**
3/4	3/4	1-1/2	4	103942	**140.12**	102898	**156.83**
7/8	7/8	1-1/2	4	103943	**224.47**	102897	**249.17**
1	1	1-1/2	4	103944	**243.04**	102900	**267.75**
Metric							
1	3	3	39	102737	**15.42**	101635	**18.22**
1.5	3	5	39	102738	**15.42**	101636	**18.22**
2	3	7	39	102760	**14.56**	101637	**17.36**
2.5	3	8	39	102761	**13.94**	101638	**16.73**
3	3	10	39	102762	**12.67**	101639	**15.42**
3.5	4	12	51	102763	**18.58**	101656	**21.36**
4	4	14	51	102764	**16.66**	101657	**19.45**
4.5	5	14	51	102765	**20.98**	101658	**25.31**
5	5	16	51	102766	**20.21**	101659	**25.96**
6	6	19	64	102767	**20.72**	101660	**26.46**
7	8	19	64	102768	**26.58**	101661	**35.17**
8	8	21	64	102769	**27.19**	101662	**35.78**
9	10	22	70	102770	**33.22**	101663	**41.82**
10	10	25	70	102771	**38.83**	101664	**48.62**
11	11	25	70	102772	**40.86**	101665	**50.65**
12	12	25	76	102773	**45.79**	101666	**71.59**
14	14	30	89	102775	**90.00**	101667	**104.16**
16	16	32	89	102776	**99.95**	101668	**114.12**
18	18	35	102	102777	**147.09**	101669	**163.82**
20	20	38	102	102778	**197.24**	101686	**221.95**
25	25	38	102	102779	**229.69**	101687	**254.38**

Multi-Flute Rougher Regular Length — TiAlN Coated

These fine pitch roughing end mills have an excellent flute design for roughing applications in a variety of materials. TiAlN coating enhances speeds-feeds and tool life.
• 4 flutes

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH

TiAlN: Speeds & Feeds ➤ P. A34

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/4	1/4	3/4	2-1/2	102150	**36.22**	102185	**42.62**
5/16	5/16	3/4	2-1/2	102155	**41.58**	102190	**48.93**
3/8	3/8	1	2-1/2	102160	**50.38**	102200	**59.28**
1/2	1/2	1-1/4	3	102165	**68.13**	102205	**80.14**
5/8	5/8	1-1/4	3-1/2	102170	**108.53**	102210	**127.68**
3/4	3/4	1-5/8	4	102175	**155.82**	102215	**183.33**
1	1	1-3/4	4	102180	**261.72**	102220	**307.92**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

4-Flute Ball Nose Long Length

Added flute and overall length combine for greater reach when deep slotting or milling. These end mills have the capability to mill thicker material in one pass, eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	3/4	2-1/4	102991	**25.02**	102942	**18.97**
3/16	3/16	3/4	2-1/2	102992	**27.58**	102944	**18.66**
1/4	1/4	1-1/8	3	102993	**31.94**	102946	**37.69**
5/16	5/16	1-1/8	3	102994	**39.45**	102948	**48.08**
3/8	3/8	1-1/8	3	102995	**44.38**	102950	**53.00**
7/16	7/16	2	4	102996	**67.05**	102952	**79.75**
1/2	1/2	2	4	102997	**68.48**	102954	**81.19**
5/8	5/8	2-1/4	5	102998	**142.62**	102956	**163.65**
3/4	3/4	2-1/4	5	102999	**234.06**	102958	**258.40**
1	1	2-1/4	5	103000	**398.00**	102960	**429.64**
Metric							
3	3	19	57	101620	**26.33**	101764	**29.11**
4	4	19	57	101621	**26.89**	101765	**31.23**
5	5	25	64	101622	**29.03**	101766	**34.78**
6	6	28	76	101623	**33.60**	101767	**39.36**
8	8	29	76	101624	**41.53**	101768	**50.12**
10	10	32	76	101625	**47.95**	101769	**57.76**
12	12	51	102	101626	**72.15**	101770	**84.81**
14	14	57	127	101627	**135.35**	-	**-**
16	16	57	127	101628	**142.61**	101772	**163.65**
18	18	57	127	101629	**219.37**	-	**-**
20	20	57	127	101630	**241.20**	101774	**272.84**
25	25	57	127	101631	**382.73**	-	**-**

4-Flute Ball Nose Extra Long Length

Extra Long Length End mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	1/8	1	3	102480	**25.02**	102580	**28.42**
3/16	3/16	1-1/8	3	102482	**27.58**	102582	**31.92**
1/4	1/4	1-1/2	4	102484	**33.59**	102584	**40.36**
5/16	5/16	1-5/8	4	102486	**44.02**	102586	**54.97**
3/8	3/8	1-3/4	4	102488	**48.70**	102588	**59.64**
7/16	7/16	3	6	102490	**87.14**	102590	**104.98**
1/2	1/2	3	6	102492	**97.00**	102592	**114.80**
5/8	5/8	3	6	102494	**142.62**	102594	**145.98**
3/4	3/4	3	6	102496	**234.06**	102596	**223.40**
1	1	3	6	102498	**398.00**	102598	**429.64**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

4-Flute Ball Nose Double End Regular Length

The ball nose 4-flute centre cut design allows for excellent finish while contour milling.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/8	3/8	3/8	3-1/16	101360	**48.08**	101708	**60.98**
5/32	3/8	7/16	3-1/8	101361	**48.08**	-	**-**
3/16	3/8	1/2	3-1/4	101362	**48.08**	101726	**60.98**
7/32	3/8	9/16	3-3/8	101363	**48.08**	-	**-**
1/4	3/8	5/8	3-3/8	101364	**48.08**	101728	**60.98**
9/32	3/8	11/16	3-3/8	101365	**48.70**	-	**-**
5/16	3/8	3/4	3-1/2	101366	**48.70**	101739	**71.63**
11/32	3/8	3/4	3-1/2	101367	**48.70**	-	**-**
3/8	3/8	3/4	3-1/2	101368	**48.70**	101748	**71.63**
7/16	1/2	7/8	4	101369	**67.05**	-	**-**
1/2	1/2	1	4	101370	**70.80**	101763	**81.19**

4-Flute Ball Nose Double End Stub Length

These end mills have a shorter flute length which provides greater rigidity with less deflection for shallow milling or slotting. This series is ideal for use on high tensile alloys and heat treated steels.

MICRO GRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ➤ P. A32
TiAlN: Speeds & Feeds ➤ P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
Inch							
1/32	1/8	5/64	1-1/2	101355	**24.48**	101776	**28.65**
3/64	1/8	3/32	1-1/2	101356	**24.48**	101777	**28.65**
1/16	1/8	1/8	1-1/2	101357	**24.48**	101778	**28.65**
3/32	1/8	3/16	1-1/2	101358	**24.48**	101779	**28.65**
1/8	1/8	1/4	1-1/2	101359	**15.17**	101802	**19.36**
5/32	3/16	5/16	2	101371	**26.96**	101803	**31.14**
3/16	3/16	3/8	2	101372	**22.04**	101804	**26.21**
7/32	1/4	1/2	2-1/2	101373	**28.65**	101805	**38.79**
1/4	1/4	1/2	2-1/2	101374	**28.65**	101806	**37.29**
5/16	5/16	1/2	2-1/2	101375	**44.02**	101807	**48.57**
3/8	3/8	1/2	2-1/2	101376	**48.70**	101808	**50.83**
7/16	7/16	9/16	2-3/4	101377	**67.05**	101809	**79.17**
1/2	1/2	5/8	3	101378	**68.48**	101832	**79.17**

2-Flute Regular Length — Typhoon

These end mills are manufactured with Premium Sub-Micron carbide and are designed to cut hardened materials. The unique geometry of the Typhoon end mill combined with its modified AlTiN coating make it an excellent choice for demanding applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/8	3/16	1-1/2	104602	**22.82**
3/32	1/8	5/16	1-1/2	104601	**21.85**
1/8	1/8	1/2	1-1/2	104600	**25.31**
5/32	3/16	9/16	2	104603	**28.23**
3/16	3/16	5/8	2	104604	**28.23**
7/32	1/4	5/8	2-1/2	104605	**31.15**
1/4	1/4	3/4	2-1/2	104608	**34.51**
9/32	5/16	3/4	2-1/2	104607	**44.77**
5/16	5/16	13/16	2-1/2	104612	**44.77**
3/8	3/8	1	2-1/2	104616	**58.95**
7/16	7/16	1	2-3/4	104618	**67.82**
1/2	1/2	1	3	104620	**84.47**
9/16	9/16	1-1/8	3-1/2	104622	**130.11**
5/8	5/8	1-1/4	3-1/2	104624	**153.90**
11/16	3/4	1-3/8	4	104630	**176.72**
3/4	3/4	1-1/2	4	104628	**207.11**
7/8	7/8	1-1/2	4	104631	**267.78**
1	1	1-1/2	4	104632	**296.98**
Metric					
1	3	3	39	101780	**20.88**
1.5	3	5	39	101781	**18.28**
2	3	7	39	101782	**19.15**
2.5	3	8	39	101783	**19.15**
3	3	10	39	101784	**19.15**
3.5	4	12	51	101785	**25.74**
4	4	14	51	101786	**25.74**
4.5	5	14	51	101787	**23.04**
5	5	16	51	101788	**28.23**
6	6	19	64	101789	**36.88**
7	8	19	64	101790	**38.61**
8	8	21	64	101791	**49.65**
9	10	22	70	101792	**58.08**
10	10	25	70	101793	**68.03**
11	12	25	70	101794	**83.71**
12	12	25	76	101795	**79.93**
14	14	30	89	101796	**108.58**
16	16	32	89	101797	**125.24**
18	18	35	102	101798	**176.83**
20	20	38	102	101799	**213.27**
22	22	38	102	101800	**268.54**
25	25	38	102	101801	**310.82**

2-Flute Long Length — Typhoon

These Typhoon end mills have the added reach and depth of cut required for longer reach applications in hardened materials.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | LONG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	1/8	3/4	2-1/4	104815	**30.07**
3/16	3/16	3/4	2-1/4	104816	**32.23**
1/4	1/4	1-1/8	3	104818	**40.99**
5/16	5/16	1-1/8	3	104820	**59.16**
3/8	3/8	1-1/8	3	104822	**63.71**
1/2	1/2	2	4	104824	**90.53**
5/8	5/8	2-1/4	5	104826	**223.77**
3/4	3/4	2-1/4	5	104830	**352.79**
1	1	2-1/4	5	104831	**366.20**

2-Flute Corner Radius — Typhoon

Typhoon end mills with corner radius allow more strength and minimize chipping on the corners in demanding applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Corner Radius (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch						
1/8	0.015	1/8	1/2	1-1/2	102602	**29.75**
3/16	0.020	3/16	5/8	2	102610	**29.96**
1/4	0.020	1/4	3/4	2-1/2	102616	**29.85**
1/4	0.030	1/4	3/4	2-1/2	102618	**31.58**
5/16	0.020	5/16	13/16	2-1/2	102620	**53.11**
3/8	0.020	3/8	1	2-1/2	102628	**57.00**
3/8	0.030	3/8	1	2-1/2	102630	**57.00**
1/2	0.020	1/2	1	3	102636	**81.33**
1/2	0.030	1/2	1	3	102638	**81.33**
1/2	0.060	1/2	1	3	102640	**109.13**

2-Flute Ball Nose Regular Length — Typhoon

Typhoon ball nose end mills are designed for contour milling applications in hardened materials.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/8	3/16	1-1/2	104649	**33.21**
3/32	1/8	5/16	1-1/2	104651	**32.23**
1/8	1/8	1/2	1-1/2	104650	**31.26**
5/32	3/16	9/16	2	104653	**33.74**
3/16	3/16	5/8	2	104654	**33.74**
7/32	1/4	5/8	2-1/2	104655	**45.21**
1/4	1/4	3/4	2-1/2	104658	**47.37**
9/32	5/16	3/4	2-1/2	104657	**61.00**
5/16	5/16	13/16	2-1/2	104662	**61.76**
3/8	3/8	1	2-1/2	104666	**72.14**
7/16	7/16	1	2-3/4	104668	**77.87**
1/2	1/2	1	3	104670	**109.13**
9/16	9/16	1-1/8	3-1/2	104672	**132.92**
5/8	5/8	1-1/4	3-1/2	104674	**151.74**
3/4	3/4	1-1/2	4	104678	**248.86**
7/8	7/8	1-1/2	4	104681	**304.45**
1	1	1-1/2	4	104682	**341.43**
Metric					
1	3	3	39	101810	**23.91**
1.5	3	5	39	101811	**22.18**
2	3	7	39	101812	**22.18**
2.5	3	8	39	101813	**18.07**
3	3	10	39	101814	**22.18**
3.5	4	12	51	101815	**23.91**
4	4	14	51	101816	**29.42**
4.5	5	14	51	101817	**31.48**
5	5	16	51	101818	**32.66**
6	6	19	64	101819	**42.51**
7	8	19	64	101820	**44.45**
8	8	21	64	101821	**48.67**
9	10	22	70	101822	**66.62**
10	10	25	70	101823	**66.62**
11	12	25	70	101824	**76.14**
12	12	25	76	101825	**91.93**
14	14	30	89	101826	**124.92**
16	16	32	89	101827	**143.84**
18	18	35	102	101828	**203.32**
20	20	38	102	101829	**301.95**
22	22	38	102	101830	**316.99**
25	25	38	102	101831	**366.63**

2-Flute Ball Nose Long Length — Typhoon

Typhoon ball nose end mills are designed for contour milling in hardened materials. The long length allows for milling tougher materials in longer reach applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | LONG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	1/8	3/4	2-1/4	104652	**38.72**
3/16	3/16	3/4	2-1/4	104656	**29.53**
1/4	1/4	1-1/8	3	104660	**51.38**
5/16	5/16	1-1/8	3	104663	**367.11**
3/8	3/8	1-1/8	3	104667	**88.15**
1/2	1/2	2	4	104671	**174.45**
3/4	3/4	2-1/4	5	104679	**323.80**
1	1	2-1/4	5	104683	**624.89**

2-Flute Mold Mill — Typhoon

The Typhoon Mold Mill offers excellent performance and tool life in mold milling applications on tougher materials.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A38

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	1/8	5/16	2-3/8	104034	**68.25**
3/16	3/16	3/8	3-1/8	104036	**48.78**
1/4	1/4	1/2	3-1/2	104038	**68.46**
5/16	5/16	15/32	4	104040	**67.80**
3/8	3/8	3/4	4	104042	**93.87**
1/2	1/2	7/8	4-1/4	104044	**214.90**
5/8	5/8	15/16	6	104046	**197.50**
3/4	3/4	1-1/8	6	104048	**308.00**
1	1	1-1/2	6	104050	**492.70**

2-Flute Spherical Ball End — Typhoon

- High performance ball nose plus end mills are used in the mold industry and have a full 220 degree arc cutting capability
- Modified AlTiN coated for improved tool life and increased production output
- Made from premium sub-micron grain carbide

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Regular Length					
1/8	1/8	3/32	1-1/2	153110	**27.93**
3/16	3/16	9/64	2	153112	**28.23**
1/4	1/4	3/16	2-1/2	153114	**41.08**
3/8	3/8	9/32	2-1/2	153116	**57.81**
1/2	1/2	3/8	3	153118	**85.56**
Long Length					
1/8	1/8	3/32	3	153120	**31.63**
3/16	3/16	9/64	3	153122	**32.13**
1/4	1/4	3/16	4	153124	**55.77**
3/8	3/8	9/32	4	153126	**65.12**
1/2	1/2	3/8	6	153128	**121.96**

Tolerances - Inch		
Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric		
Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

4-Flute Regular Length — Typhoon

These end mills are manufactured with premium sub-micron carbide and are designed to cut hardened materials. The unique geometry of the Typhoon end mill combined with its modified AlTiN coating make it an excellent choice for demanding applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/8	3/16	1-1/2	104702	**22.82**
3/32	1/8	5/16	1-1/2	104701	**23.91**
1/8	1/8	1/2	1-1/2	104700	**22.82**
5/32	3/16	9/16	2	104703	**25.52**
3/16	3/16	5/8	2	104704	**28.23**
7/32	1/4	5/8	2-1/2	104705	**31.04**
1/4	1/4	3/4	2-1/2	104708	**31.04**
9/32	5/16	3/4	2-1/2	104707	**44.77**
5/16	5/16	13/16	2-1/2	104712	**44.77**
3/8	3/8	1	2-1/2	104716	**52.99**
7/16	7/16	1	2-3/4	104718	**67.82**
1/2	1/2	1	3	104720	**84.47**
9/16	9/16	1-1/8	3-1/2	104722	**130.11**
5/8	5/8	1-1/4	3-1/2	104724	**153.90**
11/16	3/4	1-3/8	4	104730	**176.72**
3/4	3/4	1-1/2	4	104728	**217.60**
7/8	7/8	1-1/2	4	104731	**267.78**
1	1	1-1/2	4	104732	**365.66**
Metric					
1	3	3	39	101840	**20.88**
1.5	3	5	39	101841	**19.15**
2	3	7	39	101842	**19.15**
2.5	3	8	39	101843	**19.15**
3	3	10	39	101844	**19.15**
3.5	4	12	51	101845	**25.74**
4	4	14	51	101846	**25.74**
4.5	5	14	51	101847	**28.23**
5	5	16	51	101848	**28.23**
6	6	19	64	101849	**36.88**
7	8	19	64	101850	**47.59**
8	8	21	64	101851	**52.13**
9	10	22	70	101852	**68.03**
10	10	25	70	101853	**71.38**
11	12	25	70	101854	**83.71**
12	12	25	76	101855	**98.31**
14	14	30	89	101856	**133.57**
16	16	32	89	101857	**154.44**
18	18	35	102	101858	**176.83**
20	20	38	102	101859	**262.59**
22	22	38	102	101860	**462.45**
25	25	38	102	101861	**310.82**

4-Flute Long Length — Typhoon

These end mills are manufactured with premium sub-micron carbide and are designed to cut hardened materials. The unique geometry of the Typhoon end mill combined with its modified AlTiN coating make it an excellent choice for demanding and longer reach applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | LONG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	1/8	3/4	2-1/4	104832	**30.07**
3/16	3/16	3/4	2-1/4	104834	**32.23**
1/4	1/4	1-1/8	3	104836	**40.99**
5/16	5/16	1-1/8	3	104838	**59.16**
3/8	3/8	1-1/8	3	104840	**71.06**
1/2	1/2	2	4	104842	**111.39**
5/8	5/8	2-1/4	5	104844	**193.92**
3/4	3/4	2-1/4	5	104846	**337.76**
1	1	2-1/4	5	104848	**769.16**

4-Flute Corner Radius — Typhoon

G3 TOOLING

Typhoon end mills with corner radius provides greater strength and minimizes chipping on the corners in demanding applications.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A36

Cutting Dia. (in.)	Corner Radius (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch						
1/8	0.015	1/8	1/2	1-1/2	102652	**37.20**
1/8	0.030	1/8	1/2	1-1/2	102656	**27.80**
3/16	0.020	3/16	5/8	2	102660	**36.77**
1/4	0.020	1/4	3/4	2-1/2	102666	**36.77**
1/4	0.030	1/4	3/4	2-1/2	102668	**36.77**
5/16	0.020	5/16	13/16	2-1/2	102670	**53.11**
5/16	0.030	5/16	13/16	2-1/2	102672	**53.11**
3/8	0.020	3/8	1	2-1/2	102678	**57.00**
3/8	0.030	3/8	1	2-1/2	102680	**57.00**
1/2	0.020	1/2	1	3	102686	**100.15**
1/2	0.030	1/2	1	3	102688	**100.15**
1/2	0.060	1/2	1	3	102690	**109.13**

4-Flute Spherical Ball End — Typhoon

G3 TOOLING

- High performance ball nose plus end mills are used in the mold industry and have a full 220 degree arc cutting capability
- Modified AlTiN coated for improved tool life and increased production output
- Made from premium sub-micron grain carbide

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Regular Length					
1/8	1/8	3/32	1-1/2	153130	**26.67**
3/16	3/16	9/64	2	153132	**36.20**
1/4	1/4	3/16	2-1/2	153134	**50.42**
3/8	3/8	9/32	2-1/2	153136	**57.81**
1/2	1/2	3/8	3	153138	**119.23**
Long Length					
1/8	1/8	3/32	3	153140	**31.63**
3/16	3/16	9/64	3	153142	**32.13**
1/4	1/4	3/16	4	153144	**58.11**
3/8	3/8	9/32	4	153146	**65.12**
1/2	1/2	3/8	6	153148	**172.47**

4-Flute Ball Nose Long Length — Typhoon

G3 TOOLING

Typhoon ball nose end mills are designed for long reach contour milling applications in hardened materials.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | LONG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	1/8	3/4	2-1/4	104833	**40.56**
3/16	3/16	3/4	2-1/4	104835	**49.00**
1/4	1/4	1-1/8	3	104837	**62.29**
5/16	5/16	1-1/8	3	104839	**77.87**
3/8	3/8	1-1/8	3	104841	**88.15**
1/2	1/2	2	4	104843	**174.45**
5/8	5/8	2-1/4	5	104845	**310.61**
3/4	3/4	2-1/4	5	104847	**323.80**
1	1	2-1/4	5	104849	**624.89**

4-Flute Ball Nose Regular Length — Typhoon

G3 TOOLING

Typhoon ball nose end mills are designed for contour milling applications in hardened materials.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A37

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/8	3/16	1-1/2	104752	**33.21**
3/32	1/8	5/16	1-1/2	104751	**32.23**
1/8	1/8	1/2	1-1/2	104750	**34.61**
5/32	3/16	9/16	2	104753	**37.42**
3/16	3/16	5/8	2	104754	**33.74**
7/32	1/4	5/8	2-1/2	104755	**52.78**
1/4	1/4	3/4	2-1/2	104758	**47.37**
9/32	5/16	3/4	2-1/2	104757	**64.14**
5/16	5/16	13/16	2-1/2	104762	**61.76**
3/8	3/8	1	2-1/2	104766	**72.14**
7/16	7/16	1	2-3/4	104768	**77.87**
1/2	1/2	1	3	104770	**109.13**
9/16	9/16	1-1/8	3-1/2	104772	**132.92**
5/8	5/8	1-1/4	3-1/2	104774	**186.67**
11/16	3/4	1-3/8	4	104780	**212.30**
3/4	3/4	1-1/2	4	104778	**212.30**
7/8	7/8	1-1/2	4	104781	**338.19**
1	1	1-1/2	4	104782	**341.43**
Metric					
1	3	3	39	101870	**23.91**
1.5	3	5	39	101871	**22.18**
2	3	7	39	101872	**22.18**
2.5	3	8	39	101873	**22.18**
3	3	10	39	101874	**22.18**
3.5	4	12	51	101875	**29.42**
4	4	14	51	101876	**29.42**
4.5	5	14	51	101877	**31.04**
5	5	16	51	101878	**32.66**
6	6	19	64	101879	**42.51**
7	8	19	64	101880	**54.72**
8	8	21	64	101881	**60.24**
9	10	22	70	101882	**66.62**
10	10	25	70	101883	**66.62**
11	12	25	70	101884	**76.14**
12	12	25	76	101885	**113.12**
14	14	30	89	101886	**124.92**
16	16	32	89	101887	**143.84**
18	18	35	102	101888	**203.32**
20	20	38	102	101889	**245.28**
22	22	38	102	101890	**316.99**
25	25	38	102	101891	**366.63**

Multi-Flute Regular Length — Typhoon

G3 TOOLING

Multi-Flute Typhoon end mill design allow them to be run at higher rpm than conventional end mills as well as increase tool life without chipping.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH | 50°

Speeds & Feeds ➤ P. A38

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	No. of Flutes	Code No.	Price $
Inch						
1/8	1/8	1/2	1-1/2	4	101050	**22.18**
3/16	3/16	5/8	2	4	101052	**41.75**
1/4	1/4	3/4	2-1/2	6	101054	**63.06**
5/16	5/16	13/16	2-1/2	6	101056	**42.94**
3/8	3/8	1	2-1/2	6	101058	**70.73**
7/16	7/16	1	2-3/4	6	101060	**98.63**
1/2	1/2	1	3	6	101062	**114.32**
9/16	9/16	1-1/8	3-1/2	6	101064	**137.46**
5/8	5/8	1-1/4	3-1/2	6	101066	**154.22**
3/4	3/4	1-1/2	4	6	101068	**231.87**
7/8	7/8	1-1/2	4	6	101070	**294.50**
1	1	1-1/2	4	8	101072	**340.57**

Roughers Regular Length — Typhoon

This fine pitch rougher is designed for milling harder metals and has updated geometry in the design of this tool for higher feed rates with no vibration or chatter and chipbreakers to eliminate birdnesting.

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A16

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	No. of Flutes	Code No.	Price $
Inch						
1/4	1/4	3/4	2-1/2	3	104800	**41.86**
5/16	5/16	3/4	2-1/2	3	104802	**58.30**
3/8	3/8	7/8	2-1/2	3	104804	**68.90**
1/2	1/2	1	3	4	104806	**109.78**
5/8	5/8	1-1/4	3-1/2	4	104810	**200.08**
3/4	3/4	1-5/8	4	4	104812	**229.71**
1	1	1-3/4	4	5	104814	**372.47**

Speeds & Feeds — Typhoon Modified AlTiN Carbide Roughing End Mills

Roughing Side Cutting

Hardness	Up to 30HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 65 HRC
Work Material	Non-Alloyed Steels Alloy Steels Cast Iron	Alloys Steels Heat Resistant Steels	Alloys Steels Heat Resistant Steels	Hardened Steels	Hardened Steels
Depth of Cut	Ad = 1.5D, Rd = 0.3D; 1000 SFM; 800 SFM		550 SFM	Ad = 1.0D, Rd = 0.05D; 225 SFM	160 SFM

Dia. (in)	Strength (mm)	Up to 1000N/mm² Speed RPM	Up to 1000N/mm² Feed in/min	1000 to 1200N/mm² Speed RPM	1000 to 1200N/mm² Feed in/min	1200 to 1400N/mm² Speed RPM	1200 to 1400N/mm² Feed in/min	1400 to 2000N/mm² Speed RPM	1400 to 2000N/mm² Feed in/min	2000N/mm²~ Speed RPM	2000N/mm²~ Feed in/min
1/4	6	15,600	91.35	12,400	33.10	8,400	22.45	3,400	10.25	2,400	7.50
5/16	8	11,600	91.35	9,200	33.10	6,300	22.45	2,400	9.50	1,800	7.10
3/8	10	9,200	91.35	7,600	33.10	5,100	22.45	2,000	11.40	1,300	7.50
1/2	12	8000	94.50	6,000	31.50	4,200	22.45	1,680	10.25	1,200	7.50
5/8	16	6000	94.50	4,800	29.90	3,300	20.05	1,200	6.30	800	4.35
3/4	20	5200	91.35	4,400	28.35	2,700	16.55	1,100	5.90	700	3.95
1	25	4800	85.05	3,600	22.05	2,400	14.15	1,000	5.90	660	3.95

4-Flute Variable Helix Carbide End Mill — Typhoon

- Helix changes along flutes
- Increased stability during cutting action
- Substantial increase in speed
- Small corner radius for added strength and smoother cutting action
- AlTiN coated for improved tool life and increased production output
- Made from premium sub-micron grain carbide

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A17

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	With Radius Code No.	Price $	Without Radius Code No.	Price $	Weldon Flat Without Radius Code No.	Price $
1/8	1/8	1/2	1-1/2	0.010-0.015	153000	**14.85**	153250	**13.21**	-	-
3/16	3/16	3/8	1-1/2	0.010-0.015	153001	**18.66**	-	-	-	-
3/16	3/16	5/8	2	0.015-0.020	153002	**18.66**	153252	**16.65**	-	-
1/4	1/4	1/2	2	0.015-0.020	153004	**22.97**	153254	**22.97**	-	-
1/4	1/4	3/4	2-1/2	0.015-0.020	153006	**25.45**	153256	**22.46**	-	-
1/4	1/4	1-1/8	3	0.015-0.020	153008	**37.69**	153258	**37.69**	-	-
5/16	5/16	1/2	2	0.015-0.020	153010	**31.39**	153260	**27.38**	-	-
5/16	5/16	13/16	2-1/2	0.015-0.020	153012	**34.48**	153262	**32.03**	-	-
5/16	5/16	1-1/8	3	0.015-0.020	153014	**48.08**	153264	**48.08**	-	-
3/8	3/8	5/8	2	0.015-0.020	153016	**37.03**	153266	**37.80**	153500	**43.40**
3/8	3/8	1	2-1/2	0.015-0.020	153018	**40.28**	153268	**37.80**	153502	**61.71**
3/8	3/8	1-1/8	3	0.015-0.020	153020	**53.00**	153270	**53.00**	153504	**48.59**
7/16	7/16	1	2-3/4	0.015-0.020	153022	**48.70**	153272	**45.44**	153506	**55.12**
1/2	1/2	5/8	2-1/2	0.025-0.030	153024	**61.54**	153274	**52.92**	153508	**48.50**
1/2	1/2	1	3	0.025-0.030	153026	**68.69**	153276	**56.53**	153510	**68.91**
1/2	1/2	1-1/4	3	0.025-0.030	153027	**68.69**	153277	**56.53**	153512	**87.55**
1/2	1/2	2	4	0.025-0.030	153028	**81.19**	153278	**76.49**	153514	**70.12**
5/8	5/8	3/4	3	0.030-0.035	153030	**106.39**	153280	**101.35**	153516	**98.10**
5/8	5/8	1-1/4	3-1/2	0.030-0.035	153032	**109.35**	153282	**104.30**	-	-
5/8	5/8	2-1/4	5	0.030-0.035	153034	**163.65**	153284	**163.65**	153518	**150.02**
3/4	3/4	1	3	0.030-0.035	153036	**153.50**	153286	**145.71**	153520	**133.57**
3/4	3/4	1-1/2	4	0.030-0.035	153038	**156.83**	153288	**148.89**	-	-
3/4	3/4	2-1/4	5	0.030-0.035	153040	**217.53**	153290	**199.84**	153522	**238.75**
1	1	1-1/2	4	0.030-0.035	153042	**267.75**	153292	**222.44**	153526	**222.44**
1	1	2-1/4	5	0.030-0.035	153041	**329.42**	153293	**297.75**	153524	**357.76**
1-1/4	1-1/4	2-1/4	5	0.030-0.035	153043	**713.32**	153294	**570.61**	-	-

Speeds & Feeds — 4 & 5-Flute Variable Helix End Mills

Material	SFM	1/8"	1/4"	1/2"	1"
Aluminum Alloys	1120	0.0010	0.0020	0.0040	0.0080
Carbon Steel	300-600	0.0010	0.0015	0.0030	0.0060
Cast Iron	350-550	0.0010	0.0015	0.0030	0.0060
Copper Alloys	500-900	0.0010	0.0020	0.0030	0.0060
Steel - Annealed	350-500	0.0010	0.0020	0.0030	0.0050
Steel - 18-24 HRC	150-500	0.0004	0.0008	0.0015	0.0045
Steel - 25-37 HRC	125-200	0.0003	0.0005	0.0010	0.0030
Stainless Steel - Free Machining	250-400	0.0005	0.0010	0.0020	0.0030
Stainless Steel - Other	150-300	0.0005	0.0010	0.0020	0.0030
Inconel/Monel	60-100	0.0005	0.0010	0.0015	0.0030
Titanium	175-300	0.0005	0.0008	0.0015	0.0030

* All speeds and feeds are suggested starting points. They may be increased or decreased depending on machine condition, depth of cut, finish required, coolant, etc.

2-Flute For Aluminum

G3 TOOLING

This carbide aluminum end mill has been designed specially for milling aluminum and all non-ferrous materials. The unique geometry permits much higher speed and feed rates without loading. Spindle and feed rates can be increased by fifty percent for greater productivity with excellent piece/part finishes.

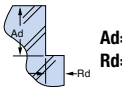
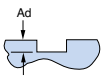
SUB MICRON MICRO GRAIN CARBIDE | BRIGHT | REG LENGTH | 40°

Speeds & Feeds ➤ P. A18

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	1/4	3/4	2-1/2	101020	**27.31**
1/4	1/4	1-1/2	4	101022	**41.79**
5/16	5/16	13/16	2-1/2	101024	**35.28**
5/16	5/16	1-5/8	4	101026	**48.89**
3/8	3/8	1	2-1/2	101028	**38.04**
3/8	3/8	1-3/4	4	101030	**57.25**
1/2	1/2	1	3	101032	**62.23**
1/2	1/2	2	4	101034	**81.44**
5/8	5/8	1-1/4	3-1/2	101036	**90.15**
5/8	5/8	2-1/4	5	101038	**138.89**
3/4	3/4	1-1/2	4	101040	**139.60**
3/4	3/4	2-1/4	5	101042	**239.40**
1	1	2-1/4	5	101044	**299.37**
1	1	3	6	101046	**356.21**
Metric					
6	6	19	63	101390	**41.11**
6	6	38	102	101391	**50.67**
8	8	21	63	101392	**49.68**
10	10	25	70	101394	**57.35**
10	10	51	102	101395	**75.26**
12	12	51	102	101397	**99.62**
16	16	32	89	101398	**120.92**
16	16	57	127	101399	**184.50**
20	20	38	102	101400	**176.47**
20	20	57	127	101401	**220.71**
25	25	57	127	101402	**450.90**
25	25	76	152	101403	**538.18**

2-Flute Aluminum Speeds & Feeds

Side Milling **Slotting**

Work Material		Aluminum		Aluminum	
Hardness					
Depth of Cut		 Ad= 1.5D Rd= 0.1D		 Ad= 0.5D	
Mill Dia. (inch)	mm	V=660 SFM		V=660 SFM	
		Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	6	10000	60	10000	30
5/16	8	8000	64	8000	32
3/8	10	8000	80	8000	40
1/2	12	8000	96	8000	48
5/8	16	6000	84	6000	42
3/4	20	4000	64	4000	32
1	25	4000	64	4000	32

5-Flute Variable Helix Carbide End Mill — Typhoon

G3 TOOLING

- 25% increase in feed rates over 4-flute version
- Helix changes along flutes
- Increased stability during cutting action
- Substantial increase in speed
- Small corner radius for added strength and smoother cutting action
- Modified AlTiN coated for improved tool life and increase production output

SUB MICRON MICRO GRAIN CARBIDE | TYPHOON | REG LENGTH

Speeds & Feeds ➤ P. A17

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Code No.	Price $
1/4	1/4	3/4	2-1/2	0.015-0.020	153100	**29.25**
3/8	3/8	1	2-1/2	0.015-0.020	153102	**46.30**
1/2	1/2	1	3	0.025-0.030	153104	**79.00**
5/8	5/8	1-1/4	3-1/2	0.030-0.035	153106	**125.77**
3/4	3/4	1-1/2	4	0.030-0.035	153108	**180.35**
1	1	1-1/2	4	0.030-0.035	153109	**233.79**

3-Flute Square End 40° Helix Carbide End Mills

G3 TOOLING

- Special geometry allows for high chip loads and feed rates
- 3-flute design excellent for slotting and profiling at high speeds
- Made from premium sub-micron grain carbide
- Cutting diameter tolerance +0.000 / -0.002

SUB MICRON MICRO GRAIN CARBIDE | BRIGHT | TiCN | 40°

Speeds & Feeds ➤ P. A18

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
Inch							
1/32	1/8	3/32	1-1/2	153300	**14.54**	153350	**18.29**
3/64	1/8	1/8	1-1/2	153302	**13.74**	153352	**15.12**
1/16	1/8	3/16	1-1/2	153304	**11.38**	153354	**14.25**
3/32	1/8	3/8	1-1/2	153306	**11.38**	153356	**13.62**
1/8	1/8	1/2	1-1/2	153308	**10.77**	153358	**12.10**
9/64	3/16	9/16	2	153310	**18.65**	153360	**15.95**
5/32	3/16	9/16	2	153312	**16.61**	153362	**15.95**
11/64	3/16	9/16	2	153314	**18.34**	153364	**14.96**
3/16	3/16	5/8	2	153316	**16.50**	153366	**18.29**
13/64	1/4	5/8	2-1/2	153318	**21.88**	153368	**19.90**
7/32	1/4	5/8	2-1/2	153320	**22.12**	153370	**24.44**
15/64	1/4	3/4	2-1/2	153322	**21.98**	153372	**19.90**
1/4	1/4	3/4	2-1/2	153324	**18.70**	153374	**25.33**
17/64	5/16	3/4	2-1/2	153326	**32.27**	153376	**27.60**
5/16	5/16	13/16	2-1/2	153328	**27.00**	153378	**34.94**
5/16	5/16	1-5/8	4	153330	**36.09**	153380	**43.69**
3/8	3/8	1	2-1/2	153332	**34.19**	153382	**41.10**
3/8	3/8	1-1/8	3	153334	**39.97**	153384	**47.54**
1/2	1/2	1	3	153336	**45.26**	153386	**61.13**
1/2	1/2	2	4	153338	**58.49**	153388	**67.67**
5/8	5/8	1-1/4	3-1/2	153340	**82.65**	153390	**99.33**
5/8	5/8	2-1/4	5	153342	**120.56**	153392	**136.58**
3/4	3/4	1-1/2	4	153344	**149.82**	153394	**175.04**

3-Flute Aluminum Speeds & Feeds

Chip Load Per Tooth					
Material	SFM	1/8"	1/4"	1/2"	1"
Aluminum Alloys	600/1200	0.0010	0.0020	0.0040	0.0080

RPM = 3.82 x sfm ÷ dia **SFM = rpm x 0.262 ÷ dia**
IPM = chip load x No. of teeth x rpm

2-Flute Corner Radius For Aluminum

- Special geometry allows for high chip loads and feed rates
- Excellent for slotting and profiling at high speeds
- Made from premium sub-micron grain carbide
- Cutting diameter tolerance +0.000 / -0.002

SUB MICRON MICRO GRAIN CARBIDE | BRIGHT | TiCN | 35°

Speeds & Feeds ➤ P. A18

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
Regular Length								
1/8	1/8	3/8	1-1/2	0.010	153208	**10.77**	153400	**22.23**
3/16	3/16	5/8	2	0.010	153210	**13.45**	153402	**22.23**
1/4	1/4	3/4	2-1/2	0.010	153212	**15.32**	153404	**28.43**
5/16	5/16	13/16	2-1/2	0.010	153214	**32.34**	153406	**37.64**
3/8	3/8	1	2-1/2	0.015	153216	**26.76**	153408	**43.86**
7/16	7/16	1	2-3/4	0.015	153218	**42.86**	153410	**79.03**
1/2	1/2	1	3	0.020	153220	**42.86**	153412	**79.03**
5/8	5/8	1-1/4	3-1/2	0.020	153222	**82.65**	153414	**136.71**
3/4	3/4	1-1/2	4	0.030	153224	**121.18**	153416	**177.43**
1	1	1-1/2	4	0.030	153226	**191.41**	153418	**302.59**
Long Length								
1/4	1/4	1-1/8	3	0.010	153228	**27.68**	153420	**49.26**
5/16	5/16	1-1/8	3	0.010	153230	**32.34**	153422	**64.76**
3/8	3/8	1-1/8	3	0.015	153232	**39.97**	153424	**74.89**
1/2	1/2	2	4	0.020	153234	**61.90**	153426	**91.39**
5/8	5/8	2-1/4	5	0.020	153236	**120.56**	153428	**195.48**
3/4	3/4	2-1/4	5	0.030	153238	**192.06**	153430	**264.43**
1	1	2-1/4	5	0.030	153240	**326.54**	153432	**443.46**

3-Flute Corner Radius For Aluminum

- Special geometry allows for high chip loads and feed rates
- 3-flute design excellent for slotting and profiling at high speeds
- Made from premium sub-micron grain carbide
- Cutting diameter tolerance +0.000 / -0.002

SUB MICRON MICRO GRAIN CARBIDE | BRIGHT | TiCN | 35°

Speeds & Feeds ➤ P. A18

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
Regular Length								
1/8	1/8	3/8	1-1/2	0.005	153150	**10.77**	153044	**21.55**
3/16	3/16	5/8	2	0.005	153152	**12.70**	153046	**22.23**
1/4	1/4	3/4	2-1/2	0.005	153154	**16.18**	153048	**28.43**
5/16	5/16	13/16	2-1/2	0.005	153156	**22.69**	153050	**37.64**
3/8	3/8	1	2-1/2	0.005	153158	**26.76**	153052	**43.86**
7/16	7/16	1	2-3/4	0.005	153160	**34.49**	153054	**79.03**
1/2	1/2	1-1/4	3	0.005	153162	**42.86**	153056	**79.03**
5/8	5/8	1-5/8	3-1/2	0.005	153164	**82.65**	153058	**136.71**
3/4	3/4	1-5/8	4	0.005	153166	**121.18**	153060	**177.43**
1	1	1-1/2	4	0.005	153168	**191.41**	153062	**302.59**
Long Length								
1/4	1/4	1-1/8	3	0.005	153170	**26.23**	153434	**49.26**
5/16	5/16	1-1/8	3	0.005	153172	**36.09**	153436	**64.76**
3/8	3/8	1-1/8	3	0.005	153174	**39.97**	153438	**74.89**
1/2	1/2	1-1/2	4	0.005	153176	**58.49**	153440	**91.39**
1/2	1/2	2	4	0.005	153178	**58.49**	153442	**91.39**
5/8	5/8	2-1/4	5	0.005	153180	**120.56**	153444	**195.48**
3/4	3/4	2-1/4	5	0.005	153182	**192.06**	153446	**264.43**
1	1	2-1/4	5	0.005	153184	**326.54**	153448	**443.46**

2-Flute Corner Radius Aluminum Speeds & Feeds

	Chip load per tooth				
Material	**SFM**	**1/8"**	**1/4"**	**1/2"**	**1"**
Aluminum Alloys	600/1200	0.0010	0.0020	0.0040	0.0080

RPM = 3.82 x sfm ÷ dia SFM = rpm x 0.262 ÷ dia IPM = chip load x No. of teeth x rpm

3-Flute Corner Radius Aluminum Speeds & Feeds

	Chip load per tooth				
Material	**SFM**	**1/8"**	**1/4"**	**1/2"**	**1"**
Aluminum Alloys	600/1200	0.0010	0.0020	0.0040	0.0080

RPM = 3.82 x sfm ÷ dia SFM = rpm x 0.262 ÷ dia IPM = chip load x No. of teeth x rpm

2-Flute Regular Length HSCO & HSS

These end mills come standard with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. Designed for slotting, drilling, pocketing and general-purpose operation.

- 2 helical flutes
- Centre cutting
- Single end with weldon shank
- Keyway tolerance

HSCO | HSS | BRIGHT | TiAlN | REG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	HSCO Weldon Flat		HSCO TiAlN Coated Weldon Flat		HSS Weldon Flat		HSCO Comb. Shank	
				Code No.	Price $	Code No.	Price $	Code No.	Price $	Code No.	Price $
Inch											
1/8	3/8	3/8	2-5/16	103050	**16.52**	104570	**32.27**	104450	**11.52**	-	**-**
5/32	3/8	7/16	2-5/16	103052	**16.52**	-	**-**	104452	**11.52**	-	**-**
3/16	3/8	7/16	2-5/16	103054	**16.52**	104571	**32.27**	104454	**11.27**	-	**-**
7/32	3/8	1/2	2-5/16	103056	**16.52**	-	**-**	104456	**9.99**	103005	**11.81**
1/4	3/8	1/2	2-5/16	103058	**16.52**	104572	**32.26**	104458	**11.27**	-	**-**
9/32	3/8	9/16	2-5/16	103060	**16.52**	-	**-**	104460	**11.52**	103007	**11.81**
5/16	3/8	9/16	2-5/16	103062	**16.52**	104573	**32.25**	104462	**11.52**	-	**-**
11/32	3/8	9/16	2-5/16	103064	**16.52**	-	**-**	104464	**9.17**	-	**-**
3/8	3/8	9/16	2-5/16	103066	**16.52**	104574	**32.27**	104466	**11.52**	103010	**14.36**
13/32	3/8	13/16	2-1/2	103068	**26.17**	-	**-**	104468	**20.11**	-	**-**
7/16	3/8	13/16	2-1/2	103070	**23.69**	104575	**39.38**	104470	**16.20**	103011	**21.82**
15/32	3/8	13/16	2-1/2	103072	**26.17**	-	**-**	104472	**20.11**	-	**-**
1/2	1/2	1	3	103074	**23.69**	104576	**42.17**	104474	**17.51**	-	**-**
17/32	1/2	1	3	103076	**31.61**	-	**-**	-	**-**	-	**-**
9/16	1/2	1-1/8	3-1/8	103078	**37.58**	-	**-**	104476	**26.51**	-	**-**
5/8	5/8	1-5/16	3-7/16	103082	**37.57**	104577	**63.15**	104478	**27.06**	-	**-**
11/16	5/8	1-5/16	3-7/16	103086	**41.83**	-	**-**	104480	**32.44**	103015	**38.20**
3/4	3/4	1-5/16	3-7/16	103090	**41.80**	104578	**72.10**	104482	**31.13**	-	**-**
13/16	5/8	1-1/2	3-5/8	103094	**53.63**	-	**-**	104484	**38.12**	-	**-**
7/8	3/4	1-1/2	3-3/4	103098	**53.64**	104579	**86.26**	104486	**37.34**	-	**-**
1	1	1-5/8	4-1/8	103110	**67.80**	104580	**108.02**	104488	**47.03**	-	**-**
1-1/8	1	1-5/8	4-1/8	103112	**96.89**	104581	**141.33**	104490	**70.55**	-	**-**
1-1/4	1-1/4	1-5/8	4-1/8	103116	**106.39**	104582	**162.90**	104492	**78.28**	103019	**134.05**
1-3/8	1-1/4	1-5/8	4-1/8	103120	**157.13**	-	**-**	-	**-**	-	**-**
1-1/2	1-1/4	1-5/8	4-1/8	103124	**153.04**	-	**-**	104494	**112.20**	-	**-**
1-3/4	1-1/4	1-5/8	4-1/8	103126	**192.56**	-	**-**	104496	**145.82**	-	**-**
2	1-1/4	1-5/8	4-1/8	103128	**229.30**	-	**-**	104498	**182.32**	-	**-**

2-Flute Regular Length HSCO – Metric

These end mills come standard with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. Designed for slotting, drilling, pocketing and general-purpose operation.

- 2 helical flutes
- Single end with weldon shank
- Centre cutting
- Keyway tolerance

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (mm)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Metric					
2 mm	3/8	5/16	2-5/16	103700	**21.16**
3 mm	3/8	5/16	2-5/16	103702	**17.60**
3.5 mm	3/8	7/16	2-5/16	103703	**20.38**
4 mm	3/8	7/16	2-5/16	103704	**21.16**
5 mm	3/8	1/2	2-5/16	103706	**21.16**
5.5 mm	3/8	1/2	2-5/16	103707	**20.38**
6 mm	3/8	1/2	2-5/16	103708	**21.16**
7 mm	3/8	9/16	2-5/16	103710	**21.16**
8 mm	3/8	9/16	2-5/16	103712	**21.16**
9 mm	3/8	9/16	2-5/16	103713	**21.16**
10 mm	3/8	13/16	2-1/2	103714	**21.16**
11 mm	3/8	13/16	2-1/2	103715	**32.27**
12 mm	3/8	13/16	2-1/2	103716	**32.27**
14 mm	1/2	1-1/8	3-1/8	103718	**37.57**
16 mm	5/8	1-5/16	3-7/16	103720	**46.03**
18 mm	5/8	1-5/16	3-7/16	103722	**53.75**
20 mm	5/8	1-1/2	3-3/4	103724	**59.88**
22 mm	3/4	1-1/2	3-3/4	103726	**69.09**
24 mm	3/4	2	4-1/2	103728	**89.08**

2-Flute Long Length HSCO

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	3/8	1-1/4	3-1/8	103130	**24.13**
5/16	3/8	1-3/8	3-1/8	103132	**24.13**
3/8	3/8	1-1/2	3-1/4	103134	**24.13**
1/2	1/2	2	4	103136	**33.96**
5/8	5/8	2	4-1/8	103138	**49.19**
3/4	3/4	2-1/4	4-1/2	103140	**57.11**
7/8	7/8	2-1/2	4-3/4	103142	**67.28**
1	1	3	5-1/2	103144	**93.94**
1-1/8	1	3	5-1/2	103146	**116.33**
1-1/4	1-1/4	3	5-1/2	103150	**127.45**
1-1/2	1-1/4	3	5-1/2	103152	**174.63**
1-3/4	1-1/4	3	5-1/2	103154	**217.43**
2	1-1/4	3	5-1/2	103156	**295.08**

2-Flute Extended Shank HSCO

HSCO | BRIGHT | EXTENDED SHANK | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Length Below Shank	Overall Length (in.)	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
Inch								
1/8	3/8	3/8	13/16	2-3/8	-	-	103158	**20.48**
3/16	3/8	1/2	1-1/8	2-11/16	103622	**19.97**	103160	**21.92**
1/4	3/8	5/8	1-1/2	3-1/16	103624	**18.30**	103162	**21.92**
5/16	3/8	3/4	1-3/4	3-5/16	-	-	103164	**21.91**
3/8	3/8	3/4	1-3/4	3-5/16	103628	**18.50**	103166	**21.91**
1/2	1/2	1	2-7/32	4	103630	**21.70**	103168	**30.79**
5/8	5/8	1-3/8	2-23/32	4-5/8	103632	**54.77**	103170	**51.00**
3/4	3/4	1-5/8	3-11/32	5-3/8	103634	**74.37**	103172	**59.06**
7/8	7/8	2	4	6	103636	**74.97**	103174	**85.25**
1	1	2-1/2	4-31/32	7-1/4	-	-	103176	**114.47**
1-1/4	1-1/4	3	4-31/32	7-1/4	-	-	103178	**143.94**

2-Flute Regular Length HSS For Aluminum

The 2-flute end mills for aluminum have high helix flute design making them well suited for milling aluminum and other non-ferrous materials.

HSS | BRIGHT | REG LENGTH | 42°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	3/8	5/8	2-7/16	103506	**16.44**
5/16	3/8	3/4	2-1/2	103507	**16.44**
3/8	3/8	3/4	2-1/2	103508	**16.44**
7/16	3/8	1	2-11/16	103509	**23.84**
1/2	1/2	1-1/4	3-1/4	103510	**23.84**
5/8	5/8	1-5/8	3-3/4	103511	**38.34**
3/4	3/4	1-5/8	3-7/8	103512	**49.89**
7/8	3/4	1-7/8	4-1/8	103513	**60.25**
1	1	2	4-1/2	103514	**75.42**
1-1/4	1-1/4	2	4-1/2	103515	**111.32**
1-1/2	1-1/4	2	4-1/2	103516	**173.78**
2	1-1/4	2	4-1/2	103517	**247.93**

2-Flute Extra Long Length HSS For Aluminum

HSS | BRIGHT | X-LONG LENGTH | 42°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	3/8	1-3/4	3-9/16	103529	**21.89**
5/16	3/8	2	3-3/4	103530	**21.89**
3/8	3/8	2-1/2	4-1/4	103531	**21.89**
1/2	1/2	3	5	103532	**37.10**
5/8	5/8	4	6-1/8	103533	**64.82**
3/4	3/4	4	6-1/4	103534	**84.34**
1	1	6	8-1/2	103535	**125.40**
1-1/4	1-1/4	6	8-1/2	103536	**188.16**
1-1/2	1-1/4	8	10-1/2	103537	**270.49**

2-Flute Long Length HSS For Aluminum

HSS | BRIGHT | LONG LENGTH | 42°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	3/8	1-1/4	3-1/16	103518	**20.32**
5/16	3/8	1-3/8	3-1/8	103519	**20.32**
3/8	3/8	1-1/2	3-1/4	103520	**20.32**
7/16	1/2	1-3/4	3-3/4	103521	**31.54**
1/2	1/2	2	4	103522	**30.90**
5/8	5/8	2-1/2	4-5/8	103523	**49.81**
3/4	3/4	3	5-1/4	103524	**66.06**
1	1	4	6-1/2	103525	**107.45**
1-1/4	1-1/4	4	6-1/2	103526	**148.41**
1-1/2	1-1/4	4	6-1/2	103527	**211.71**
2	1-1/4	4	6-1/2	103528	**328.38**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

2-Flute Double End Regular Length HSCO

Excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.

- 2 helical flutes
- Centre cutting
- Double end with weldon shank

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	3/8	3/8	3-1/16	103180	**23.39**
5/32	3/8	7/16	3-1/8	103182	**23.39**
3/16	3/8	7/16	3-1/8	103184	**23.39**
7/32	3/8	1/2	3-1/8	103186	**22.91**
1/4	3/8	1/2	3-1/8	103188	**23.39**
9/32	3/8	9/16	3-1/8	103190	**22.91**
5/16	3/8	9/16	3-1/8	103192	**23.39**
11/32	3/8	9/16	3-1/8	103194	**23.39**
3/8	3/8	9/16	3-1/8	103196	**22.91**
13/32	1/2	9/16	3-1/8	103198	**36.44**
7/16	1/2	13/16	3-3/4	103200	**36.44**
15/32	1/2	13/16	3-3/4	103202	**27.65**
1/2	1/2	13/16	3-3/4	103204	**36.44**
9/16	5/8	1-1/8	4-1/2	103206	**60.87**
5/8	5/8	1-1/8	4-1/2	103208	**60.86**
11/16	3/4	1-5/16	5	103210	**57.65**
3/4	3/4	1-5/16	5	103212	**71.73**
1	1	1-5/8	5-7/8	103220	**103.78**

2-Flute Double End Stub Length Miniature HSCO

Tools under Miniature End Mills have 3/16" shank diameter without flats. Designed with positive rake angle geometry and a high helix angle to ensure free cutting action. Flute design provides good strength behind the cutting edge. Suitable for finishing of precision components such as watch, camera and electronic apparatus molds.

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/32	3/16	3/64	2	103281	**17.99**
3/64	3/16	1/16	2	103282	**17.16**
1/16	3/16	3/32	2	103283	**16.30**
5/64	3/16	1/8	2	103284	**15.90**
3/32	3/16	9/64	2	103285	**17.46**
7/64	3/16	5/32	2	103286	**14.46**
1/8	3/16	3/16	2	103288	**16.30**
9/64	3/16	7/32	2	103289	**15.99**
5/32	3/16	15/64	2	103290	**16.30**
11/64	3/16	1/4	2	103291	**16.30**
3/16	3/16	9/32	2	103292	**14.46**

2-Flute Double End Long Length Miniature HSCO

Longer flute length. Suitable for finishing of precision components such as watch, camera and electronic apparatus molds.

- Long length
- 2 helical flutes
- Double end with straight shank

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	7/32	2-1/2	103452	**17.60**
5/64	3/16	1/4	2-1/2	103453	**17.60**
3/32	3/16	9/32	2-5/8	103454	**17.60**
7/64	3/16	9/32	2-5/8	103455	**17.60**
1/8	3/16	3/4	3-1/8	103456	**18.34**
9/64	3/16	3/4	3-1/8	103457	**18.74**
5/32	3/16	7/8	3-1/4	103458	**18.74**
11/64	3/16	7/8	3-1/4	103459	**18.34**
3/16	3/16	1	3-3/8	103460	**18.74**

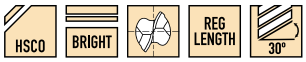
2-Flute Double End Regular Length Miniature HSCO

Excellent tool geometry for slotting, keying and general purpose milling, plus the added economy offered by the double-end design.

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/32	3/16	3/32	2-1/4	103441	**17.99**
3/64	3/16	9/64	2-1/4	103442	**17.16**
1/16	3/16	3/16	2-1/4	103443	**16.30**
5/64	3/16	15/64	2-1/4	103444	**16.30**
3/32	3/16	9/32	2-1/4	103445	**16.30**
7/64	3/16	21/64	2-1/4	103446	**16.30**
1/8	3/16	3/8	2-1/4	103447	**16.30**
9/64	3/16	13/32	2-1/4	103448	**15.99**
5/32	3/16	7/16	2-1/4	103449	**15.99**
11/64	3/16	1/2	2-1/4	103450	**15.99**
3/16	3/16	1/2	2-1/4	103451	**16.30**

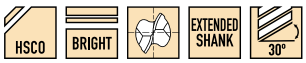
2-Flute Ball Nose Regular Length HSCO



Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
Inch							
1/8	3/8	3/8	2-5/16	103801	**22.58**	103394	**22.20**
3/16	3/8	1/2	2-3/8	103802	**18.64**	103395	**22.20**
1/4	3/8	5/8	2-7/16	103803	**19.04**	103396	**22.20**
5/16	3/8	3/4	2-1/2	103804	**18.64**	103397	**24.17**
3/8	3/8	3/4	2-1/2	-	**-**	103398	**24.17**
7/16	1/2	1	3	103806	**26.39**	103399	**36.03**
1/2	1/2	1	3	-	**-**	103400	**36.11**
5/8	5/8	1-3/8	3-1/2	103808	**44.93**	103402	**52.90**
3/4	3/4	1-5/8	3-7/8	103809	**57.45**	103404	**69.74**
7/8	3/4	2	4-1/4	103810	**66.12**	103405	**96.39**
1	1	2-1/4	4-3/4	103811	**98.27**	103406	**111.58**

2-Flute Ball Nose Extended Shank HSCO



Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Length Below Shank	Overall Length (in.)	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
Inch								
1/8	3/8	3/8	13/16	2-3/8	103821	**24.76**	103410	**30.86**
3/16	3/8	1/2	1-1/8	2-11/16	103822	**24.76**	103411	**30.86**
1/4	3/8	5/8	1-1/2	3-1/16	103823	**24.76**	103412	**30.86**
5/16	3/8	3/4	1-3/4	3-5/16	-	**-**	103413	**38.59**
3/8	3/8	3/4	1-3/4	3-5/16	103825	**24.86**	103414	**38.59**
7/16	1/2	1	1-7/8	3-11/16	-	**-**	103415	**49.82**
1/2	1/2	1	2-1/4	4	103827	**30.06**	103416	**50.84**
5/8	5/8	1-3/8	2-3/4	4-5/8	-	**-**	103417	**69.48**
3/4	3/4	1-5/8	3-3/8	5-3/8	-	**-**	103418	**88.61**
1	1	2-1/2	5	7-1/4	103830	**111.55**	103419	**138.84**

2-Flute Ball Nose Double End HSCO & HSS

HSCO | HSS | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	HSCO Code No.	Price $	HSS Code No.	Price $
Inch							
1/8	3/8	3/8	3-1/16	104174	**38.02**	104226	**30.28**
3/16	3/8	7/16	3-1/8	104176	**32.59**	104228	**30.91**
1/4	3/8	1/2	3-1/8	104178	**38.02**	104230	**26.72**
5/16	3/8	9/16	3-1/8	104180	**38.02**	104232	**15.74**
3/8	3/8	9/16	3-1/8	104182	**38.02**	104234	**26.72**
7/16	1/2	13/16	3-3/4	104184	**54.64**	104236	**38.20**
1/2	1/2	13/16	3-3/4	104186	**55.77**	104238	**39.00**
5/8	5/8	1-1/8	4-1/2	104188	**72.41**	104240	**67.43**
3/4	3/4	1-5/16	5	104190	**104.88**	104242	**53.03**
1	1	1-5/8	5-7/8	104192	**148.63**	104244	**118.98**

2-Flute Ball Nose Double End Stub Length Mini HSCO

Helical flute on the nose radius. Suitable for high efficiency copying process and cutting of die mold corner radius.

- Stub length
- 2 helical flutes, ball end
- Double end with straight shank

HSCO | BRIGHT | STUB LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	3/32	2	103270	**30.86**
3/32	3/16	9/64	2	103271	**30.86**
1/8	3/16	3/16	2	103272	**26.99**
5/32	3/16	15/64	2	103273	**26.44**
3/16	3/16	9/32	2	103274	**26.99**

2-Flute Ball Nose Double End Regular Length Mini HSCO

Helical flute on the nose radius. Suitable for high efficiency copying process and cutting of die mold corner radius.

- Regular length
- 2 helical flutes, ball end
- Double end with straight shank

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/32	3/16	3/32	2	103420	**34.81**
3/64	3/16	1/16	2	103421	**32.99**
1/16	3/16	3/32	2	103488	**31.37**
5/64	3/16	1/8	2	103489	**32.25**
3/32	3/16	9/64	2	103490	**31.37**
7/64	3/16	21/64	2-1/4	103491	**32.90**
1/8	3/16	3/8	2-1/4	103492	**27.65**
9/64	3/16	13/32	2-1/4	103493	**28.53**
5/32	3/16	7/16	2-1/4	103494	**27.45**
11/64	3/16	1/2	2-1/4	103495	**28.53**
3/16	3/16	1/2	2-1/4	103496	**30.77**

2-Flute Ball Nose Double End Long Length Mini HSCO

Longer flute length. Helical flute on the nose radius. Suitable for high efficiency copying process and cutting of die mold corner radius.

- Long length
- 2 helical flutes, ball end
- Double end with straight shank

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A39

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	7/32	2-1/2	103497	**33.23**
3/32	3/16	9/32	2-5/8	103499	**32.55**
1/8	3/16	3/4	3-1/8	103501	**31.02**
5/32	3/16	7/8	3-1/4	103503	**31.02**
3/16	3/16	1	3-3/8	103504	**29.83**

3-Flute Short Length Throwaway HSCO

Well balanced web design to minimize deflection and chattering.

- High accuracy for outside diameter is guaranteed under the strict tolerance control
- 3 helical flutes
- Single end with weldon shank

HSCO | BRIGHT | SHORT LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/4	3/32	31/32	103580	**10.72**
3/32	1/4	5/32	1-1/64	103582	**10.72**
1/8	1/4	3/16	1-3/32	103584	**10.72**
5/32	1/4	1/4	1-9/32	103586	**10.72**
3/16	1/4	9/32	1-11/32	103588	**10.72**
7/32	1/4	5/16	1-13/32	103590	**10.72**
1/4	1/4	3/8	1-13/32	103592	**10.72**

3-Flute Long Length Throwaway HSCO

Well balanced web design to minimize deflection and chattering.

- High accuracy for outside diameter is guaranteed under the strict tolerance control
- 3 helical flutes
- Single end with weldon shank

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	1/4	5/32	1-3/32	103594	**12.02**
5/64	1/4	7/32	1-3/16	103596	**11.64**
3/32	1/4	1/4	1-1/4	103598	**11.64**
7/64	1/4	9/32	1-9/32	103600	**11.64**
1/8	1/4	5/16	1-11/32	103602	**12.02**
9/64	1/4	11/32	1-7/16	103604	**11.64**
5/32	1/4	3/8	1-17/32	103606	**12.02**
11/64	1/4	13/32	1-19/32	103608	**9.77**
3/16	1/4	7/16	1-21/32	103610	**12.02**
13/64	1/4	15/32	1-11/16	103612	**11.64**
7/32	1/4	1/2	1-3/4	103614	**12.02**
15/64	1/4	9/16	1-13/16	103616	**9.58**
1/4	1/4	5/8	1-3/4	103618	**12.02**

4-Flute Regular Length HSCO - Metric

Centre cutting allows these end mills to drill into the part for the beginning of a slot. These centre cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting. • Single end with weldon shank

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (mm)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
2 mm	3/8	3/8	2-5/16	103730	**21.16**
3 mm	3/8	3/8	2-5/16	103731	**21.16**
4 mm	3/8	1/2	2-3/8	103732	**21.16**
5 mm	3/8	9/16	2-1/2	103733	**21.16**
6 mm	3/8	5/8	2-1/2	103734	**21.16**
7 mm	3/8	11/16	2-1/2	103735	**21.16**
8 mm	3/8	3/4	2-1/2	103736	**21.16**
10 mm	3/8	1	2-11/16	103737	**21.16**
11 mm	3/8	1	2-11/16	103749	**32.27**
12 mm	3/8	1	2-11/16	103738	**32.27**
13 mm	1/2	1-1/4	3-1/4	103750	**37.57**
14 mm	1/2	1-3/8	3-3/8	103739	**37.57**
16 mm	5/8	1-5/8	3-3/4	103740	**46.03**
18 mm	5/8	1-5/8	3-3/4	103741	**53.75**
20 mm	5/8	1-7/8	4-1/8	103742	**59.88**
22 mm	3/4	1-7/8	4-1/8	103743	**69.08**
24 mm	3/4	2	4-1/2	103744	**89.08**

Multi-Flute Long Length HSCO

- Multiple helical flutes
- Centre cutting
- Single end with weldon shank

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
Inch								
1/4	3/8	1-1/4	3-1/16	4	-	-	103360	**24.61**
5/16	3/8	1-3/8	3-1/8	4	-	-	103361	**24.61**
3/8	3/8	1-1/2	3-1/4	4	-	-	103362	**24.61**
1/2	1/2	2	4	4	103658	**28.38**	103363	**36.82**
5/8	5/8	2-1/2	4-5/8	4	-	-	103364	**57.28**
3/4	3/4	3	5-1/4	4	-	-	103365	**70.32**
7/8	3/4	3-1/2	5-3/4	4	103664	**146.39**	103366	**83.20**
1	1	4	6-1/2	4	103666	**119.81**	103367	**125.56**
1-1/4	1-1/4	4	6-1/2	6	-	-	103368	**163.55**
1-1/2	1-1/4	4	6-1/2	6	-	-	103369	**228.13**

Multi-Flute Regular Length HSCO & HSS

Centre cutting allows these end mills to drill into the part for the beginning of a slot. These centre cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.

HSCO | HSS | BRIGHT | TiAlN | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	HSCO Weldon Flat Code No.	HSCO Weldon Flat Price $	HSCO TiAlN Coated Weldon Flat Code No.	HSCO TiAlN Coated Weldon Flat Price $	HSS Weldon Flat Code No.	HSS Weldon Flat Price $	HSCO Comb. Shank Code No.	HSCO Comb. Shank Price $
Inch												
1/8	3/8	3/8	2-5/16	4	103222	**18.48**	104522	**34.66**	104400	**11.50**	-	-
5/32	3/8	7/16	2-3/8	4	103223	**16.51**	-	-	104402	**11.24**	103021	**12.33**
3/16	3/8	1/2	2-3/8	4	103224	**18.84**	104524	**34.66**	104404	**12.47**	-	-
7/32	3/8	9/16	2-7/16	4	103225	**14.23**	-	-	104406	**11.51**	103023	**13.76**
1/4	3/8	5/8	2-7/16	4	103226	**18.84**	104526	**32.27**	104408	**12.47**	-	-
9/32	3/8	11/16	2-1/2	4	103227	**18.84**	-	-	104410	**12.47**	-	-
5/16	3/8	3/4	2-1/2	4	103228	**18.84**	104528	**34.65**	104412	**12.71**	-	-
11/32	3/8	3/4	2-1/2	4	103229	**18.84**	-	-	104414	**12.72**	103027	**12.33**
3/8	3/8	3/4	2-1/2	4	103230	**18.84**	104530	**34.66**	104416	**12.72**	-	-
13/32	3/8	1	2-11/16	4	103231	**27.70**	-	-	104418	**19.51**	-	-
7/16	3/8	1	2-11/16	4	103232	**28.27**	104532	**44.04**	104420	**19.51**	-	-
1/2	1/2	1-1/4	3-1/4	4	103235	**28.27**	104535	**50.72**	104422	**19.51**	-	-
9/16	1/2	1-3/8	3-3/8	4	103237	**37.47**	-	-	104424	**27.07**	103031	**46.07**
5/8	5/8	1-5/8	3-3/4	4	103240	**43.31**	104540	**70.22**	104426	**29.09**	-	-
11/16	5/8	1-5/8	3-3/4	4	103242	**48.12**	-	-	104428	**32.44**	103033	**42.07**
3/4	3/4	1-5/8	3-7/8	4	103246	**51.23**	104546	**78.07**	104430	**37.27**	-	-
13/16	3/4	1-7/8	4-1/8	4	103248	**53.49**	-	-	-	-	-	-
7/8	3/4	1-7/8	4-1/8	4	103252	**64.36**	-	-	104432	**46.73**	-	-
1	1	2	4-1/2	4	103259	**77.61**	104559	**124.07**	104434	**47.81**	-	-
1-1/8	1	2	4-1/2	4	-	-	104561	**150.90**	-	-	-	-
1-1/8	1	2	4-1/2	6	103261	**104.53**	-	-	104436	**108.77**	-	-
1-1/4	1-1/4	2	4-1/2	4	-	-	104564	**180.50**	-	-	-	-
1-1/4	1-1/4	2	4-1/2	6	103264	**124.39**	-	-	104438	**97.98**	-	-
1-3/8	1	2	4-1/2	6	103265	**142.27**	-	-	-	-	-	-
1-1/2	1-1/4	2	4-1/2	4	-	-	-	-	-	-	103046	**201.72**
1-1/2	1-1/4	2	4-1/2	6	103267	**164.45**	104567	**251.24**	104442	**141.28**	103044	**222.34**
2	1-1/4	2	4-1/2	6	103269	**259.29**	-	-	104444	**185.39**	-	-

Multi-Flute Extra Long Length HSCO

- Multiple helical flutes
- Centre cutting
- Single end with weldon shank

HSCO | BRIGHT | X-LONG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
Inch						
1/4	3/8	1-3/4	3-9/16	4	103370	**29.26**
5/16	3/8	2	3-3/4	4	103371	**31.95**
3/8	3/8	2-1/2	4-1/4	4	103372	**33.78**
1/2	1/2	3	5	4	103373	**43.69**
5/8	5/8	4	6-1/8	4	103374	**69.14**
3/4	3/4	4	6-1/4	4	103375	**84.02**
7/8	3/4	5	7-1/4	4	103376	**99.72**
1	1	6	8-1/2	4	103377	**140.79**
1-1/4	1-1/4	6	8-1/2	6	103378	**189.81**
1-1/2	1-1/4	8	10-1/2	6	103378A	**357.59**

4-Flute Double End Regular Length HSCO

Double end economy. Used for slabbing, shallow pocketing, tracer milling or die sinking and similar operations.

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	3/8	3/8	3-1/16	103379	**26.28**
3/16	3/8	1/2	3-1/4	103380	**26.28**
1/4	3/8	5/8	3-3/8	103381	**26.28**
5/16	3/8	3/4	3-1/2	103382	**26.28**
3/8	3/8	3/4	3-1/2	103383	**26.28**
1/2	1/2	1	4-1/8	103384	**38.31**
5/8	5/8	1-3/8	5	103385	**65.92**
3/4	3/4	1-5/8	5-5/8	103386	**75.76**
7/8	7/8	1-7/8	6-1/8	103387	**101.39**
1	1	1-7/8	6-3/8	103388	**125.41**

4-Flute Double End Stub Length Miniature HSCO

Suitable for finishing of precision components such as watch, camera, and electronic apparatus molds.

HSCO | BRIGHT | STUB LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	3/32	2	103461	**16.30**
5/64	3/16	1/8	2	103462	**16.30**
3/32	3/16	9/64	2	103463	**16.30**
7/64	3/16	5/32	2	103464	**14.74**
1/8	3/16	3/16	2	103465	**16.30**
9/64	3/16	7/32	2	103466	**14.46**
5/32	3/16	15/64	2	103467	**16.30**
11/64	3/16	1/4	2	103468	**14.46**
3/16	3/16	9/32	2	103469	**14.46**

4-Flute Double End Regular Length Miniature HSCO

Suitable for finishing of precision components such as watch, camera, and electronic apparatus molds, etc.

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	3/16	2-1/4	103470	**16.30**
5/64	3/16	15/64	2-1/4	103471	**16.30**
3/32	3/16	9/32	2-1/4	103472	**16.30**
7/64	3/16	21/64	2-1/4	103473	**16.30**
1/8	3/16	3/8	2-1/4	103474	**16.30**
9/64	3/16	13/32	2-1/4	103475	**16.30**
5/32	3/16	7/16	2-1/4	103476	**16.30**
11/64	3/16	1/2	2-1/4	103477	**15.90**
3/16	3/16	1/2	2-1/4	103478	**16.30**

4-Flute Double End Long Length Miniature HSCO

Longer flute length. Suitable for finishing of precision components such as watch, camera and electronic apparatus molds.

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/16	3/16	7/32	2-1/2	103479	**17.60**
5/64	3/16	1/4	2-1/2	103480	**17.23**
3/32	3/16	9/32	2-5/8	103481	**17.60**
7/64	3/16	9/32	2-5/8	103482	**15.48**
1/8	3/16	3/4	3-1/8	103483	**18.74**
9/64	3/16	3/4	3-1/8	103484	**18.34**
5/32	3/16	7/8	3-1/4	103485	**18.74**
11/64	3/16	7/8	3-1/4	103486	**17.26**
3/16	3/16	1	3-3/8	103487	**18.74**

Multi-Flute Centre Cut Heavy Duty HSCO

HSCO | MULTIPLE LENGTHS | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
2	2	2	5-3/4	103389	**357.26**
2	2	4	7-3/4	103390	**362.83**
2	2	5	8-3/4	103391	**439.86**
2	2	6	9-3/4	103392	**496.13**
2	2	8	11-3/4	103393	**587.18**

60° High Helix Regular Length HSCO

Faster feed and speed than normal HSS can be applied to even hardened steels over 35HRC.

- Centre cutting

HSCO | BRIGHT | REG LENGTH | 60°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
Inch						
1/4	3/8	5/8	2-7/16	3	103538	**27.39**
5/16	3/8	3/4	2-1/2	3	103539	**27.39**
3/8	3/8	3/4	2-1/2	3	103540	**27.39**
7/16	3/8	1	2-11/16	3	103541	**35.67**
1/2	1/2	1-1/4	3-1/4	3	103542	**39.85**
5/8	5/8	1-5/8	3-3/4	3	103543	**57.66**
3/4	3/4	1-5/8	3-7/8	3	103544	**76.36**
1	1	2	4-1/2	4	103546	**116.53**
1-1/4	1-1/4	2	4-1/2	4	103547	**172.11**
1-1/2	1-1/4	2	4-1/2	4	103548	**311.84**
2	1-1/4	2	4-1/2	4	103549	**483.29**

3/4" Shank Regular Length HSCO

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
Inch						
3/4	3/4	1-5/8	3-7/8	4	103336	**41.69**
7/8	3/4	1-7/8	4-1/8	4	103338	**53.64**
1	3/4	1-7/8	4-1/8	4	103340	**66.67**
1-1/8	3/4	2	4-1/4	6	103341	**95.28**
1-1/4	3/4	2	4-1/4	6	103342	**104.62**
1-1/2	3/4	1-1/2	4-1/4	6	103343	**145.48**
1-3/4	3/4	1-1/2	4-1/2	6	103344	**189.34**
2	3/4	1-1/2	4-1/2	8	103345	**217.24**

4-Flute Ball Nose Regular Length HSCO

The 4-Flute Ball End Mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to centre allowing these end mills to drill into material at the beginning of a slotting cut.

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/8	3/8	3/8	2-5/16	104950	**28.77**
3/16	3/8	1/2	2-3/8	104952	**28.77**
1/4	3/8	5/8	2-7/16	104954	**28.77**
5/16	3/8	3/4	2-1/2	104956	**28.77**
3/8	3/8	3/4	2-1/2	104958	**28.77**
7/16	3/8	1	2-11/16	104960	**39.65**
1/2	1/2	1-1/4	3-1/4	104962	**39.65**
5/8	5/8	1-5/8	3-3/4	104964	**63.75**
11/16	3/4	1-5/8	3-3/4	104966	**81.06**
3/4	3/4	1-5/8	3-7/8	104968	**81.06**
7/8	7/8	1-7/8	4-1/8	104970	**100.76**
1	1	2	4-1/2	104972	**119.42**
1-1/8	1	2	4-1/2	104974	**157.30**
1-1/4	1-1/4	2	4-1/2	104976	**196.30**
1-1/2	1-1/4	2	4-1/2	104978	**220.66**
2	1-1/4	2	4-1/2	104980	**333.98**

4-Flute Ball Nose Long Length HSCO

Longer flute length than regular length ball end mills and suitable for high efficiency copying process and deep cutting of die mold corner radius.

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A40

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
1/4	3/8	1-1/4	3-1/16	104982	**37.12**
5/16	3/8	1-3/8	3-1/8	104984	**37.12**
3/8	3/8	1-1/2	3-1/4	104986	**37.12**
1/2	1/2	2	4	104988	**46.03**
5/8	5/8	2-1/2	4-5/8	104990	**75.63**
3/4	3/4	3	5-1/4	104992	**97.66**
7/8	7/8	3-1/2	5-3/4	104994	**111.31**
1	1	4	6-1/2	104996	**142.38**

Regular Length Roughing End Mills HSCO

Multiple-Flute: This general purpose rougher is designed for high production metal removal in a wide range of workpiece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a centre hole design for many accurate resharpenings.

- Coarse pitch

HSCO | BRIGHT | TiAlN | REG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	O.A.L. (in.)	Fl.	Comb. Shank Code No.	Price $	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch										
1/4	3/8	5/8	2-7/16	3	103950	**27.71**	103900	**27.46**	104500	**40.78**
5/16	3/8	3/4	2-1/2	3	103951	**28.29**	103901	**27.46**	104501	**40.77**
3/8	3/8	3/4	2-1/2	4	-	**-**	103902	**27.46**	104502	**40.77**
1/2	1/2	1-1/4	3-1/4	4	103953	**46.07**	103903	**38.26**	104503	**59.31**
5/8	5/8	1-5/8	3-3/4	4	-	**-**	103904	**46.69**	104504	**64.99**
3/4	5/8	1-5/8	3-3/4	4	103955	**56.65**	103905	**58.04**	104505	**81.73**
3/4	3/4	1-5/8	3-3/4	4	-	**-**	103906	**58.04**	104506	**85.89**
7/8	3/4	1-7/8	4-1/8	5	103957	**75.69**	103907	**73.12**	104507	**108.69**
1	1	2	4-1/2	5	-	**-**	103908	**83.97**	104508	**131.01**
1-1/8	1	2	4-1/2	6	103959	**103.09**	103909	**110.85**	104509	**165.69**
1-1/4	1-1/4	2	4-1/2	6	-	**-**	103910	**128.31**	104510	**186.52**
1-1/2	1-1/4	2	4-1/2	6	-	**-**	103911	**171.86**	104511	**258.22**
1-3/4	1-1/4	2	4-1/2	6	-	**-**	103912	**212.88**	-	**-**
2	2	2	5-3/4	8	-	**-**	103913	**322.32**	-	**-**
2	2	3	6-3/4	8	-	**-**	103914	**346.06**	-	**-**
2	2	4	7-3/4	8	-	**-**	103915	**419.81**	-	**-**

Medium Length Roughing End Mills HSCO

HSCO | BRIGHT | MED LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
Inch						
1	1	3	5-1/2	5	103916	**103.72**
1-1/4	1-1/4	3	5-1/2	6	103917	**155.46**
1-1/2	1-1/4	3	5-1/2	6	103918	**179.34**
2	2	6	9-3/4	8	103919	**490.77**

Long Length Roughing End Mills HSCO

HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
Inch								
3/8	3/8	1-1/2	4	4	-	**-**	103932	**45.24**
1/2	1/2	2	4	4	103970	**50.84**	103920	**49.25**
5/8	5/8	2-1/2	4-5/8	4	103971	**73.11**	103921	**67.37**
3/4	5/8	3	5-1/8	4	-	**-**	103922	**72.57**
3/4	3/4	3	5-1/4	4	-	**-**	103923	**72.57**
7/8	3/4	3-1/2	5-3/4	5	-	**-**	103924	**88.14**
1	1	4	6-1/2	5	-	**-**	103925	**120.49**
1-1/4	1-1/4	4	6-1/2	6	-	**-**	103926	**173.13**
1-1/2	1-1/4	4	6-1/2	6	-	**-**	103927	**205.55**
1-3/4	1-1/4	4	6-1/2	6	-	**-**	103928	**268.79**
2	2	8	11-3/4	8	-	**-**	103929	**671.45**

Regular Length Centre Cut Roughing End Mills HSCO

This general purpose rougher is designed for high production metal removal in a wide range of workpiece material. It is recommended for cutting steel grades and many non-ferrous materials.

- Multiple helical flutes
- Single end with weldon shank
- Centre cutting
- Round profile
- Coarse pitch

HSCO | BRIGHT | TiAlN | REG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch								
1/2	1/2	1-1/4	3-1/4	4	103100	**42.21**	103585	**40.35**
5/8	5/8	1-5/8	3-3/4	4	103101	**52.18**	103591	**84.95**
3/4	3/4	1-5/8	3-7/8	4	103102	**64.94**	103587	**72.58**
1	1	2	4-1/2	5	103103	**92.41**	103593	**87.74**
1-1/4	1-1/4	2	4-1/2	6	103104	**141.15**	103589	**107.14**
1-1/2	1-1/4	2	4-1/2	6	103105	**189.10**	103595	**191.70**

Stub Length Centre Cutting Rougher HSCO

This general purpose rougher is designed for high production metal removal in a wide range of workpiece material. Suitable for a very broad spectrum of materials having high tensile strengths. Milled surfaces are of exceptional quality.

- 3 helical flutes
- Centre cutting
- Coarse pitch
- Round profile

HSCO | BRIGHT | TiAlN | STUB LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch								
1/4	3/8	1/4	2-1/16	3	104340	**32.96**	104360	**46.21**
3/8	3/8	3/8	2-5/32	3	104342	**32.96**	104362	**43.36**
1/2	1/2	1/2	2-1/2	3	104344	**45.28**	104364	**61.70**
5/8	5/8	5/8	2-3/4	3	104346	**53.15**	104366	**74.75**
3/4	3/4	3/4	2-7/8	3	104348	**69.64**	104368	**110.40**
1	1	1	3-1/2	3	104350	**104.55**	104370	**150.06**

Regular Length Roughing End Mills For Aluminum HSCO

HSCO | BRIGHT | REG LENGTH | 37°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
Inch						
1/4	3/8	5/8	2-7/16	3	104052	**38.49**
5/16	3/8	3/4	2-1/2	3	104054	**41.61**
3/8	3/8	3/4	2-1/2	3	104056	**38.49**
1/2	1/2	1-1/4	3-1/4	3	104058	**52.87**
5/8	5/8	1-5/8	3-3/4	3	104060	**65.34**
3/4	3/4	1-5/8	3-3/4	3	104062	**82.78**
1	1	2	4-1/2	3	104066	**122.38**
1-1/4	1-1/4	2	4-1/2	3	104068	**175.63**
1-1/2	1-1/4	2	4-1/2	3	104070	**208.53**

Regular Length Ball Nose Rougher HSCO

This general purpose rougher is designed for high production metal removal in a wide range of workpiece material.

- Multiple helical flutes
- Single end with weldon shank
- Ball end
- Round profile
- Coarse pitch

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $
Inch						
1/4	3/8	5/8	2-7/16	3	104088	**49.44**
5/16	3/8	3/4	2-1/2	3	104089	**52.56**
3/8	3/8	3/4	2-1/2	4	104090	**49.44**
1/2	1/2	1-1/4	3-1/4	4	104091	**67.93**
5/8	5/8	1-5/8	3-3/4	4	104092	**84.00**
3/4	3/4	1-3/4	4	4	104093	**104.52**
1	3/4	2	4-1/2	5	104094	**145.69**
1	1	2	4-1/2	5	104095	**151.15**
1-1/4	1-1/4	2	4-1/2	6	104096	**226.16**
1-1/2	1-1/4	2	4-1/2	6	104097	**303.15**

Stub Length Fine Pitch Rougher HSCO

Fine Pitch Roughers

This general purpose rougher is designed for high production metal removal in a wide range of workpiece material. Suitable for a very broad spectrum of materials having high tensile strengths. Milled surfaces are of exceptional quality.

- Centre cutting
- Round profile
- Single end with weldon shank

HSCO | BRIGHT | TiAlN | STUB LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch								
1/4	3/8	1/4	2-1/16	3	104300	**36.23**	104320	**48.50**
3/8	3/8	3/8	2-5/32	3	104302	**34.94**	104322	**49.50**
1/2	1/2	1/2	2-1/2	3	104304	**49.79**	104324	**66.23**
5/8	5/8	5/8	2-3/4	3	104306	**61.61**	104326	**87.55**
3/4	3/4	3/4	2-7/8	3	104308	**76.57**	104328	**105.34**
7/8	3/4	7/8	3-1/8	3	104310	**91.38**	104330	**123.70**
1	1	1	3-3/4	3	104312	**108.62**	104332	**150.06**

Regular Length Fine Pitch Rougher HSCO

HSCO | BRIGHT | TiAlN | REG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch								
1/4	3/8	5/8	2-7/16	3	104150	**30.22**	104202	**41.18**
5/16	3/8	3/4	2-1/2	3	104152	**30.23**	104204	**43.48**
3/8	3/8	3/4	2-1/2	4	104154	**30.22**	104206	**43.47**
7/16	3/8	1	2-11/16	4	104156	**41.49**	104208	**56.06**
1/2	1/2	1-1/4	3-1/4	4	104158	**41.52**	104210	**62.57**
5/8	5/8	1-5/8	3-3/4	4	104160	**51.33**	104212	**75.06**
3/4	3/4	1-5/8	3-7/8	4	104162	**63.87**	104214	**91.71**
7/8	3/4	1-7/8	4-1/8	5	104164	**80.43**	104216	**116.13**
1	1	2	4-1/2	5	104166	**92.41**	104218	**139.38**
1-1/4	1-1/4	2	4-1/2	6	104168	**141.15**	104220	**195.31**
1-1/2	1-1/4	2	4-1/2	6	104170	**189.07**	104222	**288.00**
2	1-1/4	2	4-1/2	6	104172	**245.28**	104224	**502.65**

Long Length Fine Pitch Rougher HSCO

HSCO | BRIGHT | TiAlN | LONG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
Inch								
1/2	1/2	2	4	4	104250	**54.13**	104266	**75.16**
5/8	5/8	2-1/2	4-5/8	4	104252	**74.11**	104268	**103.62**
3/4	3/4	3	5-1/4	4	104254	**79.85**	104270	**120.16**
7/8	7/8	3-1/2	5-3/4	5	104256	**96.97**	104272	**140.89**
1	1	4	6-1/2	5	104258	**124.37**	104274	**182.98**
1-1/4	1-1/4	4	6-1/2	6	104260	**186.59**	104276	**241.38**
1-1/2	1-1/4	4	6-1/2	6	104262	**221.46**	104278	**341.26**
2	1-1/4	4	6-1/2	6	104264	**341.89**	104280	**455.23**

Rougher Finisher HSCO

Tools are finishing end mills with chipbreakers.

- Prevents chattering while achieving good chip control and high efficiency
- Centre cutting

HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ➤ P. A41

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $
Inch						
1/4	3/8	5/8	2-7/16	4	103550	**30.75**
5/16	3/8	3/4	2-1/2	4	103551	**30.75**
3/8	3/8	3/4	2-1/2	4	103552	**30.75**
7/16	3/8	1	2-11/16	4	103553	**41.49**
1/2	1/2	1-1/4	3-1/4	4	103554	**41.49**
5/8	5/8	1-5/8	3-3/4	4	103555	**51.34**
3/4	3/4	1-5/8	3-3/4	4	103556	**63.87**
7/8	3/4	1-7/8	4-1/8	5	103557	**82.11**
1	1	2	4-1/2	5	103559	**92.41**
1-1/4	1-1/4	2	4-1/2	6	103560	**183.23**
1-1/2	1-1/4	2	4-1/2	6	103561	**222.44**
2	1-1/4	2	4-1/2	6	103562	**321.51**

High Speed Steel Tapered End Mills

- Made from Premium-Grade High Speed Steel
- End cutting
- Weldon flat

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
Inch							
1/2°							
	AX103	3/32	3/4	3/8	2-7/8	154200	**44.12**
	AX105	3/32	1-1/4	3/8	3-1/4	154201	**50.28**
	AX203	1/8	3/4	3/8	2-7/8	154202	**44.12**
	AX305	3/16	1-1/4	3/8	3-1/4	154203	**53.84**
	AX405	1/4	1-1/4	3/8	3-1/4	154204	**56.78**
	AX409	1/4	2-1/4	1/2	4-1/4	154205	**81.30**
	AX609	3/8	2-1/4	1/2	4-1/4	154206	**89.66**
1°							
	A102	3/32	1/2	3/8	2-5/8	154207	**41.74**
	A103	3/32	3/4	3/8	2-7/8	154208	**44.76**
	A201	1/8	1/4	3/8	2-5/8	154209	**39.99**
	A203	1/8	3/4	3/8	2-7/8	154210	**44.76**
	A204	1/8	1	3/8	2-7/8	154211	**49.83**
	A303	3/16	3/4	3/8	2-7/8	154212	**45.42**
	A305	3/16	1-1/4	3/8	3-1/4	154213	**54.38**
	A403	1/4	3/4	3/8	2-7/8	154214	**45.73**
	A405	1/4	1-1/4	3/8	3-1/4	154215	**57.10**
	A409	1/4	2-1/4	1/2	4-1/8	154216	**86.50**
	A605	3/8	1-1/4	1/2	3-1/4	154217	**69.32**
	A609	3/8	2-1/4	1/2	4-1/4	154218	**96.44**
	A805	1/2	1-1/4	1/2	3-1/4	154219	**88.88**
	A809	1/2	2-1/4	1/2	4-1/4	154220	**109.10**
	A813	1/2	3-1/4	1/2	5-1/2	154221	**135.25**
1-1/2°							
	AAX203	1/8	3/4	3/8	2-7/8	154222	**45.42**
	AAX405	1/4	1-1/4	3/8	3-1/4	154223	**57.30**
2°							
	B103	3/32	3/4	3/8	2-7/8	154225	**45.53**
	B105	3/32	1-1/4	3/8	3-1/4	154226	**51.70**
	B204	1/8	1	3/8	2-7/8	154227	**51.57**
	B303	3/16	3/4	3/8	2-7/8	154228	**46.17**
	B305	3/16	1-1/4	3/8	3-1/4	154229	**55.79**
	B403	1/4	3/4	3/8	2-7/8	154230	**46.49**
	B405	1/4	1-1/4	3/8	3-1/4	154231	**57.64**
	B409	1/4	2-1/4	1/2	4-1/4	154232	**90.40**
	B413	1/4	3-1/4	1/2	5-1/2	154233	**134.18**
	B605	3/8	1-1/4	1/2	3-1/4	154234	**83.67**
	B609	3/8	2-1/4	1/2	4-1/4	154235	**104.87**
	B805	1/2	1-1/4	1/2	3-1/4	154236	**90.06**
	B809	1/2	2-1/4	1/2	4-1/4	154237	**113.73**
3°							
	C104	3/32	1	3/8	2-7/8	154238	**50.60**
	C106	3/32	1-1/4	3/8	3-1/4	154239	**54.81**
	C203	1/8	3/4	3/8	2-7/8	154240	**46.38**
	C204	1/8	1	3/8	2-7/8	154241	**51.90**
	C303	3/16	3/4	3/8	2-7/8	154242	**47.28**
	C305	3/16	1-1/4	3/8	3-1/4	154243	**57.30**
	C403	1/4	3/4	3/8	2-7/8	154244	**49.54**
	C405	1/4	1-1/4	3/8	3-1/4	154245	**58.51**
	C409	1/4	2-1/4	1/2	4-1/4	154246	**101.44**
	C605	3/8	1-1/4	1/2	3-1/4	154247	**86.95**
	C805	1/2	1-1/4	1/2	3-1/4	154248	**93.43**
	C809	1/2	2-1/4	5/8	4-3/8	154249	**135.37**
5°							
	E004	1/16	1	3/8	2-7/8	154250	**54.81**
	E103	3/32	3/4	3/8	2-7/8	154251	**48.44**
	E104	3/32	1	3/8	2-7/8	154252	**51.36**
	E106	3/32	1-1/2	3/8	3-1/4	154253	**56.11**
	E203	1/8	3/4	3/8	2-7/8	154254	**46.94**
	E204	1/8	1	3/8	2-7/8	154255	**52.01**
	E205	1/8	1-1/4	3/8	3-1/4	154256	**55.79**
	E206	1/8	1-1/2	3/8	3-1/4	154257	**64.45**
	E208	1/8	2	1/2	3-7/8	154258	**84.46**
	E210B	1/8	2-1/2	1/2	4-1/2	154259	**110.61**
	E303	3/16	3/4	3/8	2-7/8	154260	**48.12**
	E305	3/16	1-1/4	1/2	3-1/4	154261	**60.10**
	E403	1/4	3/4	3/8	2-7/8	154262	**51.27**
	E405	1/4	1-1/4	1/2	3-1/4	154264	**62.71**
	E409A	1/4	2-1/4	5/8	4-1/2	154265	**121.75**
	E605	3/8	1-1/4	1/2	3-1/4	154266	**92.66**
	E609	3/8	2-1/4	3/4	4-3/4	154267	**141.42**
	E613	3/8	3-1/4	3/4	5-1/2	154268	**220.79**
	E805	1/2	1-1/4	1/2	3-1/4	154269	**112.13**
	E809	1/2	2-1/4	3/4	4-1/2	154270	**180.67**
7°							
	G004	1/16	1	3/8	2-7/8	154271	**57.30**
	G104	3/32	1	3/8	2-7/8	154272	**53.42**
	G203	1/8	3/4	3/8	2-7/8	154273	**48.76**
	G206	1/8	1-1/2	1/2	3-1/4	154274	**61.17**
	G305	3/16	1-1/4	1/2	3-1/8	154275	**72.77**
	G403	1/4	3/4	1/2	3	154276	**64.87**
	G405	1/4	1-1/4	1/2	3-1/4	154277	**75.14**
	G409	1/4	2-1/4	3/4	4-1/2	154278	**144.34**
	G609	3/8	2-1/4	3/4	4-1/2	154279	**203.48**
10°							
	J102	3/32	1/2	3/8	2-5/8	154280	**49.83**
	J106	3/32	1-1/2	1/2	3-1/2	154281	**103.58**
	J203	1/8	3/4	3/8	2-7/8	154282	**53.73**
	J205	1/8	1-1/4	1/2	3-1/4	154283	**80.78**
	J309	3/16	2-1/4	3/4	4-1/2	154284	**217.74**
	J403	1/4	3/4	1/2	2-7/8	154285	**66.07**
	J405	1/4	1-1/4	1/2	3-1/4	154286	**104.44**
	J409	1/4	2-1/4	3/4	4-1/2	154287	**226.40**
	J605	3/8	1-1/4	5/8	3-1/2	154288	**128.23**
	J805	1/2	1-1/4	3/4	3-1/2	154289	**152.88**
15°							
	P103	3/32	3/4	1/2	2-3/4	154290	**62.71**
	P106	3/32	1-1/2	3/4	3-3/4	154291	**129.64**
	P202	1/8	1/2	3/8	2-7/8	154292	**54.24**
	P204	1/8	1	1/2	3	154293	**83.38**
	P304	3/16	1	1/2	3	154294	**99.89**
	P404	1/4	1	1/2	3	154295	**126.48**
	P406	1/4	1-1/2	3/4	3-3/4	154296	**165.87**
	P605	3/8	1-1/4	3/4	3-5/8	154297	**175.27**
	P805	1/2	1-1/4	3/4	3-1/2	154298	**207.49**
20°							
	T0002	1/32	1/2	3/8	2-1/2	154319	**102.51**
	T002	1/16	1/2	3/8	2-1/2	154320	**81.95**
	T103	3/32	3/4	1/2	2-3/4	154321	**83.38**
	T202	1/8	1/2	3/8	2-1/2	154299	**84.34**
	T204	1/8	1	1/2	3	154322	**144.57**
	T304	3/16	1	1/2	3	154323	**154.51**
	T404	1/4	1	1/2	3	154324	**161.76**
	T406	1/4	1-1/2	3/4	4	154325	**249.88**
	T504	5/16	1	3/4	3-3/8	154326	**174.63**
	T506	5/16	1-1/2	3/4	3-1/2	154327	**258.74**
	T606	3/8	1-1/2	3/4	4	154328	**381.47**
	T608	3/8	2	1	4-1/2	154329	**510.35**
	T809	1/2	2-1/4	1-1/4	4-3/4	154330	**582.11**
30°							
	U002A	1/16	1/2	1/2	2-1/2	154331	**114.29**
	U103	3/32	3/4	1/2	2-3/4	154332	**115.91**
	U202	1/8	1/2	1/2	2-1/2	154333	**108.86**
	U204B	1/8	1	1/2	3-1/8	154334	**234.40**
	U204A	1/8	1	5/8	3-1/8	154335	**234.40**
	U404	1/4	1	3/4	3-1/2	154336	**263.28**
	U406	1/4	1-1/2	1	4-1/8	154337	**456.90**
	U605	3/8	1-1/4	1	4	154338	**452.60**
	U606	3/8	1-1/2	1	4-1/4	154339	**503.95**
	U805	1/2	1-1/4	1	4	154340	**498.54**
	U806	1/2	1-1/2	1	4-1/4	154341	**537.47**
35°							
	V203 (4-fl.)	1/8	3/4	1/2	3	154342	**288.06**
	V404 (4-fl.)	1/4	1	1	3-1/4	154344	**393.12**
45°							
	WA215	1/8	5/16	1/2	2-5/8	154345	**130.28**
	WA215 (SP)	1/8	5/16	1/2	2-5/8	154346	**136.22**
	WA203	1/8	3/4	5/8	3-1/4	154347	**300.36**
	WA203 (SP)	1/8	3/4	5/8	3-1/4	154348	**306.21**
	WA204B	1/8	1	3/4	3-3/4	154349	**417.56**
	WA204B (SP)	1/8	1	3/4	3-3/4	154350	**402.91**
	WA204A	1/8	1	1	3-3/4	154351	**417.56**
	WA204A (SP)	1/8	1	1	3-3/4	154352	**427.09**

GS Tooling Shrink Fit Holders

Focusing on the cutting edge, coolant ports come standard!

See Pages G43-46

Carbide Miniature Tapered End Mills

- End cutting
- Weldon flat

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
Inch							
1/2°							
	CM-AX1001	1/32	1/4	1/8	2-1/2	154001	**66.50**
	CM-AX1002	1/32	1/2	1/8	2-1/2	154002	**71.89**
	CM-AX011	3/64	1/4	1/8	2-1/2	154003	**67.36**
	CM-AX012	3/64	1/2	1/8	2-1/2	154004	**72.00**
	CM-AX002	1/16	1/2	1/8	2-1/2	154005	**76.54**
	CM-AX003	1/16	3/4	1/8	2-1/2	154006	**80.22**
	CM-AX004	1/16	1	1/8	2-1/2	154007	**98.49**
	CM-AX022	5/64	1/2	1/8	2-1/2	154008	**78.39**
	CM-AX023	5/64	3/4	1/8	2-1/2	154009	**76.54**
	CM-AX024	5/64	1	1/8	2-1/2	154010	**90.82**
1°							
	CM-A0001	1/32	1/4	1/8	2-1/2	154011	**67.35**
	CM-A0002	1/32	1/2	1/8	2-1/2	154012	**72.02**
	CM-A001	3/64	1/4	1/8	2-1/2	154013	**80.22**
	CM-A012	3/64	1/2	1/8	2-1/2	154014	**73.10**
	CM-A002	1/16	1/2	1/8	2-1/2	154015	**77.54**
	CM-A003	1/16	3/4	1/8	2-1/2	154016	**81.20**
	CM-A004	1/16	1	1/8	2-1/2	154017	**99.48**
	CM-A022	5/64	1/2	1/8	2-1/2	154018	**79.35**
	CM-A023	5/64	3/4	1/8	2-1/2	154019	**77.54**
	CM-A024	5/64	1	1/8	2-1/2	154020	**100.33**
1-1/2°							
	CM-AAX1001	1/32	1/4	1/8	2-1/2	154022	**68.33**
	CM-AAX1002	1/32	1/2	1/8	2-1/2	154023	**72.88**
	CM-AAX011	3/64	1/4	1/8	2-1/2	154024	**69.30**
	CM-AAX012	3/64	1/2	1/8	2-1/2	154025	**73.09**
	CM-AAX002	1/16	1/2	1/8	2-1/2	154026	**78.39**
	CM-AAX003	1/16	3/4	1/8	2-1/2	154027	**82.38**
	CM-AAX004	1/16	1	3/16	3	154028	**101.32**
	CM-AAX022	5/64	1/2	1/8	2-1/2	154029	**80.22**
	CM-AAX023	5/64	3/4	1/8	2-1/2	154030	**78.39**
	CM-AAX024	5/64	1	3/16	3	154032	**86.92**
2°							
	CM-B0001	1/32	1/4	1/8	2-1/2	154033	**69.29**
	CM-B0002	1/32	1/2	1/8	2-1/2	154034	**73.84**
	CM-B011	3/64	1/4	1/8	2-1/2	154035	**66.48**
	CM-B012	3/64	1/2	1/8	2-1/2	154036	**66.49**
	CM-B002	1/16	1/2	1/8	2-1/2	154037	**81.19**
	CM-B003	1/16	3/4	1/8	2-1/2	154038	**83.03**
	CM-B004	1/16	1	3/16	3	154039	**102.29**
	CM-B022	5/64	1/2	1/8	2-1/2	154040	**81.19**
	CM-B023	5/64	3/4	3/16	3	154041	**87.69**
	CM-B024	5/64	1	3/16	3	154042	**102.29**
3°							
	CM-C0001	1/32	1/4	1/8	2-1/2	154043	**70.08**
	CM-C0002	1/32	1/2	1/8	2-1/2	154044	**68.12**
	CM-C001	3/64	1/4	1/8	2-1/2	154045	**70.08**
	CM-C012	3/64	1/2	1/8	2-1/2	154046	**75.68**
	CM-C002	1/16	1/2	1/8	2-1/2	154047	**80.22**
	CM-C003	1/16	3/4	3/16	3	154048	**84.00**
	CM-C004	1/16	1	3/16	3	154049	**103.15**
	CM-C022	5/64	1/2	3/16	3	154050	**75.68**
	CM-C023	5/64	3/4	3/16	3	154051	**103.16**
	CM-C024	5/64	1	3/16	3	154052	**103.14**
5°							
	CM-E0001	1/32	1/4	1/8	2-1/2	154053	**122.73**
	CM-E0002	1/32	1/2	3/16	3	154054	**75.71**
	CM-E011	3/64	1/4	1/8	2-1/2	154055	**73.31**
	CM-E012	3/64	1/2	3/16	3	154056	**76.55**
	CM-E002	1/16	1/2	1/4	2-1/2	154057	**87.58**
	CM-E003	1/16	3/4	1/4	2-1/2	154058	**84.88**
	CM-E004	1/16	1	1/4	2-1/2	154059	**108.00**
	CM-E022	5/64	1/2	3/16	3	154060	**83.03**
	CM-E023	5/64	3/4	1/4	2-1/2	154061	**89.43**
	CM-E024	5/64	1	3/8	2-1/2	154062	**120.34**

Carbide Tapered End Mills

- End cutting
- Weldon flat

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
Inch							
1/2°							
	AX103C	3/32	3/4	1/4	2-1/2	154063	**78.61**
	AX203C	1/8	3/4	1/4	2-1/2	154064	**79.59**
	AX205C	1/8	1-1/4	1/4	3-1/2	154065	**89.73**
	AX305C	3/16	1-1/4	1/4	3-1/2	154067	**96.44**
	AX405C	1/4	1-1/4	3/8	3-1/2	154069	**110.05**
1°							
	A102C	3/32	1/2	1/4	2	154070	**79.57**
	A104C	3/32	1	1/4	3	154071	**80.98**
	A203C	1/8	3/4	1/4	2-1/2	154072	**84.54**
	A204C	1/8	1	1/4	3	154073	**85.52**
	A206C	1/8	1-1/2	1/4	3-1/2	154074	**96.88**
	A303C	3/16	3/4	1/4	2-1/2	154075	**86.51**
	A305C	3/16	1-1/4	1/4	3-1/2	154076	**97.46**
	A308C	3/16	2	3/8	4	154077	**134.30**
	A403C	1/4	3/4	3/8	3	154078	**95.59**
	A405C	1/4	1-1//4	3/8	3-1/2	154079	**114.17**
	A409C	1/4	2-1/4	3/8	4	154080	**163.93**
1-1/2°							
	AAX104C	3/32	1	1/4	3	154081	**83.81**
	AAX204C	1/8	1	1/4	3	154082	**86.51**
	AAX206C	1/8	1-1/2	1/4	3-1/2	154083	**102.27**
	AAX305C	3/16	1-1/4	3/8	3-1/2	154084	**102.38**
	AAX308C	3/16	2	3/8	4	154085	**87.26**
	AAX403C	1/4	3/4	3/8	3	154086	**161.22**
	AAX405C	1/4	1-1/4	3/8	3-1/2	154087	**114.83**
2°							
	B103C	3/32	3/4	1/4	2-1/2	154088	**81.10**
	B104C	3/32	1	1/4	3	154089	**89.70**
	B203C	1/8	3/4	1/4	2-1/2	154090	**86.18**
	B206C	1/8	1-1/2	1/4	3-1/2	154091	**107.57**
	B303C	3/16	3/4	1/4	2-1/2	154092	**88.55**
	B305C	3/16	1-1/4	3/8	3-1/2	154093	**107.35**
	B307C	3/16	1-3/4	3/8	3-1/2	154094	**125.41**
	B403C	1/4	3/4	3/8	3	154095	**102.27**
	B405C	1/4	1-1/4	3/8	3-1/2	154096	**115.81**
	B409C	1/4	2-1/4	1/2	4-1/2	154097	**167.70**
3°							
	C104C	3/32	1	1/4	3	154098	**87.57**
	C106C	3/32	1-1/2	1/4	3-1/2	154099	**102.27**
	C203C	1/8	3/4	1/4	2-1/2	154100	**87.25**
	C204C	1/8	1	1/4	2-1/2	154101	**88.88**
	C206C	1/8	1-1/2	3/8	3-1/2	154102	**112.86**
	C209C	1/8	2-1/4	3/8	4	154103	**160.88**
	C256C	5/32	1-1/2	3/8	3-1/2	154104	**117.63**
	C257C	5/32	1-3/4	3/8	3-1/2	154105	**137.43**
	C303C	3/16	3/4	3/8	3	154106	**96.88**
	C305C	3/16	1-1/4	3/8	3-1/2	154107	**111.46**
	C403C	1/4	3/4	3/8	3	154108	**98.94**
	C405C	1/4	1-1/4	3/8	3-1/2	154109	**116.55**
	C409C	1/4	2-1/4	1/2	4-1/2	154110	**173.11**
4°							
	D104C	3/32	1	1/4	3	154111	**88.23**
	D203C	1/8	3/4	1/4	2-1/2	154112	**89.36**
	D204C	1/8	1	3/8	3	154113	**89.88**
	D303C	3/16	3/4	3/8	3	154114	**98.18**
	D305C	3/16	1-1/4	3/8	3-1/2	154115	**117.42**
	D405C	1/4	1-1/4	1/2	3-1/2	154117	**126.19**
5°							
	E103C	3/32	3/4	1/4	3	154118	**91.90**
	E104C	3/32	1	3/8	3	154119	**87.59**
	E106C	3/32	1-1/2	3/8	3-1/2	154120	**110.27**
	E203C	1/8	3/4	1/4	3	154121	**88.12**
	E204C	1/8	1	3/8	3	154122	**104.23**
	E206C	1/8	1-1/2	3/8	3-1/2	154123	**115.89**
	E303C	3/16	3/4	3/8	3	154124	**104.88**
	E305C	3/16	1-1/4	1/2	3-1/2	154125	**126.48**
	E403C	1/4	3/4	3/8	3	154126	**115.49**
	E405C	1/4	1-1/4	1/2	3-1/2	154128	**132.56**
	E408C	1/4	2	5/8	4	154129	**366.65**

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
7°							
	G104C	3/32	1	3/8	3	154130	**116.13**
	G202C	1/8	1/2	1/4	2-1/2	154131	**100.80**
	G203C	1/8	3/4	3/8	3	154132	**108.55**
	G204C	1/8	1	3/8	3	154133	**115.81**
	G206C	1/8	1-1/2	1/2	3-1/2	154134	**129.94**
	G253C	5/32	3/4	3/8	2-1/2	154135	**69.53**
	G305C	3/16	1-1/4	1/2	3-1/2	154136	**145.53**
	G403C	1/4	3/4	1/2	3	154137	**122.72**
	G405C	1/4	1-1/4	5/8	3-1/2	154138	**202.09**
10°							
	J102C	3/32	1/2	3/8	2-1/2	154140	**100.22**
	J106C	3/32	1-1/2	5/8	3-1/2	154141	**209.53**
	J203C	1/8	3/4	3/8	2-1/2	154142	**108.01**
	J204C	1/8	1	1/2	3-1/2	154143	**134.94**
	J205C	1/8	1-1/4	5/8	3-1/2	154144	**213.01**
	J305C	3/16	1-1/4	5/8	3-1/2	154145	**213.01**
	J403C	1/4	3/4	1/2	3	154146	**148.90**
	J404C	1/4	1	5/8	3	154147	**198.64**
15°							
	P0003C	1/32	3/4	1/2	3	154300	**178.30**
	P001C	1/16	1/4	1/4	2	154301	**99.58**
	P103C	3/32	3/4	1/2	3	154302	**136.73**
	P204C	1/8	1	5/8	3	154148	**350.21**
	P304CA	3/16	1	3/4	3	154149	**416.69**
	P404CA	1/4	1	3/4	3	154150	**426.96**
	P606C	3/8	1-1/2	3/4	4	154303	**707.45**
	P805C	1/2	1-1/4	3/4	3-1/2	154304	**670.79**
	P809C	1/2	2-1/4	1	4-1/4	154305	**1,202.58**
20°							
	T0001C	1/32	1/4	1/4	2	154306	**95.74**
	T001C	1/16	1/4	1/4	2	154307	**101.76**
	T002C	1/16	1/2	1/2	3	154308	**134.68**
	T102C	3/32	1/2	1/2	3	154309	**141.16**
	T202C	1/8	1/2	1/2	3	154310	**155.20**
	T304CB	3/16	1	1/2	3	154311	**441.06**
	T404CB	1/4	1	1/2	3	154312	**519.40**
30°							
	U001C	1/16	1/4	3/8	2-1/2	154313	**130.16**
	U101C	3/32	1/4	3/8	2-1/2	154314	**135.88**
	U201C	1/8	1/4	1/2	3	154315	**156.13**
	U202CB	1/8	1/2	1/2	2-1/2	154316	**344.50**
	U404C	1/4	1	3/4	3	154317	**941.30**
45°							
	WA215CB	1/8	7/16	1/2	2-1/2	154318	**381.82**

ASIMETO

Dial Indicators

See Page F12

Sowa carbide end mills have moved to the GS Tooling line.

The only change is the logo.

2 & 3-Flute Square End, 2-Flute Corner Radius, & 2-Flute Miniature Bright Carbide End Mills

Slot Milling — 2-Flute Regular Length, 2-Flute Stub Length, 2-Flute Double End Reg & Stub Length, 2-Flute Corner Radius

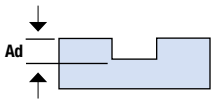
- For side milling, increase Feeds 25% or more

2-Flute Long & Extra Long Length

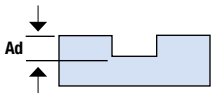
- Reduce Speeds and Feeds 25% for 2-fl. Long Length
- Reduce Speeds and Feeds 50% for 2-fl. Extra Long Length

3-Flute Regular Length

- Increase Speeds and Feeds 20% for 3-fl. Reg. Length

Hardness		Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC			
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys	
Depth of Cut				D < 1/8 → Ad = 0.3D; 1/8 ≤ D → Ad = 0.5D									
Dia. (in)	(mm)	170 SFM		155 SFM		130 SFM		110 SFM		90 SFM		390 SFM	
		Speed 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	32,000	6.6	30,000	4.5	25,230	1.9	21,350	1.4	16,890	1.2	50,000	9.4
1/32	0.8	20,790	6.6	18,950	4.5	15,900	1.9	13,450	1.4	10,640	1.2	47,700	9.4
	1	16,800	6.6	15,000	4.5	12,600	1.9	10,680	1.4	8,400	1.2	37,800	9.4
3/64		15,225	6.6	13,590	4.5	11,430	1.9	9,660	1.4	7,595	1.2	34,140	9.4
1/16	1.5	11,970	6.6	10,660	4.6	9,000	2.0	7,540	1.4	5,925	1.2	26,520	9.4
5/64	2	8,705	6.6	7,730	4.7	6,570	2.1	5,415	1.4	4,260	1.2	18,900	9.4
3/32		7,480	6.8	6,635	4.7	5,650	2.4	4,650	1.4	3,645	1.2	16,305	9.4
7/64		6,335	6.9	5,610	4.7	4,790	2.6	3,935	1.4	3,075	1.2	13,925	9.4
1/8	3	5,445	7.1	4,815	4.7	4,125	3.0	3,375	1.4	2,640	1.2	12,060	10.3
9/64		4,870	7.3	4,310	4.7	3,700	3.4	3,020	1.4	2,380	1.2	10,845	12.1
5/32	4	4,300	7.5	3,815	4.7	3,270	3.7	2,660	1.4	2,115	1.2	9,630	14.0
11/64		3,945	7.6	3,490	4.7	2,990	3.8	2,440	1.4	1,940	1.2	8,835	14.2
3/16		3,615	7.7	3,180	4.7	2,735	3.8	2,225	1.4	1,775	1.2	8,075	14.2
13/64	5	3,320	8.0	2,920	4.7	2,505	3.8	2,040	1.4	1,630	1.2	7,415	14.2
7/32		3,080	8.6	2,730	4.7	2,345	3.8	1,895	1.4	1,510	1.2	6,915	14.2
1/4	6	2,690	9.5	2,400	4.7	2,060	3.8	1,660	1.4	1,320	1.2	6,070	14.2
9/32		2,405	10.2	2,140	4.7	1,845	3.8	1,490	1.4	1,185	1.2	5,430	14.2
5/16	8	2,115	10.8	1,875	4.7	1,630	3.8	1,330	1.4	1,055	1.2	4,785	14.2
11/32		1,940	10.9	1,725	4.7	1,485	3.8	1,220	1.4	970	1.2	4,385	14.2
3/8		1,775	10.9	1,580	4.7	1,340	3.8	1,120	1.4	885	1.2	4,005	14.2
13/32	10	1,630	10.9	1,455	4.7	1,230	3.8	1,035	1.4	815	1.2	3,680	14.2
7/16		1,510	10.9	1,360	4.7	1,155	3.8	965	1.4	755	1.2	3,440	14.2
1/2	12	1,310	10.9	1,190	4.7	1,020	3.8	840	1.4	660	1.2	3,010	14.2
9/16		1,175	10.9	1,060	4.7	905	3.8	740	1.4	585	1.2	2,645	14.2
5/8	16	1,080	11.1	960	4.7	815	3.8	670	1.6	520	1.2	2,355	14.2
11/16		980	11.1	870	4.7	740	3.8	610	1.7	470	1.2	2,160	14.2
3/4	20	880	11.1	780	4.7	665	3.8	545	1.7	425	1.2	1,920	14.2
7/8	22	765	11.1	675	4.7	580	3.8	480	1.7	370	1.2	1,660	14.2
1	25	670	10.9	590	4.7	500	3.8	420	1.7	330	1.2	1,475	14.2

Slot Milling — 2-Flute Miniature End Mills

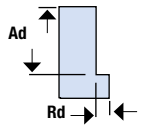
Hardness		Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC					
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys		Copper Alloys	
Depth of Cut				D < 0.04 → Ad = 0.1D; 0.04 ≤ D → Ad = 0.3D											
Dia. (in)		145 SFM		130 SFM		110 SFM		90 SFM		70 SFM		330 SFM		130 SFM	
		Speed 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
0.015		31,500	2.2	31,500	2.2	27,425	1.5	22,900	0.9	18,210	0.7	32,000	3.0	31,500	2.2
0.020		27,180	2.7	25,830	2.4	22,140	1.6	17,950	1.0	14,260	0.8	32,000	4.0	25,830	2.4
0.025		22,450	3.0	20,035	2.6	17,210	1.6	13,885	1.0	11,015	0.8	32,000	5.0	20,035	2.6
0.030		18,640	3.1	16,545	2.7	14,355	1.6	11,665	1.0	9,270	0.8	32,000	6.0	16,545	2.7
0.035		15,940	3.4	14,165	3.0	12,165	1.6	10,065	1.1	7,970	0.9	32,000	7.1	14,165	3.0
0.040		13,800	3.7	12,340	3.3	10,380	1.6	8,780	1.2	6,900	1.0	31,560	8.0	12,340	3.3
0.045		12,210	3.7	11,070	3.3	9,425	1.6	7,825	1.2	6,140	1.0	28,065	7.9	11,070	3.3
0.050		11,325	3.7	9,990	3.3	8,545	1.6	7,030	1.2	5,520	1.0	25,100	7.9	9,990	3.3
0.055		11,005	3.7	9,070	3.3	7,715	1.7	6,365	1.2	5,010	1.0	22,560	7.9	9,070	3.3
0.060		9,725	3.9	8,365	3.5	7,110	1.8	5,850	1.2	4,595	1.0	20,640	7.9	8,365	3.3

4-Flute Square End, 4-Flute Corner Radius & 3-Flute 60° Bright Carbide End Mills

Side Milling — 4-Flute Regular Length, 4-Flute Stub Length, 4-Flute Double End Regular & Stub Length, 4-Flute Corner Radius

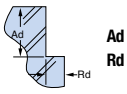
4-Flute Long & Extra Long Length

- Reduce Speeds and Feeds 25% for 4-fl. Long Length
- Reduce Speeds and Feeds 50% for 4-fl. Extra Long Length
- For slot milling, reduce Feeds 20% to 50%

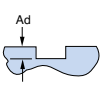
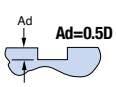
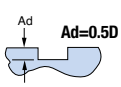
Hardness			Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC			
Work Material		Cast Iron	Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys	
Depth of Cut		 Ad = 1.5D Rd = 0.1D										
Dia. (in)	(mm)	160 SFM		175 SFM		130 SFM		120 SFM		95 SFM		470 SFM	
		Speed 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	32,000	23.9	32,000	11.8	25,240	10.9	23,300	4.5	19,400	3.5	50,000	39.4
1/32	0.8	21,150	23.9	23,240	11.8	15,900	10.9	14,600	4.5	12,200	3.5	50,000	39.4
	1	15,600	23.9	17,400	11.8	12,600	10.9	11,400	4.5	9,000	3.5	44,400	39.4
3/64		14,140	23.9	15,680	11.8	11,390	10.9	10,305	4.5	8,145	3.5	40,275	39.4
1/16	1.5	11,115	23.9	12,105	11.8	8,895	10.9	8,045	4.5	6,390	3.5	31,710	39.4
5/64	2	8,090	23.9	8,535	11.8	6,395	10.9	5,780	4.5	4,625	3.5	23,135	39.4
3/32		6,970	23.9	7,320	12.6	5,495	10.9	4,965	4.4	3,960	3.4	19,820	40.6
7/64		5,920	23.9	6,200	13.5	4,660	10.9	4,205	4.3	3,340	3.4	16,725	41.8
1/8	3	5,090	24.6	5,330	14.4	4,005	10.9	3,610	4.3	2,870	3.3	14,370	42.9
9/64		4,545	26.3	4,785	15.4	3,580	10.9	3,225	4.3	2,585	3.3	12,935	43.8
5/32	4	4,000	28.0	4,240	16.4	3,150	10.9	2,850	4.3	2,295	3.3	11,505	44.8
11/64		3,670	28.1	3,885	16.9	2,895	11.2	2,620	4.3	2,100	3.3	10,565	45.2
3/16		3,360	28.1	3,555	17.2	2,655	11.6	2,405	4.3	1,910	3.3	9,660	45.6
13/64	5	3,090	28.1	3,260	17.6	2,445	11.8	2,205	4.3	1,750	3.3	8,880	46.0
7/32		2,870	28.1	3,020	17.9	2,285	11.8	2,045	4.3	1,630	3.3	8,280	46.3
1/4	6	2,520	28.1	2,640	18.2	2,000	11.8	1,775	4.3	1,430	3.3	7,280	46.8
9/32		2,260	28.1	2,380	18.3	1,785	11.8	1,580	4.3	1,295	3.3	6,520	47.0
5/16	8	1,995	28.1	2,115	18.4	1,570	11.8	1,390	4.3	1,150	3.3	5,760	47.2
11/32		1,820	28.3	1,940	19.4	1,445	11.8	1,290	4.3	1,055	3.3	5,280	47.2
3/8		1,655	28.6	1,775	20.4	1,325	11.8	1,200	4.3	965	3.3	4,830	47.2
13/32	10	1,515	28.9	1,630	21.0	1,220	11.8	1,110	4.3	885	3.3	4,430	48.0
7/16		1,420	29.1	1,510	21.1	1,140	11.8	1,035	4.3	825	3.3	4,120	49.8
1/2	12	1,250	30.9	1,310	22.5	995	12.2	900	4.3	720	3.3	3,585	52.0
9/16		1,120	34.3	1,175	24.9	880	13.1	795	4.3	635	3.3	3,170	52.0
5/8	16	1,005	35.5	1,055	25.7	790	13.8	720	4.3	570	3.3	2,840	52.0
11/16		915	38.4	960	25.9	720	13.9	650	4.3	515	3.3	2,595	52.0
3/4	20	820	39.4	860	26.3	640	13.9	580	4.1	465	3.3	2,340	52.0
7/8	22	710	35.5	750	23.6	560	12.6	510	3.7	405	3.0	2,015	49.1
1	25	630	31.2	660	20.7	490	10.9	440	3.3	360	2.6	1,775	43.5

3-Flute 60° High Helix

Side Milling

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	
Hardness						< 35HRC		35-45 HRC		45-55 HRC	
Depth of Cut						 Ad = 1.5D Rd = 0.1D		Ad = 1.5D Rd = 0.1D			
Mill Dia. (inch)	mm	390-460 SFM		130-164 SFM		Up to 100 SFM		Up to 66 SFM		Up to 50 SFM	
		Speed 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	6900	21.7	2400	10.6	1600	6.7	1060	3.0	800	1.2
5/16	8	5200	21.7	1800	10.6	1200	6.7	800	3.0	600	1.2
3/8	10	4200	23.6	1400	13.4	950	6.7	640	3.0	480	1.2
1/2	12	3500	23.6	1200	14.2	800	7.1	530	3.0	400	1.2
5/8	16	2600	23.6	900	15.7	600	7.1	400	3.0	300	1.2
3/4	20	2100	23.6	720	16.1	480	7.9	320	3.0	240	1.2
1	25	1700	23.6	580	13.8	380	7.1	250	3.0	190	1.2

Slotting

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	
Hardness				< 35HRC		35-45 HRC		45-55 HRC	
Depth of Cut		 up to 1/2" Ad = 1.0D over 1/2" Ad = 0.5D				 Ad=0.5D		 Ad=0.5D	
Mill Dia. (inch)	mm	110-140 SFM		Up to 85 SFM		Up to 56 SFM		Up to 43 SFM	
		Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	6	2040	7.9	1360	4.7	900	2.0	680	0.8
5/16	8	1530	7.9	1020	4.7	680	2.0	510	0.8
3/8	10	1190	9.1	810	4.7	540	2.0	410	0.8
1/2	12	1020	9.8	680	5.1	450	2.0	340	0.8
5/8	16	760	10.6	510	5.1	340	2.0	260	0.8
3/4	20	620	11.0	410	5.5	270	2.0	200	0.8
1	25	500	9.4	320	5.1	210	2.0	160	0.8

2, 3 & 4-Flute Ball Nose Bright Carbide End Mills

Profiling — 2-Flute Regular Length, 2-Flute Stub Length, 2-Flute Double End Regular & Stub Length Ball Nose End Mills

2-Flute Ball Nose Long & Extra Long Length

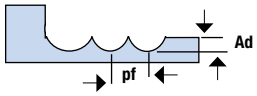
- Reduce Speeds and Feeds 25% for 2-fl. Ball Nose Long Length
- Reduce Speeds and Feeds 50% for 2-fl. Ball nose Extra Long Length

3-Flute Regular Length

- Increase Speeds and Feeds 20% for 3-fl. Reg. Length

4-Flute Ball Nose

- Increase Speeds and Feeds 40% for 4-fl. Ball Nose Reg. & Stub Length, also 4-fl Double End Reg. & Stub Length
- Reduce Speeds 25% and Increase Feeds 10% for 4-fl. Ball Nose Long Length
- Reduce Speeds 50% and Increase Feeds 10% for 4-fl. Ball Nose Extra Long Length

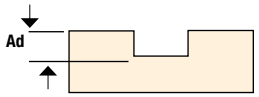
Hardness			Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC			
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys	
Depth of Cut													
		D < 1/8		0.1D		0.2D							
		1/8 ≤ D		0.3D		0.7D							
Dia. (in)	(mm)	160 SFM		160 SFM		120 SFM		100 SFM		80 SFM		490 SFM	
		Speed 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	31,000	4.8	31,000	4.5	23,300	2.5	19,400	1.2	15,500	0.9	50,000	6.8
1/32	0.8	19,600	4.8	19,600	4.5	14,680	2.5	12,200	1.2	9,780	0.9	50,000	6.8
	1	15,600	5.0	15,600	4.7	11,400	2.8	9,540	1.4	7,620	0.9	38,400	7.1
3/64		14,140	5.2	14,140	4.8	10,305	3.0	8,620	1.5	6,885	1.0	35,535	8.0
1/16	1.5	11,115	5.8	11,115	5.1	8,045	3.4	6,720	1.7	5,360	1.2	29,585	9.8
5/64	2	8,090	6.3	8,090	5.4	5,780	3.7	4,810	1.8	3,840	1.4	23,630	11.7
3/32		6,970	6.5	6,970	5.7	4,965	3.9	4,140	1.9	3,290	1.4	20,420	11.8
7/64		5,920	6.7	5,920	6.0	4,205	4.1	3,520	1.9	2,795	1.4	17,325	11.8
1/8	3	5,090	7.2	5,090	6.1	3,610	4.3	3,030	1.9	2,400	1.4	14,945	11.8
9/64		4,545	7.9	4,545	6.2	3,225	4.3	2,690	1.9	2,140	1.4	13,470	11.8
5/32	4	4,000	8.6	4,000	6.3	2,850	4.3	2,360	1.9	1,875	1.4	11,990	11.8
11/64		3,670	9.2	3,670	6.6	2,620	4.3	2,160	1.9	1,725	1.4	11,020	12.7
3/16		3,360	9.6	3,360	6.9	2,405	4.4	1,970	1.9	1,580	1.4	10,090	13.6
13/64	5	3,090	10.1	3,090	7.1	2,205	4.4	1,810	1.9	1,455	1.4	9,275	14.2
7/32		2,870	10.4	2,870	7.1	2,045	4.3	1,690	1.9	1,360	1.4	8,630	14.2
1/4	6	2,520	11.3	2,520	6.9	1,775	4.2	1,490	1.9	1,205	1.4	7,570	14.6
9/32		2,260	12.5	2,260	6.4	1,580	4.1	1,350	1.9	1,080	1.4	6,785	15.5
5/16	8	1,995	13.6	1,995	5.9	1,390	4.0	1,200	1.9	960	1.4	6,000	16.4
11/32		1,820	13.7	1,820	5.8	1,290	4.0	1,100	1.9	880	1.4	5,495	16.5
3/8		1,655	13.7	1,655	5.7	1,200	4.0	1,005	1.9	800	1.4	5,020	16.5
13/32	10	1,515	13.7	1,515	5.6	1,110	3.9	920	1.9	735	1.4	4,610	16.9
7/16		1,420	13.7	1,420	5.4	1,035	3.7	855	1.9	690	1.4	4,300	17.8
1/2	12	1,250	13.7	1,250	5.2	900	3.5	750	1.9	600	1.4	3,750	18.9
9/16		1,120	13.9	1,120	5.2	795	3.5	660	1.9	530	1.4	3,290	18.5
5/8	16	1,005	13.9	1,005	5.2	720	3.5	590	1.9	470	1.4	2,960	16.7
11/16		915	13.9	915	5.2	650	3.5	540	1.9	430	1.4	2,715	16.5
3/4	20	820	12.9	820	5.2	580	3.5	485	1.9	380	1.4	2,415	16.5
7/8	22	710	11.2	710	5.2	510	3.5	425	1.8	335	1.4	2,100	16.5
1	25	630	9.8	630	5.1	440	3.5	370	1.6	300	1.4	1,830	16.3

2-Flute Square End, TiAlN Coated Carbide End Mills

Slot Milling — 2-Flute Regular Length, 2-Flute Stub Length, 2-Flute Double End Regular & Stub Length

2-Flute Long & Extra Long Length

- Reduce Speeds and Feeds 25% for 2-fl. Long Length
- Reduce Speeds and Feeds 50% for 2-fl. Extra Long Length
- For side milling, increase Feeds 25% or more.

Hardness			Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC			
Work Material		Cast Iron	Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys	
Depth of Cut												
Dia. (in)	(mm)	220 SFM		200 SFM		170 SFM		140 SFM		110 SFM		500 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
	0.5	40,000	8.25	37,500	5.63	31,537	2.38	26,687	1.75	21,112	1.50	62,500	11.75
1/32	0.8	25,987.	8.25	23,687	5.63	19,875	2.38	16,812	1.75	13,300	1.50	59,625	11.75
	1	21,000	8.25	18,750	5.63	15,750	2.38	13,350	1.75	10,500	1.50	47,250	11.75
3/64		19,031	8.25	16,987	5.63	14,287	2.38	12,075	1.75	9,493	1.50	42,675	11.75
1/16	1.5	14,962	8.25	13,325	5.75	11,250	2.50	9,425	1.75	7,406	1.50	33,150	11.75
5/64	2	10,881	8.25	9,662	5.88	8,212	2.63	6,768	1.75	5,325	1.50	23,625	11.75
3/32		9,350	8.50	8,293	5.88	7,062	3.00	5,812	1.75	4,556	1.50	20,381	11.75
7/64		7,918	8.63	7,012	5.88	5,987	3.25	4,918	1.75	3,843	1.50	17,406	11.75
1/8	3	6,806	8.88	6,018	5.88	5,156	3.75	4,218	1.75	3,300	1.50	15,075	12.88
9/64		6,087	9.13	5,387	5.88	4,625	4.25	3,775	1.75	2,975	1.50	13,556	15.13
5/32	4	5,375	9.38	4,768	5.88	4,087	4.63	3,325	1.75	2,643	1.50	12,037	17.50
11/64		4,931	9.50	4,362	5.88	3,737	4.75	3,050	1.75	2,425	1.50	11,043	17.75
3/16		4,518	9.63	3,975	5.88	3,418	4.75	2,781	1.75	2,218	1.50	10,093	17.75
13/64	5	4,150	10.00	3,650	5.88	3,131	4.75	2,550	1.75	2,037	1.50	9,268	17.75
7/32		3,850	10.75	3,412	5.88	2,931	4.75	2,368	1.75	1,887	1.50	8,643	17.75
1/4	6	3,362	11.88	3,000	5.88	2,575	4.75	2,075	1.75	1,650	1.50	7,587	17.75
9/32		3,006	12.75	2,675	5.88	2,306	4.75	1,862	1.75	1,481	1.50	6,787	17.75
5/16	8	2,643	13.50	2,343	5.88	2,037	4.75	1,662	1.75	1,318	1.50	5,981	17.75
11/32		2,425	13.63	2,156	5.88	1,856	4.75	1,525	1.75	1,212	1.50	5,481	17.75
3/8		2,218	13.63	1,975	5.88	1,675	4.75	1,400	1.75	1,106	1.50	5,006	17.75
13/32	10	2,037	13.63	1,818	5.88	1,537	4.75	1,293	1.75	1,018	1.50	4,600	17.75
7/16		1,887	13.63	1,700	5.88	1,443	4.75	1,206	1.75	943	1.50	4,300	17.75
1/2	12	1,637	13.63	1,487	5.88	1,275	4.75	1,050	1.75	825	1.50	3,762	17.75
9/16		1,468	13.63	1,325	5.88	1,131	4.75	925	1.75	731	1.50	3,306	17.75
5/8	16	1,350	13.88	1,200	5.88	1,018	4.75	837	2.00	650	1.50	2,943	17.75
11/16		1,225	13.88	1,087	5.88	925	4.75	762	2.13	587	1.50	2,700	17.75
3/4	20	1,100	13.88	975	5.88	831	4.75	681	2.13	531	1.50	2,400	17.75
7/8	22	956	13.88	843	5.88	725	4.75	600	2.13	462	1.50	2,075	17.75
1	25	837	13.63	737	5.88	625	4.75	525	2.13	412	1.50	1,843	17.75

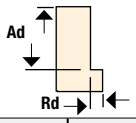
Ad	
D < 1/8	0.3D
1/8 ≤ D	0.5D

4-Flute Square End, TiAlN Coated Carbide End Mills

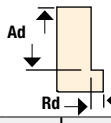
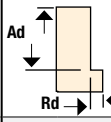
Side Milling — 4-Flute Regular Length, 4-Flute Double End Stub Length

4-Flute Long & Extra Long Length

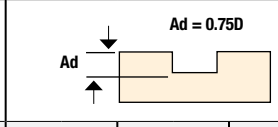
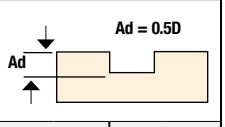
- Reduce Speeds and Feeds 25% for 4-fl. Long Length
- Reduce Speeds and Feeds 50% for 4-fl. Extra Long Length
- For slot milling, reduce Feeds 20% to 50%.

Hardness			Tensile Strength: Up to 750N/mm²	Up to 30HRC		30 to 38 HRC		38 to 45 HRC		
Work Material		Cast Iron	Mild Steels, Carbon Steels	Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys
Depth of Cut		 Ad = 1.5D Rd = 0.1D								
Dia. (in)	(mm)	200 SFM		215 SFM		165 SFM		150 SFM		120 SFM		590 SFM	
		Speed 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	40,000	29.88	40,000	14.75	31,550	13.63	29,125	5.63	24,250	4.38	62,500	49.25
1/32	0.8	26,437	29.88	29,050	14.75	19,875	13.63	18,250	5.63	15,250	4.38	62,500	49.25
	1	19,500	29.88	21,750	14.75	15,750	13.63	14,250	5.63	11,250	4.38	55,500	49.25
3/64		17,675	29.88	19,600	14.75	14,237	13.63	12,881	5.63	10,181	4.38	50,343	49.25
1/16	1.5	13,893	29.88	15,131	14.75	11,118	13.63	10,056	5.63	7,987	4.38	39,637	49.25
5/64	2	10,112	29.88	10,668	14.75	7,993	13.63	7,225	5.63	5,781	4.38	28,918	49.25
3/32		8,712	29.88	9,150	15.75	6,868	13.63	6,206	5.50	4,950	4.25	24,775	50.75
7/64		7,400	29.88	7,750	16.88	5,825	13.63	5,256	5.38	4,175	4.25	20,906	52.25
1/8	3	6,362	30.75	6,662	18.00	5,006	13.63	4,512	5.38	3,587	4.13	17,962	53.63
9/64		5,681	32.88	5,981	19.25	4,475	13.63	4,031	5.38	3,231	4.13	16,168	54.75
5/32	4	5,000	35.00	5,300	20.50	3,937	13.63	3,562	5.38	2,868	4.13	14,381	56.00
11/64		4,587	35.13	4,856	21.13	3,618	14.00	3,275	5.38	2,625	4.13	13,206	56.50
3/16		4,200	35.13	4,443	21.50	3,318	14.50	3,006	5.38	2,387	4.13	12,075	57.00
13/64	5	3,862	35.13	4,075	22.00	3,056	14.75	2,756	5.38	2,187	4.13	11,100	57.50
7/32		3,587	35.13	3,775	22.38	2,856	14.75	2,556	5.38	2,037	4.13	10,350	57.88
1/4	6	3,150	35.13	3,300	22.75	2,500	14.75	2,218	5.38	1,787	4.13	9,100	58.50
9/32		2,825	35.13	2,975	22.88	2,231	14.75	1,975	5.38	1,618	4.13	8,150	58.75
5/16	8	2,493	35.13	2,643	23.00	1,962	14.75	1,737	5.38	1,437	4.13	7,200	59.00
11/32		2,275	35.38	2,425	24.25	1,806	14.75	1,612	5.38	1,318	4.13	6,600	59.00
3/8		2,068	35.75	2,218	25.50	1,656	14.75	1,500	5.38	1,206	4.13	6,037	59.00
13/32	10	1,893	36.13	2,037	26.25	1,525	14.75	1,387	5.38	1,106	4.13	5,537	60.00
7/16		1,775	36.38	1,887	26.38	1,425	14.75	1,293	5.38	1,031	4.13	5,150	62.25
1/2	12	1,562	38.63	1,637	28.13	1,243	15.25	1,125	5.38	900	4.13	4,481	65.00
9/16		1,400	42.88	1,468	31.13	1,100	16.38	993	5.38	793	4.13	3,962	65.00
5/8	16	1,256	44.38	1,318	32.13	987	17.25	900	5.38	712	4.13	3,550	65.00
11/16		1,143	48.00	1,200	32.38	900	17.38	812	5.38	643	4.13	3,243	65.00
3/4	20	1,025	49.25	1,075	32.88	800	17.38	725	5.13	581	4.13	2,925	65.00
7/8	22	887	44.38	937	29.50	700	15.75	637	4.63	506	3.75	2,518	61.38
1	25	787	39.00	825	25.88	612	13.63	550	4.13	450	3.25	2,218	54.38

TiAlN Coated Carbide Roughing End Mills — Side Milling

Hardness			Tensile Strength: Up to 750N/mm²	Up to 30HRC		30 to 38 HRC		38 to 45 HRC	
Work Material		Cast Iron	Mild Steels, Carbon Steels	Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels		Hardened Steels, Stainless Steels	
Depth of Cut		 Ad = 1.5D Rd = 0.4D				 Ad = 1.5D Rd = 0.3D			
Dia. (in)	(mm)	420 SFM		350 SFM		300 SFM		225 SFM		175 SFM	
		Speed 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	6,350	29.9	5,300	25.2	4,500	14.2	3,450	11.0	2,650	8.3
5/16	8	4,750	29.9	4,000	25.2	3,400	16.1	2,600	12.2	2,000	9.4
3/8	10	3,800	29.9	3,200	25.2	2,700	16.9	2,050	13.0	1,600	10.2
1/2	12	3,200	30.3	2,650	25.2	2,250	17.7	1,700	13.4	1,350	10.6
5/8	16	2,400	30.3	2,000	25.2	1,700	18.9	1,300	14.2	1,000	11.0
3/4	20	1,900	29.9	1,600	24.0	1,350	18.5	1,050	13.8	800	10.2
1	25	1,500	29.9	1,150	24.0	1,000	18.5	800	13.8	600	10.2

TiAlN Coated Carbide Roughing End Mills — Slotting

Hardness			Tensile Strength: Up to 750N/mm²	Up to 30HRC	30 to 38 HRC	38 to 45 HRC
Work Material		Cast Iron	Mild Steels, Carbon Steels	Alloy Steels, Tool Steels, Ti Alloys (Annealed)	Hardened Steels, Prehardened Steels	Hardened Steels, Stainless Steels
Depth of Cut						
Dia. (in)	(mm)	350 SFM		300 SFM	250 SFM	190 SFM		160 SFM	
		Speed 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	5,300	25.2	4,500	21.3	3,700	11.8	2,900	9.1	2,400	7.5
5/16	8	4,000	25.2	3,400	21.3	2,800	13.4	2,200	10.2	1,800	8.7
3/8	10	3,200	25.2	2,700	21.3	2,250	14.2	1,750	11.0	1,450	9.1
1/2	12	2,650	25.2	2,250	21.3	1,850	14.6	1,450	11.4	1,200	9.4
5/8	16	2,000	25.2	1,700	21.3	1,400	15.4	1,100	12.2	900	9.8
3/4	20	1,600	25.2	1,350	20.1	1,100	15.4	900	11.8	700	9.1
1	25	1,150	25.2	950	20.1	800	15.4	700	11.8	500	9.1

2 & 4-Flute Ball Nose TiAlN Coated Carbide End Mills

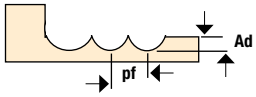
Profiling — 2-Flute Regular Length Ball Nose End Mills

2-Flute Long & Extra Long Length

- Reduce Speeds and Feeds 25% for 2-fl. Ball Nose Long Length
- Reduce Speeds and Feeds 50% for 2-fl. Ball Nose Extra Long Length

4-Flute Ball Nose

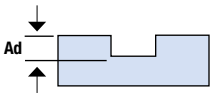
- Increase Speeds and Feeds 40% for 4-fl. Ball Nose Reg. Length
- Reduce Speeds 25% and Increase Feeds 10% for 4-fl. Ball Nose Long Length
- Reduce Speeds 50% and Increase Feeds 10% for 4-fl. Ball Nose Extra Long Length

Hardness			Tensile Strength: Up to 750N/mm²		Up to 30HRC		30 to 38 HRC		38 to 45 HRC		
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Aluminum Alloys
Depth of Cut												
Dia. (in)	(mm)	200 SFM		205 SFM		150 SFM		125 SFM		100 SFM		600 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
	0.5	38,750	6.00	38,750	5.63	29,125	3.13	24,250	1.50	14,375	1.13	62,500	8.50
1/32	0.8	24,500	6.00	24,500	5.63	18,350	3.13	15,250	1.50	12,225	1.13	62,500	8.50
	1	19,500	6.25	19,500	5.88	14,250	3.50	11,925	1.75	9,525	1.13	48,000	8.88
3/64		17,675	6.50	17,675	6.00	12,881	3.75	10,775	1.88	8,606	1.25	44,418	10.00
1/16	1.5	13,893	7.25	13,893	6.38	10,056	4.25	8,400	2.13	6,700	1.50	36,981	12.25
5/64	2	10,112	7.88	10,112	6.75	7,225	4.63	6,012	2.25	4,800	1.75	29,537	14.63
3/32		8,712	8.13	8,712	7.13	6,206	4.88	5,175	2.38	4,112	1.75	25,525	14.75
7/64		7,400	8.38	7,400	7.50	5,256	5.13	4,400	2.38	3,493	1.75	21,656	14.75
1/8	3	6,362	9.00	6,362	7.63	4,512	5.38	3,787	2.38	3,000	1.75	18,681	14.75
9/64		5,681	9.88	5,681	7.75	4,031	5.38	3,362	2.38	2,675	1.75	16,837	14.75
5/32	4	5,000	10.75	5,000	7.88	3,562	5.38	2,950	2.38	2,343	1.75	14,987	14.75
11/64		4,587	11.50	4,587	8.25	3,275	5.38	2,700	2.38	2,156	1.75	13,775	15.88
3/16		4,200	12.00	4,200	8.63	3,006	5.50	2,462	2.38	1,975	1.75	12,612	17.00
13/64	5	3,862	12.63	3,862	8.88	2,756	5.50	2,262	2.38	1,818	1.75	11,593	17.75
7/32		3,587	13.00	3,587	8.88	2,556	5.38	2,112	2.38	1,700	1.75	10,787	17.75
1/4	6	3,150	14.13	3,150	8.63	2,218	5.25	1,862	2.38	1,506	1.75	9,462	18.25
9/32		2,825	15.63	2,825	8.00	1,975	5.13	1,687	2.38	1,350	1.75	8,481	19.38
5/16	8	2,493	17.00	2,493	7.38	1,737	5.00	1,500	2.38	1,200	1.75	7,500	20.50
11/32		2,275	17.13	2,275	7.25	1,612	5.00	1,375	2.38	1,100	1.75	6,868	20.63
3/8		2,068	17.13	2,068	7.13	1,500	5.00	1,256	2.38	1,000	1.75	6,275	20.63
13/32	10	1,893	17.13	1,893	7.00	1,387	4.88	1,150	2.38	918	1.75	5,762	21.13
7/16		1,775	17.13	1,775	6.75	1,293	4.63	1,068	2.38	862	1.75	5,375	22.25
1/2	12	1,562	17.13	1,562	6.50	1,125	4.38	937	2.38	750	1.75	4,687	23.63
9/16		1,400	17.38	1,400	6.50	993	4.38	825	2.38	662	1.75	4,112	23.13
5/8	16	1,256	17.38	1,256	6.50	900	4.38	737	2.38	587	1.75	3,700	20.88
11/16		1,143	17.38	1,143	6.50	812	4.38	675	2.38	537	1.75	3,393	20.63
3/4	20	1,025	16.13	1,025	6.50	725	4.38	606	2.38	475	1.75	3,018	20.63
7/8	22	887	14.00	887	6.50	637	4.38	531	2.25	418	1.75	2,625	20.63
1	25	787	12.25	787	6.38	550	4.38	462	2.00	375	1.75	2,287	20.38

	Ad	pf
D < 1/8	0.1D	0.2D
1/8 ≤ D	0.3D	0.7D

Typhoon Modified AlTiN Carbide End Mills

Slot Milling — 2-Flute Square End & 2-Flute Corner Radius

Hardness		Tensile Strength: Up to 750N/mm²	Up to 30HRC	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, Prehardened Steels, Ti Alloys (Solution Treated and Aged)	Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys	Hardened Steels	Hardened Steels
Depth of Cut							

	Ad
D <1/16	0.1D
1/16 ≤ D<1/8	0.3D
1/16 ≤ D	0.5D

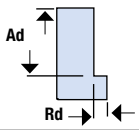
	Ad
D <1/16	0.02D
1/16 ≤ D	0.05D

	Ad
D <1/16	0.01D
1/16 ≤ D<1/8	0.02D
1/8 ≤ D	0.05D

Dia. (in)	(mm)	360 SFM		330 SFM		260 SFM		220 SFM		280 SFM		120 SFM		80 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
1/16	1.5	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	3	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	4	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
7/32		6,365	16.3	5,790	14.7	4,690	11.1	3,855	6.1	3,285	4.7	2,045	2.6	1,365	1.3
1/4	6	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
9/32		5,000	15.6	4,545	14.2	3,700	11.1	3,020	6.0	2,585	4.7	1,580	2.5	1,080	1.2
5/16	8	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
11/32		4,035	15.0	3,670	13.7	2,990	11.1	2,440	5.9	2,100	4.6	1,290	2.4	880	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
13/32	10	3,400	14.5	3,090	13.2	2,505	10.9	2,040	5.9	1,750	4.4	1,110	2.4	735	1.1
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	12	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
9/16		2,460	14.2	2,230	13.0	1,770	10.1	1,480	5.1	1,240	4.3	795	1.9	530	0.8
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
11/16		1,980	12.1	1,800	11.2	1,485	8.7	1,215	4.3	1,040	3.7	650	1.5	430	0.7
3/4	20	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
7/8	22	1,565	9.8	1,420	8.9	1,140	6.8	960	3.3	815	2.8	510	1.2	340	0.5
1	25	1,360	8.5	1,240	7.7	1,020	6.0	840	3.0	720	2.6	440	0.9	300	0.5

Typhoon Modified AlTiN Carbide End Mills

Side Milling — 4-Flute Square End & 4-Flute Corner Radius

Hardness		Tensile Strength: Up to 750N/mm²	Up to 30HRC	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, Prehardened Steels, Ti Alloys (Solution Treated and Aged)	Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys	Hardened Steels	Hardened Steels
Depth of Cut							

	Ad	Rd
D <1/8	1.5D	0.05D
1/8 ≤ D	1.5D	0.1D

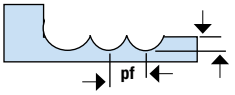
Ad	Rd
1D	0.02D

Dia. (in)	(mm)	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
1/16	1.5	20,825	15.4	18,070	12.5	15,670	11.2	10,870	4.7	9,915	4.2	6,740	2.6	5,400	1.6
3/32		16,305	21.5	13,720	18.1	11,550	14.5	8,075	5.4	6,885	4.9	4,185	2.9	2,950	2.0
1/8	3	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
5/32	4	9,630	29.9	8,060	25.0	7,890	17.5	5,170	6.3	4,475	5.3	2,655	3.3	1,815	2.2
3/16		8,075	33.7	6,740	28.3	5,930	19.4	4,455	6.5	3,935	5.7	2,360	3.5	1,565	2.0
7/32		7,580	34.8	5,790	29.1	4,835	20.0	3,855	6.7	3,440	6.0	2,045	3.4	1,360	1.9
1/4	6	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
9/32		5,945	34.0	4,545	28.3	3,785	19.9	3,020	6.9	2,690	6.1	1,580	3.3	1,080	1.8
5/16	8	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
11/32		4,385	33.6	3,670	27.8	3,050	19.8	2,440	6.9	2,160	6.1	1,290	3.5	880	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
13/32	10	3,680	33.6	3,090	27.8	2,565	19.8	2,040	6.9	1,810	6.1	1,110	3.9	735	1.7
7/16		3,440	33.6	2,870	27.8	2,405	19.8	1,895	6.9	1,690	6.1	1,035	3.4	690	1.5
1/2	12	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
9/16		2,645	31.2	2,230	26.9	1,820	19.6	1,470	6.7	1,295	5.8	795	2.4	530	1.1
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
11/16		2,160	31.0	1,800	25.7	1,485	19.2	1,215	5.6	1,090	5.0	650	2.0	430	0.9
3/4	20	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
7/8	22	1,660	26.2	1,420	22.4	1,185	15.9	960	4.3	850	3.9	510	1.4	335	0.8
1	25	1,485	23.3	1,240	19.5	1,050	14.0	840	3.9	750	3.5	440	1.4	300	0.7

2 & 4-Flute Ball Nose Typhoon Modified AlTiN Carbide End Mills

Profiling — 2-Flute Ball Nose

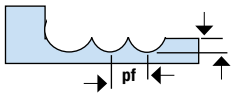
4-Flute Ball Nose: Increase Feeds 40% to 50%

Hardness		Tensile Strength: Up to 750N/mm²	Up to 30HRC	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, Prehardened Steels, Ti Alloys (Solution Treated and Aged)	Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys	Hardened Steels	Hardened Steels
Depth of Cut			Ad: 0.1D, pf: 0.2D			Ad: 0.05D, pf: 0.1D	

Dia. (in)	(mm)	575 SFM		460 SFM		375 SFM		310 SFM		260 SFM		230 SFM		165 SFM	
		Speed 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	1.5	32,405	41.0	29,230	36.1	26,520	29.3	21,185	18.9	18,640	13.6	16,095	9.9	11,970	6.6
3/32		24,540	44.4	19,820	36.1	16,305	29.4	13,145	18.9	11,550	13.7	9,950	9.9	7,480	6.6
1/8	3	17,760	44.4	14,370	36.1	12,060	29.8	9,695	19.5	8,490	14.4	7,280	10.4	5,445	6.9
5/32	4	13,950	44.4	11,505	36.1	9,630	29.8	7,695	20.9	6,725	17.3	5,760	12.7	4,300	8.2
3/16		11,100	48.3	9,660	39.4	8,075	29.9	6,425	21.0	5,650	17.5	4,830	13.3	3,615	8.3
7/32		10,360	49.6	8,280	40.4	6,915	30.9	5,490	21.5	4,835	18.0	4,120	13.7	3,080	8.5
1/4	6	9,120	51.6	7,280	42.0	6,070	32.6	4,815	22.7	4,235	18.9	3,610	14.2	2,690	8.9
9/32		8,165	56.3	6,520	45.6	5,430	34.9	4,310	24.4	3,785	20.2	3,225	14.7	2,405	9.4
5/16	8	7,210	61.0	5,760	49.3	4,785	37.1	3,815	26.1	3,330	21.4	2,850	15.3	2,115	9.9
11/32		6,610	59.7	5,280	48.0	4,385	36.5	3,490	25.7	3,050	21.0	2,620	15.5	1,940	9.9
3/8		6,040	57.8	4,830	46.3	4,005	35.7	3,180	25.1	2,795	20.6	2,405	15.7	1,775	9.9
13/32	10	5,540	55.9	4,430	44.6	3,680	34.8	2,920	24.5	2,565	20.3	2,205	15.6	1,630	9.8
7/16		5,165	54.0	4,120	42.7	3,440	34.0	2,730	23.9	2,405	20.3	2,045	15.2	1,510	9.5
1/2	12	4,505	51.1	3,585	40.7	3,010	32.6	2,390	22.9	2,090	19.7	1,775	14.5	1,310	9.1
9/16		4,000	49.6	3,170	40.7	2,645	31.7	2,110	22.4	1,820	18.3	1,580	13.9	1,175	8.9
5/8	16	3,570	49.6	2,840	39.7	2,355	30.5	1,875	22.4	1,630	18.0	1,390	12.8	1,080	8.7
11/16		3,275	47.9	2,595	38.1	2,160	29.2	1,725	22.4	1,485	18.0	1,290	12.4	980	8.4
3/4	20	2,915	45.2	2,340	36.5	1,920	27.4	1,545	21.5	1,350	17.6	1,175	11.9	880	8.1
7/8	22	2,540	42.1	2,130	33.8	1,775	24.4	1,365	19.2	1,185	15.9	1,025	10.8	765	7.7
1	25	2,240	36.8	1,775	31.5	1,475	21.8	1,180	16.8	1,050	13.7	900	9.8	670	6.7

High-Speed Light Milling — 2-Flute Ball Nose

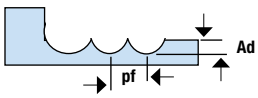
4-Flute Ball Nose: Increase Feeds 40% to 50%

Hardness	Tensile Strength: Up to 750N/mm²	Up to 30HRC	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, Prehardened Steels, Ti Alloys (Solution Treated and Aged)	Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys	Hardened Steels	Hardened Steels
Depth of Cut		Ad: 0.02D, pf: 0.05D			D <5/8: Ad 0.02D, pf 0.05D 5/8 ≤ D: Ad 0.012", pf 0.05D	

Dia. (in)	(mm)	985 SFM		855 SFM		740 SFM		590 SFM		590 SFM		400 SFM	
		Speed 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	1.5	39,125	126.4	35,305	110.2	35,010	98.4	33,400	88.6	88.6	59.4	17,650	39.4
3/32		27,490	137.8	21,750	110.2	21,250	98.4	20,450	88.6	88.6	61.0	10,950	39.4
1/8	3	20,475	139.2	16,325	114.4	15,825	100.1	15,150	90.0	90.0	63.4	8,355	40.0
5/32	4	18,085	145.4	15,525	133.1	15,025	108.0	13,555	96.2	96.2	74.4	7,960	43.1
3/16		16,085	154.6	15,110	153.3	14,230	112.8	11,585	91.9	91.9	80.8	7,675	46.3
7/32		15,215	175.0	14,160	164.9	12,600	110.9	10,160	89.4	89.4	85.9	7,035	46.1
1/4	6	14,380	181.0	12,880	161.7	11,050	103.8	9,080	84.8	84.8	84.8	6,305	43.5
9/32		12,990	163.1	11,490	144.5	10,035	93.6	8,150	76.2	76.2	76.2	5,650	39.4
5/16	8	11,600	145.1	10,100	127.3	9,025	83.5	7,215	67.6	67.6	67.6	5,000	35.4
11/32		10,760	134.3	9,355	117.3	8,285	76.9	6,610	61.9	61.9	61.9	4,575	32.4
3/8		9,975	124.2	8,660	108.0	7,575	70.7	6,035	56.4	56.4	56.4	4,180	29.6
13/32	10	9,250	115.0	8,025	99.5	6,950	65.0	5,540	51.6	51.6	51.6	3,840	27.2
7/16		8,630	107.1	7,465	92.5	6,475	60.4	5,165	47.6	47.6	47.6	3,580	25.3
1/2	12	7,540	93.6	6,510	80.5	5,650	52.4	4,500	41.5	41.5	41.5	3,125	22.0
9/16		6,675	83.2	5,785	71.4	5,000	46.4	3,975	37.5	37.5	37.5	2,740	19.3
5/8	16	6,000	75.4	5,190	63.6	4,485	41.7	3,575	33.7	33.7	33.7	2,465	17.4
11/16		5,465	67.6	4,705	58.7	4,075	38.3	3,250	30.7	30.7	30.7	2,260	16.0
3/4	20	4,890	60.6	4,215	52.8	3,650	34.4	2,925	27.6	27.6	27.6	2,010	14.3
7/8	22	4,255	53.2	3,710	46.3	3,190	30.2	2,550	24.0	24.0	24.1	1,755	12.3
1	25	3,740	46.6	3,250	40.8	2,805	26.4	2,215	21.0	21.0	21.0	1,525	10.7

Typhoon Modified AlTiN Mold Mills

Mold Mills for Profile Milling

Hardness		Tensile Strength: Up to 750N/mm²	Up to 30HRC	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, Prehardened Steels, Ti Alloys (Solution Treated and Aged)	Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys	Hardened Steels	Hardened Steels
Depth of Cut							

D		Ad
D < 5/8		0.05D
5/8≤ D		0.03"

Dia. (in)	(mm)	550 SFM		550 SFM		450 SFM		360 SFM		270 SFM		230 SFM		200 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
1/8	3	14,400	40.8	14,400	34.8	12,720	28.8	10,200	19.2	7,680	14.4	6,528	10.5	5,683	9.4
3/16	5	11,520	43.2	11,520	34.8	9,600	28.8	7,680	21.6	5,760	16.8	4,896	12.3	4,262	10.9
1/4	6	9,120	43.2	9,120	34.8	7,680	28.8	6,120	22.8	4,560	16.8	3,876	12.3	3,374	10.9
5/16	8	7,680	43.2	7,680	36.0	6,360	28.8	5,040	24.0	3,840	18.0	3,264	13.1	2,842	11.7
3/8	10	5,760	32.4	5,760	27.6	4,800	22.8	3,840	18.0	2,880	13.2	2,448	9.6	2,131	8.6
7/16	11	4,560	25.2	4,560	21.6	3,840	18.0	3,000	14.4	2,280	10.8	1,938	7.9	1,687	7.0
1/2	12	4,200	24.0	4,200	19.2	3,480	16.8	2,760	13.2	2,040	9.6	1,734	7.0	1,510	6.2
9/16	14	3,840	21.6	3,840	18.0	3,120	15.6	2,520	12.0	1,920	9.6	1,632	7.0	1,421	6.2
5/8	16	2,880	16.8	2,880	13.2	2,400	10.8	1,920	9.6	1,440	7.2	1,224	5.3	1,066	4.7
3/4	20	2,280	13.2	2,280	10.8	1,920	9.6	1,560	7.2	1,140	6.0	969	4.4	844	3.9
1	25	1,800	10.8	1,800	8.4	1,560	7.2	1,200	6.0	912	4.8	775	3.5	675	3.1

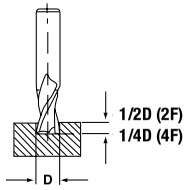
Multi-Flute 50° High Spiral Typhoon Modified AlTiN Carbide End Mills

Side Milling

Work Material	Mild Steel Carbon Steel Cast Iron	Alloy Steels Tool Steels	Hardened Steels Tool Steels	Hardened Steels Tool Steels	Titanium Alloy	Nickel Base High-Temp Alloy
Hardness	Up to 25HRC	25-45 HRC	45-55 HRC	55-60 HRC	30-40 HRC	25-45 HRC
Depth of Cut	Ad= 1.5D Rd= 0.1D		Ad= 1.5D Rd= 0.05D		Ad= 1.5D Rd= 0.05D	

Dia. (in)	(mm)	312-540 SFM		156-312 SFM		96-156 SFM		60-96 SFM		156-276 SFM		48-80 SFM	
		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
		RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min	RPM	in/min
1/8	3	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	4	8,640	70.8	4,800	19.2	2,640	9.6	1,800	4.8	3,840	36.0	1,260	2.4
3/16	5	6,840	61.2	3,840	19.2	2,160	10.8	1,560	4.8	3,000	36.0	984	3.6
1/4	6	6,360	122.4	3,,480	39.6	1,920	14.4	1,320	7.2	2,520	42.0	840	4.8
5/16	8	4,800	112.8	2,,640	39.6	1,440	14.4	996	7.2	1,920	42.0	624	4.8
3/8	10	3,840	99.6	2,,160	39.6	1,152	13.2	804	7.2	1,560	37.2	480	4.8
1/2	12	3,480	99.6	1,920	36.0	960	13.2	672	6.0	1,260	36.0	408	3.6
5/8	16	2,640	75.6	1,440	27.6	720	10.8	528	4.8	960	33.6	312	3.6
3/4	20	2,160	61.2	1,140	21.6	576	7.2	420	3.6	780	28.8	240	3.6
1	25	1,500	56.4	900	22.8	450	8.4	300	3.6	720	24.0	216	2.4
1/8	3	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	4	8,640	70.8	4,800	19.2	2,640	9.6	1,800	4.8	3,840	36.0	1,260	2.4
3/16	5	6,840	61.2	3,840	19.2	2,160	10.8	1,560	4.8	3,000	36.0	984	3.6
1/4	6	6,360	122.4	3,,480	39.6	1,920	14.4	1,320	7.2	2,520	42.0	840	4.8
5/16	8	4,800	112.8	2,,640	39.6	1,440	14.4	996	7.2	1,920	42.0	624	4.8
3/8	10	3,840	99.6	2,,160	39.6	1,152	13.2	804	7.2	1,560	37.2	480	4.8
1/2	12	3,480	99.6	1,920	36.0	960	13.2	672	6.0	1,260	36.0	408	3.6
5/8	16	2,640	75.6	1,440	27.6	720	10.8	528	4.8	960	33.6	312	3.6
3/4	20	2,160	61.2	1,140	21.6	576	7.2	420	3.6	780	28.8	240	3.6
1	25	1,500	56.4	900	22.8	450	8.4	300	3.6	720	24.0	216	2.4

Materials	1. Mild Steels (Up to 70 x 10^3 lb/in^2) 2. Brass 3. Bronze		1. Medium Tensile Steels (70 x 10^3 - 115 x 10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Hard Brass and Bronze 5. Copper		1. High Tensile Sheers (115 x 10^3 - 142 x 10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Sheets (142 x 10^3 - 200 x 10^3 lb/in^2) 2. Tool Steels 3. Medium Strength Stainless Steels 4. Medium Strength Titanium Alloys		1. Heat Resistant High Alloys 2. High Strength Stainless Steels 3. High Strength Titanium Alloys		1. Aluminum 2. Alloyed Aluminum 3. Plastic 4. Woods	
Hardness	Up to Bhn 145 Up to 0HRC		Bhn 145-237 0-22 HRC		Bhn 237-286 22-30 HRC		Bhn 286-390 30-42 HRC		Bhn 390-451 42-48 HRC			
Cutting Speeds	80~150 SFM		80~110 SFM		50~65 SFM		30~50 SFM		16~32 SFM		80~395 SFM	
Dia. of Mills	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)
1/8	4000	4.05	3000	2.70	1800	1.35	1250	0.079	800	0.34	10000	9.00
5/32	3150	4.50	2360	3.04	1400	1.46	1000	0.090	630	0.34	8000	10.24
3/16	2500	4.95	1900	3.38	1120	1.58	800	1.01	500	0.45	6300	10.80
1/4	2000	5.74	1500	3.83	900	1.80	630	1.13	400	0.56	5000	11.93
5/16	1600	6.41	1180	4.28	710	2.03	500	1.24	315	0.56	4000	13.73
3/8	1400	6.64	1060	4.50	630	2.14	450	1.35	280	0.56	3550	13.50
7/16	1120	6.75	850	4.61	500	2.25	355	1.35	224	0.56	2800	13.39
1/2	1000	6.75	750	4.28	450	2.14	315	1.35	200	0.68	2500	13.50
9/16	900	6.53	670	4.28	400	2.14	280	1.46	180	0.68	2240	12.71
5/8	800	6.08	600	4.05	355	2.14	250	1.46	160	0.68	2000	12.04
11/16	710	6.08	530	3.83	315	2.03	224	1.46	140	0.68	1800	12.15
3/4	710	6.08	530	3.83	315	2.03	224	1.46	140	0.68	1800	12.15
13/16	630	5.63	475	3.83	280	2.03	200	1.46	125	0.68	1600	11.48
7/8	560	5.29	425	3.04	250	1.80	180	1.35	112	0.68	1400	10.69
15/16	500	5.29	375	2.70	224	1.58	160	1.13	100	0.68	1250	10.13
1	500	5.29	375	2.70	224	1.58	160	1.13	100	0.68	1250	10.13
1-1/8	450	4.50	335	2.36	200	1.46	140	1.01	90	0.68	1120	9.56
1-1/4	400	4.28	300	2.14	180	1.35	125	0.90	80	0.56	1000	8.55
1-3/8	355	3.83	265	1.91	160	1.13	112	0.79	71	0.56	900	8.10
1-1/2	315	3.60	236	1.69	140	1.01	100	0.68	63	0.45	800	7.20
1-3/4	280	3.15	212	1.58	125	0.90	90	0.68	56	0.45	710	6.41
2	250	2.81	190	1.35	112	0.79	80	0.56	50	0.34	630	5.63

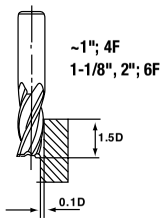


NOTES:

1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut, cutting fluid and other conditions
2) Use a holder of strong gripping force and machine of high stiffness
3) In case of deeper operation, slow down feed by 20~50%
4) The feed, in long types, should be reduced by around 50%

Call **1-800-265-8221** or visit www.**SowaTool**.com to order.

Materials	1. Mild Steels (Up to 70 x 10^3 lb/in^2) 2. Brass 3. Bronze		1. Medium Tensile Steels (70 x 10^3 - 115 x 10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Hard Brass and Bronze 5. Copper		1. High Tensile Sheers (115 x 10^3 - 142 x 10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Sheets (142 x 10^3 - 200 x 10^3 lb/in^2) 2. Tool Steels 3. Medium Strength Stainless Steels 4. Medium Strength Titanium Alloys		1. Heat Resistant High Alloys 2. High Strength Stainless Steels 3. High Strength Titanium Alloys		1. Aluminum 2. Alloyed Aluminum 3. Plastic 4. Woods	
Hardness	Up to Bhn 145 Up to 0HRC		Bhn 145-237 0-22 HRC		Bhn 237-286 22-30 HRC		Bhn 286-390 30-42 HRC		Bhn 390-451 42-48 HRC			
Cutting Speeds	130~135 SFM		105~125 SFM		65~80 SFM		30~50 SFM		16~32 SFM		325~590 SFM	
Dia. of Mills	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)
1/8	4500	9.11	3550	6.41	2240	3.26	1250	1.46	800	0.68	16000	28.80
5/32	3550	10.24	2800	7.20	1800	3.60	1000	1.69	630	0.79	12500	31.95
3/16	2800	11.14	2240	8.10	1400	4.05	800	1.91	500	0.90	10000	34.20
1/4	2240	12.94	1800	9.11	1120	4.50	630	2.14	400	1.01	8000	38.03
5/16	1800	14.51	1400	10.13	900	5.18	500	2.36	315	1.13	6300	43.09
3/8	1600	15.30	1250	10.58	800	5.51	450	2.59	280	1.24	5600	42.75
7/16	1250	15.06	1000	10.80	630	5.63	355	2.70	224	1.13	4500	42.98
1/2	1120	15.06	900	10.24	560	5.29	315	2.70	200	1.35	4000	43.20
9/16	1000	14.40	800	10.24	500	5.60	280	2.81	180	1.35	3550	40.28
5/8	900	13.73	710	9.56	450	5.60	250	2.81	160	1.24	3150	38.03
11/16	800	13.73	630	8.55	400	5.06	224	2.81	140	1.24	2800	37.80
3/4	800	13.73	630	8.55	400	5.06	224	2.81	140	1.24	2800	37.80
13/16	710	12.83	560	7.54	355	5.06	200	2.93	125	1.24	2500	36.00
7/8	630	12.04	500	6.75	315	4.50	180	2.59	112	1.24	2240	34.31
15/16	560	11.25	450	6.08	280	4.05	160	2.25	100	1.24	2000	32.40
1	560	11.25	450	6.08	280	4.05	160	2.25	100	1.24	2000	32.40
1-1/8	500	13.97	400	7.45	250	4.97	140	2.79	90	1.86	1800	42.54
1-1/4	450	13.35	355	6.68	224	4.50	125	2.48	80	1.55	1600	37.73
1-3/8	400	11.95	315	5.90	200	4.04	112	2.17	71	1.40	1400	34.78
1-1/2	355	11.18	280	5.28	180	3.57	100	2.02	63	1.24	1250	31.05
1-3/4	315	10.69	250	5.06	160	3.49	90	1.91	56	1.24	1120	30.26
2	280	9.56	224	4.50	140	3.04	80	1.69	50	1.13	1000	27.00



NOTES:

1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut, cutting fluid and other conditions
2) Use a holder of strong gripping force and machine of high stiffness
3) For 2-fl end mill slow down to 1/2 of feed speed
4) For finish cut put rpm, up to 1.5 to 1.3 times faster
5) The feed, in long types should be reduced by around 50%

4-Flute Ball Nose

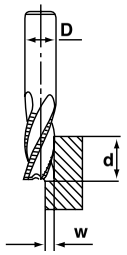
- Increase Feeds 40% to 50% for 4-Flute Ball Nose

End Mill Cutting Diameter & Shank Tolerances

Type	No. of Flute	Series	Shank Type	Size	Cutting Edge Tolerance	Shank Dia. Tolerance
Slot Drill & Ball Nose	2-Flute	Short	Plain / Flatted	< 12mm & 1/2"	-0.025mm	+0.000mm -0.025mm
				> 12mm & 1/2"	h9	
		Long		< 32mm		
End Mill & Ball Nose	4-Flute	Short		< 12mm & 1/2"	-0.025mm	
				> 12mm & 1/2"	k9	
		Long		< 32mm		
Slot Drill & Ball Nose	2-Flute	Short	Threaded	< 12mm & 1/2"	-0.025mm	+0.000mm -0.025mm
				> 12mm & 1/2"	h9	
		Long		< 1.1/2"		
Unimill	3-Flute	Short		< 12mm & 1/2"		
				> 12mm & 1/2"		
		Long		< 1.1/2"		
End Mill & Ball Nose	4-Flute	Short		< 12mm & 1/2"	+0.025mm	
				> 12mm & 1/2"	k9	
		Long		< 1.1/2"		
End Mill & Ball Nose	4-Flute	Short	Plain / Flatted	All	js10	+0.000mm -0.010mm
		Long				
		Short	Threaded			+0.000mm -0.025mm
		Long				

Roughing HSCO

Materials	1. Mild Steels (Up to 115 x 10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Hard Brass and Bronze 5. Copper		1. High Tensile Sheers (115 x 10^3 - 145 x 10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Sheets (145 x 10^3 - 200 x 10^3 lb/in^2) 2. Tool Steels 3. Medium Strength Titanium Alloys		1. Heat Resistant High Alloys 2. High Strength Stainless Steels 3. High Strength Titanium Alloys 4. Woods		1. Aluminum 2. Alloyed Aluminum 3. Plastic Materials	
Hardness	Up to Bhn 237 Up to 22HRC		Bhn 237-286 22-30 HRC		Bhn 286-390 30-42 HRC		Bhn 390-451 42-48 HRC			
Cutting Speeds	80~100 SFM		60~75 SFM		40~55 SFM		26~40 SFM		195~330 SFM	
Dia. of Mills	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)	rpm	Feed (in/min)
1/4	1320	2.36	1000	1.46	750	0.90	500	0.63	4000	10.01
5/16	1060	2.70	800	1.69	600	1.01	400	0.75	3150	11.14
3/8	950	2.81	710	1.80	530	0.90	355	0.75	2800	11.70
1/2	670	3.38	500	2.14	375	1.35	250	0.79	2000	14.18
5/8	600	4.28	400	2.36	300	1.46	200	0.90	1600	15.86
3/4	475	4.05	355	2.48	265	1.58	180	0.90	1400	16.65
7/8	375	4.05	280	2.48	212	1.58	140	0.90	1120	16.88
1	335	3.71	250	2.36	190	1.46	125	0.90	1000	15.98
1-1/8	300	3.60	224	2.25	170	1.46	112	0.79	900	15.19
1-1/4	256	4.16	200	2.70	150	1.69	100	1.01	800	17.89
1-1/2	212	3.71	160	2.36	118	1.46	80	0.90	630	15.86
1-3/4	190	3.60	140	2.25	106	1.35	71	0.90	560	14.8
2	170	3.15	125	2.02	95	1.24	63	0.79	500	13.28



1/4" up to 1-1/8"
d=1.5 x D
W=0.5 x D
1-1/4" up to 2"
d=1 x D
W=0.5 x D

NOTES:

1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut, cutting fluid and other conditions
2) Use a holder of strong gripping force and machine of high stiffness
3) For TiN-Coated End Mills put cutting speed, feed up to 1.5~1.8 times faster
4) The feed, in long types, should be reduced by around 50%

Call **1-800-265-8221** or visit www.**SowaTool**.com to order.

Drilling & Holemaking

Drilling & Holemaking

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Jobber Length Straight Shank Twist Drill Sets

STM PREMIUM

1/16 to 1/2 by 64th
Folding Metal Case Included
29 Piece Set

Number Sizes 1 through 60
Folding Metal Case Included
60 Piece Set

A to Z Inclusive
Folding Metal Case Included
26 Piece Set

1/16 to 1/2 by 64th Inclusive
1 to 60 Inclusive
A to Z Inclusive
115 Piece Set

Quality Import

No. pcs.	HSS	Price $	Cobalt	Price $	TiN Coated	Price $	HSS	Price $	TiN Coated	Price $
29 - 1/16-1/2	118119	**145.10**	118121	**254.07**	118122	**311.09**	-	-	105370	**127.88**
60 - #1-60	118124	**118.29**	-	-	-	-	-	-	-	-
20 - #61-80	-	-	-	-	-	-	105830	**32.56**	-	-
26 - A-Z	118125	**148.62**	-	-	-	-	-	-	-	-
115 - 3 in 1	118123	**417.86**	-	-	-	-	-	-	-	-

ASIMETO

For when you need accuracy, choose Asimeto.

High-precision measuring instruments, competitively priced!

See Chapter F

Jobber Length Drill Sets

* Sizes under 1/16 - NOT split

Description	Pieces Set	Empty Case No.	Price $	Set Code No.	Price $
High Speed Steel - General Purpose					
Fractional 1/16 - 1/2 by 64ths	29	105374	**14.33**	118119	**145.10**
Fractional 1/16 - 1/4 by 64ths	13	105349	**7.72**	113847	**43.97**
Fractional 1/16 - 3/8 by 64ths	21	113800	**14.33**	113848	**103.60**
Fractional 1/16 - 1/2 by 32nds	15	113801	**14.33**	113849	**114.91**
Letter A-Z	26	105989	**16.54**	118125	**148.62**
Wire Gauge 1 - 60	60	105824	**14.33**	118124	**118.29**
Wire Gauge 61 - 80	20	113802	**8.27**	113850	**77.31**
Metric 1.0mm - 6.0mm by 0.5mm	11	113803	**8.82**	113851	**54.91**
Metric 1.0mm - 10.00mm by 0.5mm	19	113804	**13.78**	113852	**138.70**
Metric 1.0mm - 13.0mm by 0.5mm	25	113805	**18.74**	113853	**274.93**
Titanium Coated, High Speed Steel					
Fractional 1/16 - 1/2 by 64ths	29	-	**-**	118122	**311.09**
Fractional 1 /16 - 1 /4 by 64ths	13	105349	**7.72**	113854	**88.25**
Fractional 1/16 - 1/2 by 32nds	15	-	**-**	113855	**291.66**
Letter A - Z	26	-	**-**	113856	**507.22**
Wire Gauge 1 - 60	60	-	**-**	113857	**458.24**
Cobalt, 135° Split Point					
Fractional 1/16 - 1/2 by 64ths	29	-	**-**	118121	**254.07**
Fractional 1/16 - 1/2 by 32nds	15	-	**-**	113858	**235.97**
Fractional 1/16 - 3/8 by 64ths	21	-	**-**	113859	**202.64**
Fractional 1/16 - 1/4 by 64ths	13	105349	**7.72**	113860	**78.04**
Letter A - Z	26	-	**-**	113861	**419.64**
*Wire Gauge 1 - 60	60	-	**-**	113862	**309.70**
*Wire Gauge 61 - 80	20	-	**-**	113863	**124.48**
Combination Sets, General Purpose					
1/16 - 1/2 by 64ths, A - Z, 1 - 60	115	105994	**52.92**	118123	**417.86**
1/16 - 1/2 by 64ths, A - Z, 1 - 80	135	-	**-**	113864	**753.72**
1/16-1/2 by 64ths, 1-80,1-13mm by 0.5mm	134	-	**-**	113865	**704.92**
Combination Set, Titanium Coated					
1/16 - 1/2 by 64ths, A - Z, 1 - 60	115	-	**-**	113866	**1,510.10**
Combination Set, Cobalt					
135° Sp. Pt. 1/16 - 1/2 by 64ths, A - Z, 1 - 60	115	-	**-**	113867	**1,164.15**
Split Point, High Speed Steel					
118° Split Point 1/16 - 1/2 by 64ths	29	-	**-**	113868	**265.84**
135° Split Point 1/16 - 1/2 by 64ths	29	-	**-**	113869	**265.84**
Left Hand, High Speed Steel					
Fractional 1/16 - 1/2 by 64ths	29	-	**-**	113870	**459.05**
Letter A - Z	26	-	**-**	113871	**702.42**
Wire Gauge 1 - 60	60	-	**-**	113872	**494.92**
Fast Spiral, High Speed Steel					
Fractional 1/16 - 1/2 by 64ths	29	-	**-**	113873	**281.56**
Parabolic Flute, High Speed Steel					
Fractional 1/16 - 1/2 by 64ths	29	-	**-**	113875	**370.14**
Carbide Tip, High Speed Steel					
Fractional 1/8 - 1/2 by 64ths	25	-	**-**	113876	**1,456.91**
Carbide					
Fractional 1/16 - 1/2 by 32nds	15	-	**-**	113877	**1,678.15**
Fractional 1/8 - 1/4 by 64ths	9	-	**-**	113878	**473.01**

Screw Machine Length Drill Sets

Description	Pieces per Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel, 135° Split Point						
Fractional 1/16 - 1/2 by 64ths	29	607F	113807	**22.05**	113879	**241.68**
Fractional 1/16 - 1/4 by 64ths	13	607G	113808	**12.13**	113880	**58.74**
Letter A-Z	26	607L	113809	**22.05**	113881	**279.43**
*Wire Gauge 1-60	60	607W	113810	**22.05**	113882	**223.08**
*Comb. 1/16-1/2 by 64ths, A-Z, 1-60	115	607X	113811	**66.14**	113883	**745.18**
High Speed Steel, 118° Standard Point						
Fractional 1/2 - 1" by 64ths'"	33	607H	-	**-**	113884	**3,074.22**
Cobalt, 135° Split Point						
Fractional 1/16 - 1/2 by 64ths	29	607CF	113807	**22.05**	113885	**544.42**
Letter A - Z	26	607CL	113809	**22.05**	113886	**519.59**
*Wire Gauge 1-60	60	607CW	113810	**22.05**	113887	**439.08**

Taper Length/Taper Shank Drill Sets

Description	Pieces per Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel						
Fractional 1/16 - 1/2 by 64ths	29	407A	113812	**33.07**	113888	**408.70**
Fractional 33/64 - 3/4 by 64ths	16	4078	113813	**121.26**	113889	**886.27**
Fractional 49/64 - 1" by 64ths	16	407C	113814	**143.31**	113890	**1,584.97**
Letter A-Z	26	407L	113815	**33.07**	113891	**586.48**
Wire Gauge 1-60	60	407W	113816	**54.02**	113892	**748.38**
Cobalt, 135° Split Point						
Fractional 1/16 - 1/2 by 64ths	29	407CF	113807	**22.05**	113893	**1,138.78**
Taper Shank, High Speed Steel						
Fractional 33/64 - 3/4 by 64ths	16	200A	113813	**121.26**	113894	**923.21**
Fractional 49/64 - 1" by 64ths	16	200B	113814	**143.31**	113895	**1,626.92**

Aircraft Extension Drill Sets

Description	Pieces per Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel						
Frac. - 6" OAL 1 /16-3/8 x 64ths	21	906SF	113908	**11.34**	113896	**270.15**
Frac. - 12" OAL 1 /16-1/2 x 64ths	29	912SF	113908	**11.34**	113897	**772.95**
Letter - 12" OAL A-Z	26	912SL	113909	**11.34**	113898	**1,126.99**
Wire Gauge - 6" OAL 1-60	60	906SW	113910	**11.34**	113899	**412.71**
Wire Gauge - 12" OAL 1-60	60	912SW	113910	**11.34**	113900	**1,055.98**

Extra Length Drill Sets

Description	Pieces per Set	Set No.	Empty Case No.	Price $	Code No.	Price $
Straight Shank, High Speed Steel						
8" Overall 1/8 - 3/8 by 64ths	17	208ES	113908	**11.34**	113901	**475.21**
10" Overall 3/16 - 1/2 by 64ths	21	210ES	113908	**11.34**	113902	**1,060.26**
12" Overall 1/8 - 1/2 by 64ths	25	212ES	113908	**11.34**	113903	**1,104.30**
18" Overall 3/16 - 1/2 by 32nds	11	218ES	113908	**11.34**	113904	**741.16**

Reduced Shank Drill Sets

Description	Pieces per Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel						
1/4" shank 1/16 - 1/2 by 64ths	29	304A	113911	**19.15**	113913	**307.49**
1/4" shank 1/4 - 1/2 by 16ths drill, 1/4- 1/2 by 1/16ths CT masonry	10	304B	-	**-**	113914	**121.69**
3/8" shank 1/16 - 1/2 by 64ths	29	308A	-	**-**	113915	**333.42**
3/8" shank 3/8 - 5/8 by 32nds	8	308D	-	**-**	113916	**241.12**
1/2" shank 9/16 - 1" by 16ths	8	303SA	113912	**55.32**	113917	**451.20**
1/2" shank 1-1/16 - 1-1/2 by 16ths	8	303SB	-	**-**	113918	**1,180.87**
1/2" shk. 9/16-1" x 16ths, 1-1/8, 1-1/4	10	303SC	-	**-**	113919	**624.67**
1/2" shk. 17/32 - 3/4 by 32nds, 13/16 - 1" by 16ths, 31 /32	13	303SD	-	**-**	113920	**624.52**
1/2" shank 33/64 - 1 " by 64ths	32	303SE	-	**-**	113921	**1,585.82**
3/4" shank 1" - 1-1/2 by 8ths	5	306A	-	**-**	113922	**1,139.44**
3/4" shank 1"-2" by 4ths	5	306B	-	**-**	113923	**2,004.46**
Cobalt						
1/2" shank 9/16- 1" by 16ths	8	303CA	113912	**55.32**	113924	**957.83**
1/2" shank 9/16-1"x 16ths, 1-1/8,1-1/4	10	303CS	-	**-**	113925	**1,502.62**
1/2" shank 1-1/16-1-1/2 by 16ths	8	303CB	-	**-**	113926	**1,516.48**
1/2" shank 17/32 -3/4 by 32nds, 13/16- 1" by 16ths, 31/32	13	303CD	-	**-**	113927	**1,409.88**
1 /2" shank 33/64 - 1" by 64ths	32	303CE	-	**-**	113928	**3,579.01**
3/4" shank 1"- 1-1/2 by 8ths	5	306D	-	**-**	113929	**2,196.57**
3/4" shank 1"-2" by 4ths	5	306E	-	**-**	113930	**3,374.35**

Drill Stands

Description	Pieces per Set	Code No.	Price $
Standard Shanks			
Fractional 1/16 - 1/2 by 64ths	29	113908	**11.34**
Letter A-Z	26	113909	**11.34**
Wire Gauge 1-60	60	113910	**11.34**

Drill Dispenser Cabinets

Description	Case No.	Code No.	Price $
Steel Cabinet holds 1/16-1/2 x 64ths Jobber Drills	13000	113826	**95.91**
Steel Cabinet holds #1-60 Jobber Drills	13025	113827	**121.26**

Chatterfree HSS Countersink Sets

HSS

Description	Set Contents	Set Code No.	Price $
82°	0, 1, 2, 3, 4	121035	**177.62**
90°	0, 1, 2, 3, 4	121033	**177.62**

3-Flute Countersink Sets HSS

HSS

Description	82° HSS Code No.	Price $	90° HSS Code No.	Price $
5 piece - 1/4, 3/8, 1/2, 3/4, 1	121048	**299.42**	121060	**310.15**

5pc 3-Flute Countersink Sets

- M35 Cobalt
- Wide flutes provide good chip evacuation
- Positive cut
- Constant profile aids regrinding of the tool
- Self-centering of the cutting mill (three bearing points)
- Virtually eliminates vibration

121865 121870

Description	Code No.	Price $
Includes 6.3mm, 10.4mm, 16.5mm, 20.5mm, 25.0mm		
82° HSCO	121860	**235.13**
90° HSS	121865	**290.51**
TiN Coated 10.4mm, 16.5mm, 20.5mm, 25mm, 31mm		
82° HSCO TiN	121870	**520.39**

3-Flute Countersink Sets HSS

HSS

Set Size (in.)	60° Code No.	Price $	82° Code No.	Price $	90° Code No.	Price $	100° Code No.	Price $
5 piece								
1/4, 3/8, 1/2, 3/4, 1	120865	**191.26**	120854	**191.26**	120856	**191.26**	-	**-**
6 piece								
1/4, 3/8, 1/2, 5/8, 3/4, 1	120866	**228.25**	120868	**228.25**	120870	**228.25**	120872	**167.17**

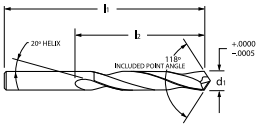
6-Flute HSS Machine Countersink Sets

HSS

Set Size (in.)	60° Code No.	Price $	82° Code No.	Price $	90° Code No.	Price $
5 piece						
1/4, 3/8, 1/2, 3/4, 1	-	**-**	120877	**231.33**	120881	**231.33**
8 piece						
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1	120874	**374.76**	120878	**374.76**	120882	**374.76**
10 piece						
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4, 1-1/2	120875	**512.56**	120879	**512.56**	120883	**700.20**
11 piece						
3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4, 1-1/2	120876	**526.18**	120880	**526.18**	120884	**526.18**

Carbide Jobber Drills

- Aluminum
- Low & Med Carbon Steel
- Glass, Plastics, Composite Materials
- Titanium Alloy
- Copper
- Cast Iron
- High Carbon Steel



STM PREMIUM

Speeds & Feeds ➤ P. B63

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
Inch					
56	0.0465	3/4	1-1/2	171063	**9.11**
3/64	0.0469	3/4	1-1/2	170600	**9.61**
55	0.0520	3/4	1-1/2	171064	**10.63**
54	0.0550	3/4	1-1/2	171065	**10.63**
53	0.0595	3/4	1-1/2	171066	**10.63**
1/16	0.0625	3/4	1-1/2	170602	**8.90**
52	0.0635	3/4	1-1/2	171067	**10.29**
51	0.0670	3/4	1-1/2	171068	**10.29**
50	0.0700	7/8	1-3/4	171069	**10.63**
49	0.0730	7/8	1-3/4	171070	**10.63**
48	0.0760	7/8	1-3/4	171071	**10.96**
5/64	0.0781	7/8	1-3/4	170604	**10.96**
47	0.0785	7/8	1-3/4	171072	**10.96**
46	0.0810	7/8	1-3/4	171073	**11.08**
45	0.0820	7/8	1-3/4	171074	**11.08**
44	0.0860	1	2	171075	**11.53**
43	0.0890	1	2	171076	**11.87**
42	0.0935	1	2	171077	**11.98**
3/32	0.0938	1	2	170606	**11.98**
41	0.0960	1	2	171078	**12.31**
40	0.0980	1	2	171079	**12.44**
39	0.0995	1-1/4	2-1/4	171080	**12.78**
38	0.1015	1-1/4	2-1/4	171081	**12.78**
37	0.1040	1-1/4	2-1/4	171082	**13.00**
36	0.1065	1-1/4	2-1/4	171083	**13.56**
7/64	0.1094	1-1/4	2-1/4	170608	**13.56**
35	0.1100	1-1/4	2-1/4	171084	**13.56**
34	0.1110	1-1/4	2-1/4	171085	**13.56**
33	0.1130	1-1/4	2-1/4	171086	**14.01**
32	0.1160	1-1/4	2-1/4	171087	**14.24**
31	0.1200	1-1/4	2-1/4	171088	**14.13**
1/8	0.1250	1-1/4	2-1/4	170610	**14.47**
30	0.1285	1-1/4	2-1/4	171089	**15.14**
29	0.1360	1-3/8	2-1/2	171090	**16.06**
28	0.1405	1-3/8	2-1/2	171091	**16.06**
9/64	0.1406	1-3/8	2-1/2	170612	**16.06**
27	0.1440	1-3/8	2-1/2	171092	**16.50**
26	0.1470	1-3/8	2-1/2	171093	**16.84**
25	0.1495	1-3/8	2-1/2	171094	**16.84**
24	0.1520	1-3/8	2-1/2	171096	**17.41**
23	0.1540	1-3/8	2-1/2	171097	**17.97**
5/32	0.1562	1-3/8	2-1/2	170614	**17.97**
22	0.1570	1-3/8	2-1/2	171098	**17.97**
21	0.1590	1-3/8	2-1/2	171099	**18.76**
20	0.1610	1-3/8	2-1/2	171100	**18.76**
19	0.1660	1-5/8	2-3/4	171101	**19.44**
18	0.1695	1-5/8	2-3/4	171102	**19.90**
11/64	0.1719	1-5/8	2-3/4	170616	**21.25**
17	0.1730	1-5/8	2-3/4	171103	**21.25**
16	0.1770	1-5/8	2-3/4	171104	**22.15**
15	0.1800	1-5/8	2-3/4	171105	**22.15**
14	0.1820	1-5/8	2-3/4	171106	**22.61**
13	0.1850	1-5/8	2-3/4	171107	**23.06**
3/16	0.1875	1-5/8	2-3/4	170618	**21.82**
12	0.1890	1-5/8	2-3/4	171108	**23.62**
11	0.1910	1-5/8	2-3/4	171109	**23.62**
10	0.1935	1-5/8	2-3/4	171110	**23.85**
9	0.1960	1-3/4	3	171111	**24.19**
8	0.1991	1-3/4	3	171112	**24.52**
7	0.2010	1-3/4	3	171113	**24.75**
13/64	0.2031	1-3/4	3	170620	**25.10**
6	0.2040	1-3/4	3	171114	**25.43**
5	0.2055	1-3/4	3	171115	**25.43**
4	0.2090	1-3/4	3	171116	**26.00**
3	0.2130	1-3/4	3	171117	**26.56**
7/32	0.2188	1-3/4	3	170622	**27.80**
2	0.2210	1-3/4	3	171118	**27.80**
1	0.2280	1-3/4	3	171119	**28.82**
A	0.2340	2	3-1/4	171120	**31.75**
15/64	0.2344	2	3-1/4	170624	**31.53**
B	0.2380	2	3-1/4	171121	**33.12**
C	0.2420	2	3-1/4	171122	**33.34**
D	0.2460	2	3-1/4	171123	**33.80**
1/4	0.2500	2	3-1/4	170626	**33.12**
E	0.2500	2	3-1/4	171124	**33.12**
F	0.2570	2	3-1/4	171125	**36.73**
G	0.2610	2-1/8	3-1/2	171126	**39.00**
17/64	0.2656	2-1/8	3-1/2	170628	**37.41**
H	0.2660	2-1/8	3-1/2	171127	**39.78**
I	0.2720	2-1/8	3-1/2	171128	**40.58**
J	0.2770	2-1/8	3-1/2	171129	**41.59**
K	0.2810	2-1/8	3-1/2	171130	**42.05**
9/32	0.2812	2-1/8	3-1/2	170630	**38.88**
L	0.2900	2-1/8	3-1/2	171131	**44.42**
M	0.2950	2-1/8	3-1/2	171132	**45.21**
19/64	0.2969	2-1/8	3-1/2	170632	**43.73**
N	0.3020	2-1/8	3-1/2	171133	**48.14**
5/16	0.3125	2-1/8	3-1/2	170634	**45.88**
O	0.3160	2-1/8	3-1/2	171134	**50.74**
P	0.3230	2-1/8	3-1/2	171135	**52.44**
21/64	0.3281	2-1/2	4	170636	**50.07**
Q	0.3320	2-1/2	4	171136	**54.59**
R	0.3390	2-1/2	4	171137	**56.96**
11/32	0.3438	2-1/2	4	170638	**54.69**
S	0.3480	2-1/2	4	171138	**60.69**
T	0.3580	2-1/2	4	171139	**62.72**
23/64	0.3594	2-1/2	4	170640	**61.27**
U	0.3680	2-3/4	4-1/4	171140	**65.78**
3/8	0.3750	2-3/4	4-1/4	170642	**64.88**
V	0.3770	2-3/4	4-1/4	171141	**72.90**
W	0.3860	2-7/8	4-1/2	171142	**78.44**
25/64	0.3906	2-7/8	4-1/2	170644	**75.84**
X	0.3970	2-7/8	4-1/2	171143	**85.66**
Y	0.4040	2-7/8	4-1/2	171144	**88.61**
13/32	0.4062	2-7/8	4-1/2	170646	**83.19**
Z	0.4130	2-7/8	4-1/2	171145	**92.45**
27/64	0.4219	2-7/8	4-1/2	170648	**90.53**
7/16	0.4375	2-7/8	4-1/2	170650	**94.71**
29/64	0.4531	3	4-3/4	170652	**109.64**
15/32	0.4688	3	4-3/4	170654	**104.88**
31/64	0.4844	3	4-3/4	170656	**117.54**
1/2	0.5000	3	4-3/4	170658	**117.54**
Metric					
1.5	0.0591	19	38	171146	**10.86**
2.0	0.0787	22	44	171147	**11.53**
2.5	0.0984	25	51	171148	**12.89**
3.0	0.1181	32	57	171149	**14.58**
3.5	0.1378	35	64	171150	**17.18**
4.0	0.1575	35	64	171151	**19.33**
4.5	0.1772	41	70	171152	**22.84**
5.0	0.1968	44	76	171153	**24.87**
5.5	0.2165	44	76	171154	**28.26**
6.0	0.2362	51	83	171155	**31.88**
6.5	0.2559	51	83	171156	**35.60**
7.0	0.2756	54	89	171157	**41.59**
7.5	0.2953	60	92	171158	**45.66**
8.0	0.3150	60	92	171159	**51.66**
8.5	0.3346	64	102	171160	**56.51**
9.0	0.3543	64	102	171161	**65.45**
9.5	0.3740	70	108	171162	**73.68**
10.0	0.3937	73	114	171163	**86.01**
10.5	0.4134	73	114	171164	**92.45**
11.0	0.4331	73	114	171165	**106.58**
11.5	0.4528	76	121	171166	**115.85**
12.0	0.4724	76	121	171167	**119.81**

Premium HSS Jobber Length Drills

These Premium HSS drills can be used in a variety of applications. Their surface treatment increases abrasion resistance, which reduces the amount of chip welding and improves chip flow.

PREMIUM HSS | 30° | 135° SPLIT POINT | JOBBERS LENGTH

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	0.0400	11/16	1-5/8	128189	**2.06**
59	0.0410	11/16	1-5/8	128188	**2.06**
58	0.0420	11/16	1-5/8	128187	**2.06**
57	0.0430	3/4	1-3/4	128186	**2.06**
56	0.0465	3/4	1-3/4	128185	**2.06**
55	0.0520	7/8	1-7/8	128184	**2.06**
54	0.0540	7/8	1-7/8	128183	**2.06**
53	0.0595	7/8	1-7/8	128182	**2.06**
1/16	0.0625	7/8	1-7/8	128001	**1.88**
52	0.0635	7/8	1-7/8	128181	**2.06**
51	0.0670	1	2	128180	**2.06**
50	0.0700	1	2	128179	**1.93**
49	0.0730	1	2	128178	**1.93**
48	0.0760	1	2	128177	**1.93**
5/64	0.0781	1	2	128002	**1.88**
47	0.0785	1	2	128176	**1.93**
46	0.0810	1-1/8	2-1/8	128175	**1.93**
45	0.0820	1-1/8	2-1/8	128174	**1.93**
44	0.0860	1-1/8	2-1/8	128173	**1.93**
43	0.0890	1-1/4	2-1/4	128172	**1.93**
42	0.0935	1-1/4	2-1/4	128171	**1.93**
3/32	0.0938	1-1/4	2-1/4	128003	**1.88**
41	0.0960	1-3/8	2-3/8	128170	**1.93**
40	0.0980	1-3/8	2-3/8	128169	**1.93**
39	0.0995	1-3/8	2-3/8	128168	**1.93**
38	0.1015	1-7/16	2-1/2	128167	**1.93**
37	0.1040	1-7/16	2-1/2	128166	**1.93**
36	0.1065	1-7/16	2-1/2	128165	**1.93**
7/64	0.1094	1-1/2	2-5/8	128004	**2.05**
35	0.1100	1-1/2	2-5/8	128164	**1.93**
34	0.1110	1-1/2	2-5/8	128163	**1.93**
33	0.1130	1-1/2	2-5/8	128162	**1.93**
32	0.1160	1-5/8	2-3/4	128161	**1.93**
31	0.1200	1-5/8	2-3/4	128160	**1.93**
1/8	0.1250	1-5/8	2-3/4	128005	**2.05**
30	0.1285	1-5/8	2-3/4	128159	**1.93**
29	0.1360	1-3/4	2-7/8	128158	**1.93**
28	0.1405	1-3/4	2-7/8	128157	**1.93**
9/64	0.1406	1-3/4	2-7/8	128006	**2.06**
27	0.1440	1-7/8	3	128156	**2.25**
26	0.1470	1-7/8	3	128155	**2.25**
25	0.1495	1-7/8	3	128154	**2.25**
24	0.1520	2	3-1/8	128153	**2.25**
23	0.1540	2	3-1/8	128152	**2.25**
5/32	0.1562	2	3-1/8	128007	**2.06**
22	0.1570	2	3-1/8	128151	**2.25**
21	0.1590	2-1/8	3-1/4	128150	**2.25**
20	0.1610	2-1/8	3-1/4	128149	**2.40**
19	0.1660	2-1/8	3-1/4	128148	**2.31**
18	0.1695	2-1/8	3-1/4	128147	**2.31**
11/64	0.1719	2-1/8	3-1/4	128008	**2.25**
17	0.1730	2-3/16	3-3/8	128146	**2.79**
16	0.1770	2-3/16	3-3/8	128145	**2.79**
15	0.1800	2-3/16	3-3/8	128144	**2.79**
14	0.1820	2-3/16	3-3/8	128143	**2.79**
13	0.1850	2-5/16	3-1/2	128142	**2.79**
3/16	0.1875	2-5/16	3-1/2	128009	**2.51**
12	0.1890	2-5/16	3-1/2	128141	**2.79**
11	0.1910	2-5/16	3-1/2	128140	**2.79**
10	0.1935	2-7/16	3-5/8	128139	**3.02**
9	0.1960	2-7/16	3-5/8	128138	**3.02**
8	0.1991	2-7/16	3-5/8	128137	**3.02**
7	0.2010	2-7/16	3-5/8	128136	**3.02**
13/64	0.2031	2-7/16	3-5/8	128010	**2.79**

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
6	0.2040	2-1/2	3-3/4	128135	**3.38**
5	0.2055	2-1/2	3-3/4	128134	**3.38**
4	0.2090	2-1/2	3-3/4	128133	**3.38**
3	0.2130	2-1/2	3-3/4	128132	**3.38**
7/32	0.2188	2-1/2	3-3/4	128011	**3.15**
2	0.2210	2-5/8	3-7/8	128131	**3.64**
1	0.2280	2-5/8	3-7/8	128130	**3.64**
A	0.2340	2-5/8	3-7/8	128250	**3.52**
15/64	0.2344	2-5/8	3-7/8	128012	**3.39**
B	0.2380	2-3/4	4	128251	**3.77**
C	0.2420	2-3/4	4	128252	**3.77**
D	0.2460	2-3/4	4	128253	**3.75**
1/4	0.2500	2-3/4	4	128013	**3.52**
E	0.2500	2-3/4	4	128254	**3.75**
F	0.2570	2-7/8	4-1/8	128255	**5.65**
G	0.2610	2-7/8	4-1/8	128256	**5.31**
17/64	0.2656	2-7/8	4-1/8	128014	**4.65**
H	0.2660	2-7/8	4-1/8	128257	**5.32**
I	0.2720	2-7/8	4-1/8	128258	**5.65**
J	0.2770	2-7/8	4-1/8	128259	**5.55**
K	0.2810	2-15/16	4-1/4	128260	**5.69**
9/32	0.2812	2-15/16	4-1/4	128015	**4.65**
L	0.2900	2-15/16	4-1/4	128261	**6.03**
M	0.2950	3-1/16	4-3/8	128262	**6.17**
19/64	0.2969	3-1/16	4-3/8	128016	**5.31**
N	0.3020	3-1/16	4-3/8	128263	**6.43**
5/16	0.3125	3-3/16	4-1/2	128017	**5.55**
O	0.3160	3-3/16	4-1/2	128264	**7.03**
P	0.3230	3-5/16	4-5/8	128265	**7.39**
21/64	0.3281	3-5/16	4-5/8	128018	**6.16**
Q	0.3320	3-7/16	4-3/4	128266	**7.74**
R	0.3390	3-7/16	4-3/4	128267	**8.28**
11/32	0.3438	3-7/16	4-3/4	128019	**6.78**
S	0.3480	3-1/2	4-7/8	128268	**8.46**
T	0.3580	3-1/2	4-7/8	128269	**8.70**
23/64	0.3594	3-1/2	4-7/8	128020	**7.49**
U	0.3680	3-5/8	5	128270	**9.55**
3/8	0.3750	3-5/8	5	128021	**7.74**
V	0.3770	3-5/8	5	128271	**9.78**
W	0.3860	3-3/4	5-1/8	128272	**10.50**
25/64	0.3906	3-3/4	5-1/8	128022	**9.42**
X	0.3970	3-3/4	5-1/8	128273	**11.01**
Y	0.4040	3-7/8	5-1/4	128274	**11.60**
13/32	0.4062	3-7/8	5-1/4	128023	**9.20**
Z	0.4130	3-7/8	5-1/4	128275	**12.18**
27/64	0.4219	3-15/16	5-3/8	128024	**10.80**
7/16	0.4375	4-1/16	5-1/2	128025	**10.51**
29/64	0.4531	4-3/16	5-5/8	128026	**12.21**
15/32	0.4688	4-5/16	5-3/4	128027	**13.18**
31/64	0.4844	4-3/8	5-7/8	128028	**13.42**
1/2	0.5000	4-1/2	6	128029	**13.28**

General Purpose HSS & Cobalt Jobber Drills — Fractional

- General Purpose

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	General Purpose 118° Code No.	Price $	HD Split Point 135° Code No.	Price $	General Purpose TiN Coated 118° Code No.	Price $	General Purpose Cobalt 135° Code No.	Price $
1/64	0.0156	3/16	3/4	117995	**4.20**	-	**-**	-	**-**	117985	**5.08**
1/32	0.0312	1/2	1-3/8	117996	**2.36**	-	**-**	-	**-**	117986	**4.38**
3/64	0.0469	3/4	1-3/4	117997	**2.03**	-	**-**	-	**-**	117987	**3.50**
1/16	0.0625	7/8	1-7/8	118001	**1.58**	118030	**1.93**	118090	**4.60**	118060	**2.34**
5/64	0.0781	1	2	118002	**1.58**	118031	**1.93**	118091	**4.74**	118061	**2.34**
3/32	0.0938	1-1/4	2-1/4	118003	**1.70**	118032	**1.93**	118092	**4.33**	118062	**2.34**
7/64	0.1094	1-1/2	2-5/8	118004	**1.70**	118033	**2.11**	118093	**4.46**	118063	**2.59**
1/8	0.1250	1-5/8	2-3/4	118005	**1.63**	118034	**2.11**	118094	**4.74**	118064	**2.93**
9/64	0.1406	1-3/4	2-7/8	118006	**1.77**	118035	**2.11**	118095	**4.68**	118065	**3.16**
5/32	0.1562	2	3-1/8	118007	**1.99**	118036	**2.11**	118096	**5.34**	118066	**3.16**
11/64	0.1719	2-1/8	3-1/4	118008	**2.11**	118037	**2.31**	118097	**5.45**	118067	**3.39**
3/16	0.1875	2-5/16	3-1/2	118009	**2.31**	118038	**2.67**	118098	**5.71**	118068	**4.10**
13/64	0.2031	2-7/16	3-5/8	118010	**2.67**	118039	**2.82**	118099	**8.29**	118069	**4.97**
7/32	0.2188	2-1/2	3-3/4	118011	**2.80**	118040	**3.16**	118100	**8.65**	118070	**5.01**
15/64	0.2344	2-5/8	3-7/8	118012	**2.93**	118041	**3.51**	118101	**9.22**	118071	**5.82**
1/4	0.2500	2-3/4	4	118013	**2.94**	118042	**3.52**	118102	**9.12**	118072	**5.73**
17/64	0.2656	2-7/8	4-1/8	118014	**3.52**	118043	**4.74**	118103	**13.19**	118073	**6.56**
9/32	0.2812	2-15/16	4-1/4	118015	**4.25**	118044	**4.74**	118104	**13.66**	118074	**7.17**
19/64	0.2969	3-1/16	4-3/8	118016	**4.69**	118045	**5.38**	118105	**14.14**	118075	**8.63**
5/16	0.3125	3-3/16	4-1/2	118017	**5.26**	118046	**5.60**	118106	**14.36**	118076	**9.00**
21/64	0.3281	3-5/16	4-5/8	118018	**5.73**	118047	**6.42**	118107	**16.71**	118077	**10.17**
11/32	0.3438	3-7/16	4-3/4	118019	**6.56**	118048	**6.91**	118108	**17.18**	118078	**11.10**
23/64	0.3594	3-1/2	4-7/8	118020	**7.17**	118049	**7.94**	118109	**17.75**	118079	**11.10**
3/8	0.3750	3-5/8	5	118021	**7.00**	118050	**8.07**	118110	**19.05**	118080	**11.21**
25/64	0.3906	3-3/4	5-1/8	118022	**8.42**	118051	**9.59**	118111	**20.67**	118081	**13.43**
13/32	0.4062	3-7/8	5-1/4	118023	**8.65**	118052	**9.34**	118112	**21.50**	118082	**14.93**
27/64	0.4219	3-15/16	5-3/8	118024	**9.56**	118053	**11.04**	118113	**22.20**	118083	**17.05**
7/16	0.4375	4-1/16	5-1/2	118025	**10.31**	118054	**10.75**	118114	**23.23**	118084	**17.39**
29/64	0.4531	4-3/16	5-5/8	118026	**11.77**	118055	**12.98**	118115	**25.58**	118085	**19.84**
15/32	0.4688	4-5/16	5-3/4	118027	**12.04**	118056	**12.83**	118116	**26.52**	118086	**20.33**
31/64	0.4844	4-3/8	5-7/8	118028	**12.98**	118057	**13.79**	118117	**27.46**	118087	**21.60**
1/2	0.5000	4-1/2	6	118029	**12.61**	118058	**13.78**	118118	**28.15**	118088	**21.73**
33/64	0.5156	4-13/16	6-5/8	117970	**29.02**	-	**-**	-	**-**	117988	**71.82**
17/32	0.5312	4-13/16	6-5/8	117971	**29.87**	-	**-**	-	**-**	117989	**81.84**
35/64	0.5469	4-13/16	6-5/8	117972	**32.93**	-	**-**	-	**-**	117990	**86.62**
9/16	0.5625	4-13/16	6-5/8	117973	**33.77**	-	**-**	-	**-**	117991	**93.25**
37/64	0.5781	4-13/16	6-5/8	117974	**34.58**	-	**-**	-	**-**	117992	**96.13**
19/32	0.5938	5-3/16	7-1/8	117975	**35.50**	-	**-**	-	**-**	117993	**96.72**
39/64	0.6094	5-3/16	7-1/8	117976	**38.01**	-	**-**	-	**-**	117994	**102.50**
5/8	0.6250	5-3/16	7-1/8	117977	**37.35**	-	**-**	-	**-**	117998	**103.42**
41/64	0.6406	5-3/16	7-1/8	117978	**40.73**	-	**-**	-	**-**	117999	**108.17**
21/32	0.6562	5-3/16	7-1/8	117979	**42.69**	-	**-**	-	**-**	117983	**114.32**
43/64	0.6719	5-5/8	7-5/8	117980	**46.15**	-	**-**	-	**-**	117984	**122.86**
11/16	0.6875	5-5/8	7-5/8	117981	**46.15**	-	**-**	-	**-**	117969	**125.15**
3/4	0.7500	5-5/8	7-5/8	117982	**60.66**	-	**-**	-	**-**	-	**-**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

General Purpose HSS Jobber Drills — Number

STM PREMIUM

- General Purpose

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	General Purpose 118° Code No.	Price $	HD Split Point 135° Code No.	Price $
1	0.2280	2-5/8	3-7/8	118130	**3.16**	118200	**3.75**
2	0.2210	2-5/8	3-7/8	118131	**3.16**	118201	**3.75**
3	0.2130	2-1/2	3-3/4	118132	**3.04**	118202	**3.39**
4	0.2090	2-1/2	3-3/4	118133	**3.04**	118203	**3.39**
5	0.2055	2-1/2	3-3/4	118134	**3.04**	118204	**3.52**
6	0.2040	2-1/2	3-3/4	118135	**3.04**	118205	**3.52**
7	0.2010	2-7/16	3-5/8	118136	**2.79**	118206	**3.15**
8	0.1990	2-7/16	3-5/8	118137	**2.79**	118207	**3.15**
9	0.1960	2-7/16	3-5/8	118138	**2.79**	118208	**3.15**
10	0.1935	2-7/16	3-5/8	118139	**2.79**	118209	**3.15**
11	0.1910	2-5/16	3-1/2	118140	**2.59**	118210	**2.93**
12	0.1890	2-5/16	3-1/2	118141	**2.59**	118211	**2.93**
13	0.1850	2-5/16	3-1/2	118142	**2.59**	118212	**2.93**
14	0.1820	2-3/16	3-3/8	118143	**2.59**	118213	**2.93**
15	0.1800	2-3/16	3-3/8	118144	**2.59**	118214	**2.93**
16	0.1770	2-3/16	3-3/8	118145	**2.59**	118215	**2.93**
17	0.1730	2-3/16	3-3/8	118146	**2.59**	118216	**2.93**
18	0.1695	2-1/8	3-1/4	118147	**2.11**	118217	**2.34**
19	0.1660	2-1/8	3-1/4	118148	**2.11**	118218	**2.34**
20	0.1610	2-1/8	3-1/4	118149	**2.11**	118219	**2.31**
21	0.1590	2-1/8	3-1/4	118150	**1.93**	118220	**2.31**
22	0.1570	2	3-1/8	118151	**1.93**	118221	**2.31**
23	0.1540	2	3-1/8	118152	**1.93**	118222	**2.31**
24	0.1520	2	3-1/8	118153	**1.93**	118223	**2.31**
25	0.1495	1-7/8	3	118154	**1.93**	118224	**2.31**
26	0.1470	1-7/8	3	118155	**1.93**	118225	**2.31**
27	0.1440	1-7/8	3	118156	**1.93**	118226	**2.31**
28	0.1405	1-3/4	2-7/8	118157	**1.77**	118227	**1.99**
29	0.1360	1-3/4	2-7/8	118158	**1.77**	118228	**1.99**
30	0.1285	1-5/8	2-3/4	118159	**1.77**	118229	**1.99**
31	0.1200	1-5/8	2-3/4	118160	**1.77**	118230	**1.99**
32	0.1160	1-5/8	2-3/4	118161	**1.77**	118231	**1.99**
33	0.1130	1-1/2	2-5/8	118162	**1.77**	118232	**1.99**
34	0.1110	1-1/2	2-5/8	118163	**1.77**	118233	**1.99**
35	0.1100	1-1/2	2-5/8	118164	**1.77**	118234	**1.99**
36	0.1065	1-7/16	2-1/2	118165	**1.77**	118235	**1.99**
37	0.1040	1-7/16	2-1/2	118166	**1.77**	118236	**1.99**
38	0.1015	1-7/16	2-1/2	118167	**1.77**	118237	**1.99**
39	0.0995	1-3/8	2-3/8	118168	**1.77**	118238	**1.99**
40	0.0980	1-3/8	2-3/8	118169	**1.77**	118239	**1.99**
41	0.0960	1-3/8	2-3/8	118170	**1.77**	-	-
42	0.0935	1-1/4	2-1/4	118171	**1.77**	-	-
43	0.0890	1-1/4	2-1/4	118172	**1.77**	-	-
44	0.0860	1-1/8	2-1/8	118173	**1.77**	-	-
45	0.0820	1-1/8	2-1/8	118174	**1.77**	-	-
46	0.0810	1-1/8	2-1/8	118175	**1.77**	-	-
47	0.0785	1	2	118176	**1.77**	-	-
48	0.0760	1	2	118177	**1.77**	-	-
49	0.0730	1	2	118178	**1.77**	-	-
50	0.0700	1	2	118179	**1.77**	-	-
51	0.0670	1	2	118180	**1.77**	-	-
52	0.0635	7/8	1-7/8	118181	**1.77**	-	-
53	0.0595	7/8	1-7/8	118182	**1.77**	-	-
54	0.0550	7/8	1-7/8	118183	**1.77**	-	-
55	0.0520	7/8	1-7/8	118184	**1.77**	-	-
56	0.0465	3/4	1-3/4	118185	**1.77**	-	-
57	0.0430	3/4	1-3/4	118186	**1.77**	-	-
58	0.0420	11/16	1-5/8	118187	**1.77**	-	-
59	0.0410	11/16	1-5/8	118188	**1.77**	-	-
60	0.0400	11/16	1-5/8	118189	**1.77**	-	-

General Purpose HSS Jobber Drills — Number

- General Purpose

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
61	0.0390	11/16	1-5/8	105705	**1.40**
62	0.0380	5/8	1-1/2	105710	**1.40**
63	0.0370	5/8	1-1/2	105715	**0.61**
64	0.0360	5/8	1-1/2	105720	**1.40**
65	0.0350	5/8	1-1/2	105725	**1.40**
66	0.0330	1/2	1-3/8	105730	**1.40**
67	0.0320	1/2	1-3/8	105735	**1.40**
68	0.0310	1/2	1-3/8	105740	**1.62**
69	0.0292	1/2	1-3/8	105745	**0.61**
70	0.0280	3/8	1-1/4	105750	**1.23**
71	0.0260	3/8	1-1/4	105755	**0.61**
72	0.0250	5/16	1-1/8	105760	**1.23**
73	0.0240	5/16	1-1/8	105765	**1.62**
74	0.0225	1/4	1	105770	**1.62**
75	0.0210	1/4	1	105775	**1.23**
76	0.0200	3/16	7/8	105780	**0.63**
77	0.0180	3/16	7/8	105785	**1.62**
78	0.0160	3/16	7/8	105790	**1.23**
79	0.0145	1/8	3/4	105795	**1.62**
80	0.0135	1/8	3/4	105800	**1.62**

General Purpose HSS Jobber Drills — Letter A-Z

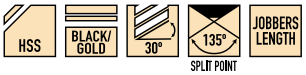
STM PREMIUM

- General Purpose

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	General Purpose 118° Code No.	Price $	HD Split Point 135° Code No.	Price $
A	0.234	2-5/8	3-7/8	118250	**3.39**	118280	**3.75**
B	0.238	2-3/4	4	118251	**3.39**	118281	**3.86**
C	0.242	2-3/4	4	118252	**3.39**	118282	**3.86**
D	0.246	2-3/4	4	118253	**3.51**	118283	**4.10**
E	0.250	2-3/4	4	118254	**3.52**	118284	**4.10**
F	0.257	2-7/8	4-1/8	118255	**5.15**	118285	**5.21**
G	0.261	2-7/8	4-1/8	118256	**4.97**	118286	**5.38**
H	0.266	2-7/8	4-1/8	118257	**5.21**	118287	**5.38**
I	0.272	2-7/8	4-1/8	118258	**5.16**	118288	**5.82**
J	0.277	2-7/8	4-1/8	118259	**5.45**	118289	**5.73**
K	0.281	2-15/16	4-1/4	118260	**5.38**	118290	**5.73**
L	0.290	2-15/16	4-1/4	118261	**5.71**	118291	**5.96**
M	0.295	3-1/16	4-3/8	118262	**5.85**	118292	**6.42**
N	0.302	3-1/16	4-3/8	118263	**5.96**	118293	**6.79**
O	0.316	3-3/16	4-1/2	118264	**6.42**	118294	**7.00**
P	0.323	3-5/16	4-5/8	118265	**7.17**	118295	**7.60**
Q	0.332	3-7/16	4-3/4	118266	**7.13**	118296	**7.95**
R	0.339	3-7/16	4-3/4	118267	**7.48**	118297	**8.29**
S	0.348	3-1/2	4-7/8	118268	**8.00**	118298	**8.63**
T	0.358	3-1/2	4-7/8	118269	**8.17**	118299	**9.00**
U	0.368	3-5/8	5	118270	**8.99**	118300	**9.83**
V	0.377	3-5/8	5	118271	**9.59**	118301	**10.05**
W	0.386	3-3/4	5-1/8	118272	**9.94**	118302	**10.63**
X	0.397	3-3/4	5-1/8	118273	**10.27**	118303	**11.77**
Y	0.404	3-7/8	5-1/4	118274	**10.74**	118304	**11.91**
Z	0.413	3-7/8	5-1/4	118275	**10.85**	118305	**12.74**

Black & Gold Jobber Length Drills

- Black & Gold finish extends tool life
- 135° split point penetrates faster and prevents bit "walk"



Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	0.0400	11/16	1-5/8	105495	**2.46**
59	0.0410	11/16	1-5/8	105494	**2.46**
58	0.0420	11/16	1-5/8	105493	**2.46**
57	0.0430	3/4	1-3/4	105492	**2.46**
56	0.0465	3/4	1-3/4	105491	**2.46**
55	0.0520	7/8	1-7/8	105490	**2.46**
54	0.0540	7/8	1-7/8	105489	**2.46**
53	0.0595	7/8	1-7/8	105488	**2.46**
1/16	0.0625	7/8	1-7/8	105381	**0.72**
52	0.0635	7/8	1-7/8	105487	**2.46**
51	0.0670	1	2	105486	**2.46**
50	0.0700	1	2	105485	**2.34**
49	0.0730	1	2	105484	**2.34**
48	0.0760	1	2	105483	**2.34**
5/64	0.0781	1	2	105382	**0.61**
47	0.0785	1	2	105482	**2.34**
46	0.0810	1-1/8	2-1/8	105481	**2.34**
45	0.0820	1-1/8	2-1/8	105480	**2.34**
44	0.0860	1-1/8	2-1/8	105479	**2.34**
43	0.0890	1-1/4	2-1/4	105478	**2.34**
42	0.0935	1-1/4	2-1/4	105477	**2.34**
3/32	0.0938	1-1/4	2-1/4	105383	**0.88**
41	0.0960	1-3/8	2-3/8	105476	**2.34**
40	0.0980	1-3/8	2-3/8	105475	**2.34**
39	0.0995	1-3/8	2-3/8	105474	**2.35**
38	0.1015	1-7/16	2-1/2	105473	**2.35**
37	0.1040	1-7/16	2-1/2	105472	**2.35**
36	0.1065	1-7/16	2-1/2	105471	**2.35**
7/64	0.1094	1-1/2	2-5/8	105384	**0.89**
35	0.1100	1-1/2	2-5/8	105470	**2.35**
34	0.1110	1-1/2	2-5/8	105469	**2.33**
33	0.1130	1-1/2	2-5/8	105468	**2.33**
32	0.1160	1-5/8	2-3/4	105467	**2.35**
31	0.1200	1-5/8	2-3/4	105466	**2.35**
1/8	0.1250	1-5/8	2-3/4	105385	**1.08**
30	0.1285	1-5/8	2-3/4	105465	**2.33**
29	0.1360	1-3/4	2-7/8	105464	**2.33**
28	0.1405	1-3/4	2-7/8	105463	**2.33**
9/64	0.1406	1-3/4	2-7/8	105386	**1.03**
27	0.1440	1-7/8	3	105462	**2.73**
26	0.1470	1-7/8	3	105461	**2.73**
25	0.1495	1-7/8	3	105460	**2.73**
24	0.1520	2	3-1/8	105459	**2.69**
23	0.1540	2	3-1/8	105458	**2.69**
5/32	0.1562	2	3-1/8	105387	**1.13**
22	0.1570	2	3-1/8	105457	**2.69**
21	0.1590	2-1/8	3-1/4	105456	**2.69**
20	0.1610	2-1/8	3-1/4	105455	**2.85**
19	0.1660	2-1/8	3-1/4	105454	**2.96**
18	0.1695	2-1/8	3-1/4	105453	**2.96**
11/64	0.1719	2-1/8	3-1/4	105388	**1.31**
17	0.1730	2-3/16	3-3/8	105452	**3.47**
16	0.1770	2-3/16	3-3/8	105451	**3.47**
15	0.1800	2-3/16	3-3/8	105450	**3.47**
14	0.1820	2-3/16	3-3/8	105449	**3.47**
13	0.1850	2-5/16	3-1/2	105448	**3.47**
3/16	0.1875	2-5/16	3-1/2	105389	**1.67**
12	0.1890	2-5/16	3-1/2	105447	**3.44**
11	0.1910	2-5/16	3-1/2	105446	**3.44**
10	0.1935	2-7/16	3-5/8	105445	**3.80**
9	0.1960	2-7/16	3-5/8	105444	**3.82**
8	0.1991	2-7/16	3-5/8	105443	**3.82**
7	0.2010	2-7/16	3-5/8	105442	**3.82**
13/64	0.2031	2-7/16	3-5/8	105390	**1.76**

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
6	0.2040	2-1/2	3-3/4	105441	**4.31**
5	0.2055	2-1/2	3-3/4	105440	**4.31**
4	0.2090	2-1/2	3-3/4	105439	**4.31**
3	0.2130	2-1/2	3-3/4	105438	**4.31**
7/32	0.2188	2-1/2	3-3/4	105391	**1.92**
2	0.2210	2-5/8	3-7/8	105437	**4.55**
1	0.2280	2-5/8	3-7/8	105436	**4.55**
A	0.2340	2-5/8	3-7/8	105410	**4.44**
15/64	0.2344	2-5/8	3-7/8	105392	**1.89**
B	0.2380	2-3/4	4	105411	**4.55**
C	0.2420	2-3/4	4	105412	**4.55**
D	0.2460	2-3/4	4	105413	**4.81**
1/4	0.2500	2-3/4	4	105393	**2.02**
E	0.2500	2-3/4	4	105414	**4.80**
F	0.2570	2-7/8	4-1/8	105415	**6.52**
G	0.2610	2-7/8	4-1/8	105416	**6.65**
17/64	0.2656	2-7/8	4-1/8	105394	**2.56**
H	0.2660	2-7/8	4-1/8	105417	**6.78**
I	0.2720	2-7/8	4-1/8	105418	**7.03**
J	0.2770	2-7/8	4-1/8	105419	**7.02**
K	0.2810	2-15/16	4-1/4	105420	**7.14**
9/32	0.2812	2-15/16	4-1/4	105395	**2.80**
L	0.2900	2-15/16	4-1/4	105421	**7.40**
M	0.2950	3-1/16	4-3/8	105422	**8.00**
19/64	0.2969	3-1/16	4-3/8	105396	**3.08**
N	0.3020	3-1/16	4-3/8	105423	**8.13**
5/16	0.3125	3-3/16	4-1/2	105397	**3.16**
O	0.3160	3-3/16	4-1/2	105424	**8.75**
P	0.3230	3-5/16	4-5/8	105425	**9.62**
21/64	0.3281	3-5/16	4-5/8	105398	**3.55**
Q	0.3320	3-7/16	4-3/4	105426	**9.85**
R	0.3390	3-7/16	4-3/4	105427	**10.09**
11/32	0.3438	3-7/16	4-3/4	105399	**4.37**
S	0.3480	3-1/2	4-7/8	105428	**10.70**
T	0.3580	3-1/2	4-7/8	105429	**11.20**
23/64	0.3594	3-1/2	4-7/8	105400	**4.57**
U	0.3680	3-5/8	5	105430	**12.19**
3/8	0.3750	3-5/8	5	105401	**4.66**
V	0.3770	3-5/8	5	105431	**12.54**
W	0.3860	3-3/4	5-1/8	105432	**13.40**
25/64	0.3906	3-3/4	5-1/8	105402	**4.93**
X	0.3970	3-3/4	5-1/8	105433	**14.17**
Y	0.4040	3-7/8	5-1/4	105434	**14.87**
13/32	0.4062	3-7/8	5-1/4	105403	**5.38**
Z	0.4130	3-7/8	5-1/4	105435	**15.13**
27/64	0.4219	3-15/16	5-3/8	105404	**6.19**
7/16	0.4375	4-1/16	5-1/2	105405	**6.40**
29/64	0.4531	4-3/16	5-5/8	105406	**6.53**
15/32	0.4688	4-5/16	5-3/4	105407	**7.16**
31/64	0.4844	4-3/8	5-7/8	105408	**7.85**
1/2	0.5000	4-1/2	6	105409	**8.59**

Slow Spiral HSS Drills

STM PREMIUM

Used in shallow hole drilling of aluminum and magnesium alloys and die cast parts.

BRIGHT | 118° | HSS

Fractional Sizes

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	143200	**6.48**
1/32	0.0312	1/2	1-3/8	143201	**4.16**
3/64	0.0469	3/4	1-3/4	143202	**4.09**
1/16	0.0625	7/8	1-7/8	143203	**3.83**
5/64	0.0781	1	2	143204	**3.90**
3/32	0.0938	1-1/4	2-1/4	143205	**3.50**
7/64	0.1094	1-1/2	2-5/8	143206	**3.57**
1/8	0.1250	1-5/8	2-3/4	143207	**3.57**
9/64	0.1406	1-3/4	2-7/8	143208	**4.20**
5/32	0.1562	2	3-1/8	143209	**4.49**
11/64	0.1719	2-1/8	3-1/4	143210	**4.82**
3/16	0.1875	2-5/16	3-1/2	143211	**5.12**
13/64	0.2031	2-7/16	3-5/8	143212	**4.79**
7/32	0.2188	2-1/2	3-3/4	143213	**6.85**
15/64	0.2344	2-5/8	3-7/8	143214	**7.81**
1/4	0.2500	2-3/4	4	143215	**6.63**
17/64	0.2656	2-7/8	4-1/8	143216	**10.46**
9/32	0.2812	2-15/16	4-1/4	143217	**10.72**
19/64	0.2969	3-1/16	4-3/8	143218	**11.42**
5/16	0.3125	3-3/16	4-1/2	143219	**11.42**
21/64	0.3281	3-5/16	4-5/8	143220	**14.44**
11/32	0.3438	3-7/16	4-3/4	143221	**14.44**
23/64	0.3594	3-1/2	4-7/8	143222	**19.85**
3/8	0.3750	3-5/8	5	143223	**15.21**
25/64	0.3906	3-3/4	5-1/8	143224	**17.94**
13/32	0.4062	3-7/8	5-1/4	143225	**18.12**
27/64	0.4219	3-15/16	5-3/8	143226	**20.44**
7/16	0.4375	4-1/16	5-1/2	143227	**20.88**
29/64	0.4531	4-3/16	5-5/8	143228	**22.32**
15/32	0.4688	4-5/16	5-3/4	143229	**24.01**
31/64	0.4844	4-3/8	5-7/8	143230	**29.94**
1/2	0.5000	4-1/2	6	143231	**24.68**

Letter Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
A	0.2340	2-5/8	3-7/8	143232	**8.10**
B	0.2380	2-3/4	4	143233	**8.10**
C	0.2420	2-3/4	4	143234	**8.10**
D	0.2460	2-3/4	4	143235	**8.10**
E	0.2500	2-3/4	4	143236	**6.63**
F	0.2570	2-7/8	4-1/8	143237	**11.34**
G	0.2610	2-7/8	4-1/8	143238	**11.90**
H	0.2660	2-7/8	4-1/8	143239	**12.26**
I	0.2720	2-7/8	4-1/8	143240	**14.22**
J	0.2770	2-7/8	4-1/8	143241	**14.22**
K	0.2810	2-15/16	4-1/4	143242	**14.22**
L	0.2900	2-15/16	4-1/4	143243	**14.92**
M	0.2950	3-1/16	4-3/8	143244	**14.92**
N	0.3020	3-1/16	4-3/8	143245	**15.47**
O	0.3160	3-3/16	4-1/2	143246	**16.83**
P	0.3230	3-5/16	4-5/8	143247	**16.83**
Q	0.3320	3-7/16	4-3/4	143248	**16.83**
R	0.3390	3-7/16	4-3/4	143249	**17.46**
S	0.3480	3-1/2	4-7/8	143250	**19.19**
T	0.3580	3-1/2	4-7/8	143251	**19.19**
U	0.3680	3-5/8	5	143252	**19.19**
V	0.3770	3-5/8	5	143253	**20.22**
W	0.3860	3-3/4	5-1/8	143254	**22.87**
X	0.3970	3-3/4	5-1/8	143255	**22.87**
Y	0.4040	3-7/8	5-1/4	143256	**25.78**
Z	0.4130	3-7/8	5-1/4	143257	**25.78**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	143258	**8.18**
2	0.2210	2-5/8	3-7/8	143259	**8.18**
3	0.2130	2-1/2	3-3/4	143260	**8.18**
4	0.2090	2-1/2	3-3/4	143261	**7.96**
5	0.2055	2-1/2	3-3/4	143262	**7.96**
6	0.2040	2-1/2	3-3/4	143263	**7.96**
7	0.2010	2-7/16	3-5/8	143264	**7.22**
8	0.1990	2-7/16	3-5/8	143265	**7.22**
9	0.1960	2-7/16	3-5/8	143266	**7.22**
10	0.1935	2-7/16	3-5/8	143267	**7.22**
11	0.1910	2-5/16	3-1/2	143268	**7.22**
12	0.1890	2-5/16	3-1/2	143269	**7.22**
13	0.1850	2-5/16	3-1/2	143270	**6.48**
14	0.1820	2-3/16	3-3/8	143271	**6.48**
15	0.1800	2-3/16	3-3/8	143272	**6.48**
16	0.1770	2-3/16	3-3/8	143273	**6.48**
17	0.1730	2-3/16	3-3/8	143274	**6.48**
18	0.1695	2-1/8	3-1/4	143275	**6.48**
19	0.1660	2-1/8	3-1/4	143276	**5.38**
20	0.1610	2-1/8	3-1/4	143277	**5.38**
21	0.1590	2-1/8	3-1/4	143278	**5.38**
22	0.1570	2	3-1/8	143279	**5.38**
23	0.1540	2	3-1/8	143281	**5.05**
24	0.1520	2	3-1/8	143282	**5.05**
25	0.1495	1-7/8	3	143283	**5.05**
26	0.1470	1-7/8	3	143284	**5.05**
27	0.1440	1-7/8	3	143285	**5.05**
28	0.1405	1-3/4	2-7/8	143286	**4.20**
29	0.1360	1-3/4	2-7/8	143287	**3.90**
30	0.1285	1-5/8	2-3/4	143288	**3.90**
31	0.1200	1-5/8	2-3/4	143289	**3.90**
32	0.1160	1-5/8	2-3/4	143290	**3.90**
33	0.1130	1-1/2	2-5/8	143291	**3.90**
34	0.1110	1-1/2	2-5/8	143292	**3.90**
35	0.1100	1-1/2	2-5/8	143293	**3.90**
36	0.1065	1-7/16	2-1/2	143294	**3.90**
37	0.1040	1-7/16	2-1/2	143295	**3.90**
38	0.1015	1-7/16	2-1/2	143296	**3.90**
39	0.0995	1-3/8	2-3/8	143297	**3.90**
40	0.0980	1-3/8	2-3/8	143298	**3.90**
41	0.0960	1-3/8	2-3/8	143299	**3.90**
42	0.0935	1-1/4	2-1/4	143300	**3.90**
43	0.0890	1-1/4	2-1/4	143301	**3.90**
44	0.0860	1-1/8	2-1/8	143302	**3.90**
45	0.0820	1-1/8	2-1/8	143303	**3.90**
46	0.0810	1-1/8	2-1/8	143304	**3.90**
47	0.0785	1	2	143305	**3.90**
48	0.0760	1	2	143306	**3.90**
49	0.0730	1	2	143307	**3.90**
50	0.0700	1	2	143308	**3.90**
51	0.0670	1	2	143309	**3.90**
52	0.0635	7/8	1-7/8	143310	**3.90**
53	0.0595	7/8	1-7/8	143311	**3.90**
54	0.0550	7/8	1-7/8	143312	**3.90**
55	0.0520	7/8	1-7/8	143313	**3.90**
56	0.0465	3/4	1-3/4	143314	**4.12**
57	0.0430	3/4	1-3/4	143315	**4.12**
58	0.0420	11/16	1-5/8	143316	**4.12**
59	0.0410	11/16	1-5/8	143317	**4.12**
60	0.0400	11/16	1-5/8	143318	**4.12**
61	0.0390	11/16	1-5/8	143319	**5.12**
62	0.0380	5/8	1-1/2	143320	**5.12**
63	0.0370	5/8	1-1/2	143321	**5.12**
64	0.0360	5/8	1-1/2	143322	**5.12**
65	0.0350	5/8	1-1/2	143323	**5.12**
66	0.0330	1/2	1-3/8	143324	**5.12**
67	0.0320	1/2	1-3/8	143325	**5.12**
68	0.0310	1/2	1-3/8	143326	**5.12**
69	0.0292	1/2	1-3/8	143327	**5.41**
70	0.0280	3/8	1-1/4	143328	**5.41**
71	0.0260	3/8	1-1/4	143329	**6.63**
72	0.0250	5/16	1-1/8	143330	**6.63**
73	0.0240	5/16	1-1/8	143331	**6.63**
74	0.0225	1/4	1	143332	**6.63**
75	0.0210	1/4	1	143333	**6.63**
76	0.0200	3/16	7/8	143334	**6.63**
77	0.0180	3/16	7/8	143335	**6.63**
78	0.0160	3/16	7/8	143336	**6.63**
79	0.0145	1/8	3/4	143337	**7.70**
80	0.0135	1/8	3/4	143338	**7.70**

Fast Spiral HSS Drills

STM PREMIUM

These drills are designed primarily for drilling in non-ferrous materials such as Aluminum, Zinc die cast, and some plastics. They are successfully used in mild steel deep holes where chip packing occurs with standard helix drills.

BRIGHT | 118° | HSS

Fractional Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	117700	**4.20**
1/32	0.0312	1/2	1-3/8	117701	**3.39**
3/64	0.0469	3/4	1-3/4	117702	**2.73**
1/16	0.0625	7/8	1-7/8	117703	**2.76**
5/64	0.0781	1	2	117704	**2.76**
3/32	0.0938	1-1/4	2-1/4	117705	**2.76**
7/64	0.1094	1-1/2	2-5/8	117706	**2.76**
1/8	0.1250	1-5/8	2-3/4	117707	**2.61**
9/64	0.1406	1-3/4	2-7/8	117708	**2.87**
5/32	0.1562	2	3-1/8	117709	**2.73**
11/64	0.1719	2-1/8	3-1/4	117710	**3.57**
3/16	0.1875	2-5/16	3-1/2	117711	**3.98**
13/64	0.2031	2-7/16	3-5/8	117712	**4.38**
7/32	0.2188	2-1/2	3-3/4	117713	**4.94**
15/64	0.2344	2-5/8	3-7/8	117714	**5.30**
1/4	0.2500	2-3/4	4	117715	**5.41**
17/64	0.2656	2-7/8	4-1/8	117716	**6.78**
9/32	0.2812	2-15/16	4-1/4	117717	**7.33**
19/64	0.2969	3-1/16	4-3/8	117718	**7.70**
5/16	0.3125	3-3/16	4-1/2	117719	**8.14**
21/64	0.3281	3-5/16	4-5/8	117720	**10.09**
11/32	0.3438	3-7/16	4-3/4	117721	**11.05**
23/64	0.3594	3-1/2	4-7/8	117722	**13.22**
3/8	0.3750	3-5/8	5	117723	**13.22**
25/64	0.3906	3-3/4	5-1/8	117724	**15.39**
13/32	0.4062	3-7/8	5-1/4	117725	**15.39**
27/64	0.4219	3-15/16	5-3/8	117726	**16.57**
7/16	0.4375	4-1/16	5-1/2	117727	**17.16**
29/64	0.4531	4-3/16	5-5/8	117728	**17.90**
15/32	0.4688	4-5/16	5-3/4	117729	**19.26**
31/64	0.4844	4-3/8	5-7/8	117730	**20.22**
1/2	0.5000	4-1/2	6	117731	**20.70**

Letter Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
A	0.2340	2-5/8	3-7/8	117732	**6.67**
B	0.2380	2-3/4	4	117733	**6.67**
C	0.2420	2-3/4	4	117734	**6.67**
D	0.2460	2-3/4	4	117735	**6.67**
E	0.2500	2-3/4	4	117736	**5.41**
F	0.2570	2-7/8	4-1/8	117737	**6.85**
G	0.2610	2-7/8	4-1/8	117738	**7.81**
H	0.2660	2-7/8	4-1/8	117739	**7.81**
I	0.2720	2-7/8	4-1/8	117740	**7.81**
J	0.2770	2-7/8	4-1/8	117741	**8.40**
K	0.2810	2-15/16	4-1/4	117742	**9.39**
L	0.2900	2-15/16	4-1/4	117743	**9.39**
M	0.2950	3-1/16	4-3/8	117744	**10.17**
N	0.3020	3-1/16	4-3/8	117745	**10.17**
O	0.3160	3-3/16	4-1/2	117746	**10.17**
P	0.3230	3-5/16	4-5/8	117747	**11.12**
Q	0.3320	3-7/16	4-3/4	117748	**11.53**
R	0.3390	3-7/16	4-3/4	117749	**11.79**
S	0.3480	3-1/2	4-7/8	117750	**12.85**
T	0.3580	3-1/2	4-7/8	117751	**13.77**
U	0.3680	3-5/8	5	117752	**13.77**
V	0.3770	3-5/8	5	117753	**14.44**
W	0.3860	3-3/4	5-1/8	117754	**14.44**
X	0.3970	3-3/4	5-1/8	117755	**16.32**
Y	0.4040	3-7/8	5-1/4	117756	**17.53**
Z	0.4130	3-7/8	5-1/4	117757	**18.71**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	117758	**5.78**
2	0.2210	2-5/8	3-7/8	117759	**5.78**
3	0.2130	2-1/2	3-3/4	117760	**5.41**
4	0.2090	2-1/2	3-3/4	117761	**5.41**
5	0.2055	2-1/2	3-3/4	117762	**5.41**
6	0.2040	2-1/2	3-3/4	117763	**5.41**
7	0.2010	2-7/16	3-5/8	117764	**4.46**
8	0.1990	2-7/16	3-5/8	117765	**4.46**
9	0.1960	2-7/16	3-5/8	117766	**4.46**
10	0.1935	2-7/16	3-5/8	117767	**4.46**
11	0.1910	2-5/16	3-1/2	117768	**4.46**
12	0.1890	2-5/16	3-1/2	117769	**4.46**
13	0.1850	2-5/16	3-1/2	117770	**4.20**
14	0.1820	2-3/16	3-3/8	117771	**4.20**
15	0.1800	2-3/16	3-3/8	117772	**4.20**
16	0.1770	2-3/16	3-3/8	117773	**4.20**
17	0.1730	2-3/16	3-3/8	117774	**4.20**
18	0.1695	2-1/8	3-1/4	117775	**3.61**
19	0.1660	2-1/8	3-1/4	117776	**3.61**
20	0.1610	2-1/8	3-1/4	117777	**3.61**
21	0.1590	2-1/8	3-1/4	117778	**3.31**
22	0.1570	2	3-1/8	117779	**3.31**
23	0.1540	2	3-1/8	117780	**3.09**
24	0.1520	2	3-1/8	117781	**3.09**
25	0.1495	1-7/8	3	117782	**3.09**
26	0.1470	1-7/8	3	117783	**3.09**
27	0.1440	1-7/8	3	117784	**3.09**
28	0.1405	1-3/4	2-7/8	117785	**2.87**
29	0.1360	1-3/4	2-7/8	117786	**2.87**
30	0.1285	1-5/8	2-3/4	117787	**2.87**
31	0.1200	1-5/8	2-3/4	117788	**2.87**
32	0.1160	1-5/8	2-3/4	117789	**2.87**
33	0.1130	1-1/2	2-5/8	117790	**2.87**
34	0.1110	1-1/2	2-5/8	117791	**2.87**
35	0.1100	1-1/2	2-5/8	117792	**2.87**
36	0.1065	1-7/16	2-1/2	117793	**2.87**
37	0.1040	1-7/16	2-1/2	117794	**2.87**
38	0.1015	1-7/16	2-1/2	117795	**2.87**
39	0.0995	1-3/8	2-3/8	117796	**2.87**
40	0.0980	1-3/8	2-3/8	117797	**2.76**
41	0.0960	1-3/8	2-3/8	117798	**2.61**
42	0.0935	1-1/4	2-1/4	117799	**2.61**
43	0.0890	1-1/4	2-1/4	117800	**2.61**
44	0.0860	1-1/8	2-1/8	117801	**2.76**
45	0.0820	1-1/8	2-1/8	117802	**2.76**
46	0.0810	1-1/8	2-1/8	117803	**2.76**
47	0.0785	1	2	117804	**2.76**
48	0.0760	1	2	117805	**2.76**
49	0.0730	1	2	117806	**2.76**
50	0.0700	1	2	117807	**2.76**
51	0.0670	1	2	117808	**2.76**
52	0.0635	7/8	1-7/8	117809	**2.76**
53	0.0595	7/8	1-7/8	117810	**2.65**
54	0.0550	7/8	1-7/8	117811	**2.65**
55	0.0520	7/8	1-7/8	117812	**2.65**
56	0.0465	3/4	1-3/4	117813	**2.65**
57	0.0430	3/4	1-3/4	117814	**2.65**
58	0.0420	11/16	1-5/8	117815	**2.65**
59	0.0410	11/16	1-5/8	117816	**2.65**
60	0.0400	11/16	1-5/8	117817	**2.65**
61	0.0390	11/16	1-5/8	117818	**3.35**
62	0.0380	5/8	1-1/2	117819	**3.35**
63	0.0370	5/8	1-1/2	117820	**3.35**
64	0.0360	5/8	1-1/2	117821	**3.35**
65	0.0350	5/8	1-1/2	117822	**3.35**
66	0.0330	1/2	1-3/8	117823	**3.35**
67	0.0320	1/2	1-3/8	117824	**3.35**
68	0.0310	1/2	1-3/8	117825	**3.35**
69	0.0292	1/2	1-3/8	117826	**3.35**
70	0.0280	3/8	1-1/4	117827	**3.35**
71	0.0260	3/8	1-1/4	117828	**4.09**
72	0.0250	5/16	1-1/8	117829	**3.87**
73	0.0240	5/16	1-1/8	117830	**3.87**
74	0.0225	1/4	1	117831	**3.87**
75	0.0210	1/4	1	117832	**4.20**
76	0.0200	3/16	7/8	117833	**4.20**
77	0.0180	3/16	7/8	117834	**4.57**
78	0.0160	3/16	7/8	117835	**4.57**
79	0.0145	1/8	3/4	117836	**5.12**
80	0.0135	1/8	3/4	117837	**5.12**

General Purpose Jobber Drills — Metric

STM PREMIUM

- General purpose
- Heavy duty
- Super Cobalt

118° | 135° | HSS | SUPER COBALT

Size (mm)	Decimal Equivalent	Flute Length	Overall Length	HSS 118° Point Code No.	Price $	Cobalt 135° Point Code No.	Price $
0.15	0.0059	3/64	3/4	143340	**13.11**	-	-
0.16	0.0063	3/64	3/4	143341	**9.16**	-	-
0.17	0.0067	1/16	3/4	143342	**8.37**	-	-
0.18	0.0071	1/16	3/4	143343	**8.37**	-	-
0.19	0.0075	1/16	3/4	143344	**9.43**	-	-
0.20	0.0079	1/16	3/4	143345	**6.42**	-	-
0.22	0.0087	1/16	3/4	143346	**6.65**	-	-
0.25	0.0098	5/64	3/4	143347	**5.26**	-	-
0.26	0.0102	5/64	3/4	143348	**5.26**	-	-
0.27	0.0106	5/64	3/4	143349	**4.75**	-	-
0.28	0.0110	5/64	3/4	143350	**4.75**	-	-
0.29	0.0114	5/64	3/4	143351	**6.74**	-	-
0.30	0.0118	3/32	3/4	144001	**4.55**	-	-
0.32	0.0126	3/32	3/4	144002	**6.74**	-	-
0.35	0.0138	1/8	3/4	144003	**2.89**	-	-
0.38	0.0150	3/16	3/4	144004	**2.89**	-	-
0.40	0.0158	3/16	7/8	144005	**4.53**	-	-
0.42	0.0165	3/16	7/8	144006	**4.53**	-	-
0.44	0.0173	3/16	7/8	143352	**4.53**	-	-
0.45	0.0177	3/16	7/8	144007	**4.53**	-	-
0.48	0.0189	3/16	7/8	144008	**6.74**	-	-
0.50	0.0197	3/16	7/8	144009	**6.74**	-	-
0.55	0.0217	1/4	1	144011	**4.09**	-	-
0.58	0.0228	5/16	1-1/8	144012	**2.96**	-	-
0.60	0.0236	5/16	1-1/8	144013	**4.09**	-	-
0.62	0.0244	5/16	1-1/8	144014	**2.31**	-	-
0.65	0.0256	3/8	1-1/4	144015	**4.09**	-	-
0.68	0.0267	3/8	1-1/4	144016	**2.96**	-	-
0.70	0.0276	3/8	1-1/4	144017	**3.24**	-	-
0.72	0.0283	3/8	1-1/4	144018	**2.96**	-	-
0.75	0.0296	1/2	1-3/8	144019	**2.91**	-	-
0.78	0.0308	1/2	1-3/8	144020	**2.43**	-	-
0.80	0.0315	1/2	1-3/8	144021	**2.91**	-	-
0.82	0.0322	1/2	1-3/8	144022	**2.43**	-	-
0.85	0.0335	5/8	1-1/2	144023	**2.91**	-	-
0.88	0.0346	5/8	1-1/2	144024	**1.91**	-	-
0.90	0.0355	5/8	1-1/2	144025	**2.91**	-	-
0.92	0.0362	5/8	1-1/2	144026	**1.91**	-	-
0.95	0.0374	5/8	1-1/2	144027	**2.91**	-	-
1.00	0.0394	11/16	1-5/8	144029	**2.91**	143354	**4.90**
1.05	0.0413	11/16	1-5/8	144030	**2.91**	-	-
1.10	0.0433	3/4	1-3/4	144031	**3.06**	143355	**3.40**
1.15	0.0453	3/4	1-3/4	144032	**3.06**	143356	**5.12**
1.20	0.0472	7/8	1-7/8	144033	**3.06**	143357	**5.12**
1.25	0.0492	7/8	1-7/8	144034	**3.06**	-	-
1.30	0.0512	7/8	1-7/8	144035	**3.06**	-	-
1.35	0.0531	7/8	1-7/8	144036	**3.06**	-	-
1.40	0.0551	7/8	1-7/8	144037	**3.06**	-	-
1.45	0.0571	7/8	1-7/8	-	-	143358	**5.12**
1.50	0.0591	7/8	1-7/8	144038	**2.32**	143359	**5.12**
1.55	0.0610	7/8	1-7/8	144039	**3.06**	-	-
1.60	0.0630	7/8	1-7/8	144040	**3.06**	-	-
1.65	0.0650	1	2	144041	**3.06**	143360	**5.12**
1.70	0.0669	1	2	144042	**3.06**	-	-
1.75	0.0689	1	2	144043	**3.06**	-	-
1.80	0.0709	1	2	144044	**3.06**	143361	**5.12**
1.85	0.0728	1	2	144045	**3.39**	143362	**5.12**
1.90	0.0748	1	2	-	-	143363	**5.12**
1.95	0.0768	1	2	-	-	143364	**5.12**
2.00	0.0787	1	2-1/8	144046	**2.58**	143365	**4.60**
2.05	0.0807	1-1/8	2-1/8	144047	**3.65**	-	-
2.10	0.0827	1-1/8	2-1/8	144048	**3.06**	143366	**5.12**
2.15	0.0846	1-1/8	2-1/8	144049	**3.06**	143367	**5.12**
2.20	0.0866	1-1/4	2-1/4	144050	**3.06**	143368	**5.12**
2.25	0.0886	1-1/4	2-1/4	144051	**3.06**	-	-
2.30	0.0906	1-1/4	2-1/4	144052	**3.06**	-	-
2.35	0.0925	1-1/4	2-1/4	144053	**3.06**	143369	**5.12**
2.40	0.0945	1-3/8	2-3/8	144054	**3.06**	143370	**5.12**
2.45	0.0965	1-3/8	2-3/8	144055	**3.65**	-	-
2.50	0.0984	1-3/8	2-3/8	144056	**3.06**	143371	**4.68**
2.60	0.1024	1-7/16	2-1/2	144058	**3.06**	143372	**5.12**
2.65	0.1043	1-7/16	2-1/2	144059	**1.54**	-	-
2.70	0.1063	1-7/16	2-1/2	144060	**3.06**	143373	**5.12**
2.75	0.1083	1-1/2	2-5/8	144061	**3.65**	-	-
2.80	0.1102	1-1/2	2-5/8	144062	**3.65**	143374	**5.67**
2.85	0.1122	1-1/2	2-5/8	144063	**1.54**	-	-
2.90	0.1142	1-5/8	2-3/4	144064	**3.65**	143375	**5.67**
2.95	0.1161	1-5/8	2-3/4	144065	**1.54**	-	-
3.00	0.1181	1-5/8	2-3/4	144066	**2.84**	143376	**5.41**
3.10	0.1220	1-5/8	2-3/4	144067	**3.65**	143377	**5.67**
3.15	0.1240	1-5/8	2-3/4	144068	**1.75**	-	-
3.20	0.1260	1-5/8	2-3/4	144069	**3.20**	143378	**5.67**
3.25	0.1280	1-5/8	2-3/4	143353	**3.65**	-	-
3.30	0.1299	1-3/4	2-7/8	144070	**3.20**	143379	**5.67**
3.40	0.1339	1-3/4	2-7/8	144071	**3.35**	143380	**5.67**
3.50	0.1378	1-3/4	2-7/8	144072	**2.91**	143381	**5.67**
3.55	0.1397	1-3/4	2-7/8	144073	**2.66**	-	-
3.60	0.1417	1-7/8	3	144074	**3.65**	143382	**6.85**
3.70	0.1457	1-7/8	3	144075	**3.65**	-	-
3.75	0.1476	1-7/8	3	144076	**3.87**	-	-
3.80	0.1496	1-7/8	3	144077	**3.87**	143383	**6.85**
3.90	0.1535	2	3-1/8	144078	**4.57**	-	-
4.00	0.1575	2-1/8	3-1/4	144079	**3.20**	143389	**6.85**
4.10	0.1614	2-1/8	3-1/4	144080	**3.87**	-	-
4.20	0.1654	2-1/8	3-1/4	144081	**3.87**	143390	**6.85**
4.25	0.1673	2-1/8	3-1/4	143384	**4.16**	-	-
4.30	0.1693	2-1/8	3-1/4	144082	**4.24**	-	-
4.40	0.1732	2-3/16	3-3/8	144083	**4.53**	143391	**7.73**
4.50	0.1772	2-3/16	3-3/8	144084	**3.87**	143392	**6.85**
4.60	0.1811	2-3/16	3-3/8	144085	**4.53**	143393	**7.73**
4.70	0.1850	2-5/16	3-1/2	144086	**4.82**	-	-
4.75	0.1870	2-5/16	3-1/2	143385	**4.82**	-	-
4.80	0.1890	2-5/16	3-1/2	144087	**4.82**	143394	**8.91**
4.90	0.1929	2-7/16	3-5/8	144088	**4.82**	-	-
5.00	0.1968	2-7/16	3-5/8	144089	**4.24**	143395	**8.91**
5.10	0.2008	2-7/16	3-5/8	144090	**5.41**	-	-
5.20	0.2047	2-1/2	3-3/4	144091	**5.41**	143396	**10.50**
5.25	0.2067	2-1/2	3-3/4	144092	**5.41**	-	-
5.30	0.2087	2-1/2	3-3/4	144093	**5.41**	143397	**10.94**
5.40	0.2126	2-1/2	3-3/4	144094	**5.41**	-	-
5.50	0.2165	2-1/2	3-3/4	144095	**5.41**	143398	**9.17**
5.60	0.2205	2-5/8	3-7/8	144096	**5.52**	143399	**10.94**
5.70	0.2244	2-5/8	3-7/8	144097	**5.52**	143400	**10.94**
5.75	0.2264	2-5/8	3-7/8	144098	**5.63**	-	-
5.80	0.2283	2-5/8	3-7/8	144099	**5.63**	143401	**10.94**
5.90	0.2323	2-5/8	3-7/8	144100	**5.63**	-	-
6.00	0.2362	2-3/4	4	144101	**5.05**	143402	**9.91**
6.10	0.2402	2-3/4	4	144102	**5.97**	-	-
6.20	0.2441	2-3/4	4	144103	**5.97**	-	-
6.25	0.2461	2-3/4	4	144104	**6.56**	-	-
6.30	0.2480	2-3/4	4	144105	**6.56**	-	-
6.40	0.2520	2-7/8	4-1/8	144106	**6.56**	143403	**12.41**
6.50	0.2559	2-7/8	4-1/8	144107	**5.97**	143404	**12.41**
6.60	0.2598	2-7/8	4-1/8	144108	**6.56**	-	-
6.70	0.2638	2-7/8	4-1/8	144109	**6.56**	-	-
6.75	0.2657	2-7/8	4-1/8	143386	**6.89**	-	-
6.80	0.2677	2-7/8	4-1/8	144110	**6.89**	-	-
6.90	0.2717	2-7/8	4-1/8	144111	**7.88**	-	-
7.00	0.2756	2-7/8	4-1/8	144112	**6.56**	143405	**12.41**
7.10	0.2795	2-15/16	4-1/4	144113	**7.88**	-	-
7.20	0.2835	2-15/16	4-1/4	144114	**7.88**	-	-
7.25	0.2854	2-15/16	4-1/4	144115	**8.47**	-	-
7.30	0.2874	2-15/16	4-1/4	144116	**8.47**	-	-
7.40	0.2913	3-1/16	4-3/8	144117	**8.47**	-	-
7.50	0.2953	3-1/16	4-3/8	144118	**8.18**	143406	**14.73**
7.60	0.2992	3-1/16	4-3/8	144119	**9.47**	-	-
7.70	0.3031	3-3/16	4-1/2	144120	**9.47**	143407	**19.56**
7.75	0.3051	3-3/16	4-1/2	143387	**9.47**	-	-
7.80	0.3071	3-3/16	4-1/2	144121	**9.47**	143408	**19.56**
7.90	0.3110	3-3/16	4-1/2	144122	**9.47**	143409	**19.56**
8.00	0.3150	3-3/16	4-1/2	144123	**9.24**	143410	**15.84**
8.10	0.3189	3-5/16	4-5/8	-	-	143411	**18.97**
8.20	0.3228	3-5/16	4-5/8	144124	**10.35**	-	-
8.25	0.3248	3-5/16	4-5/8	144125	**11.82**	-	-
8.30	0.3268	3-5/16	4-5/8	144126	**11.82**	-	-

General Purpose Jobber Drills – Metric — Cont'd

Size (mm)	Decimal Equivalent (in.)	Flute Length	Overall Length	HSS 118° Point Code No.	Price $	Cobalt 135° Point Code No.	Price $
8.40	0.3307	3-7/16	4-3/4	144127	**11.97**	-	-
8.50	0.3346	3-7/16	4-3/4	144128	**10.35**	143412	**18.67**
8.60	0.3386	3-7/16	4-3/4	144129	**11.97**	143413	**22.47**
8.70	0.3425	3-7/16	4-3/4	144130	**11.97**	-	-
8.75	0.3445	3-1/2	4-7/8	143388	**14.44**	-	-
8.80	0.3465	3-1/2	4-7/8	144131	**12.41**	-	-
8.90	0.3504	3-1/2	4-7/8	144132	**12.41**	-	-
9.00	0.3543	3-1/2	4-7/8	144133	**12.41**	143414	**20.70**
9.10	0.3583	3-1/2	4-7/8	144134	**13.11**	-	-
9.20	0.3622	3-5/8	5	144135	**13.11**	-	-
9.25	0.3642	3-5/8	5	144136	**9.85**	-	-
9.30	0.3661	3-5/8	5	144137	**13.55**	-	-
9.40	0.3701	3-5/8	5	144138	**13.55**	-	-
9.50	0.3740	3-5/8	5	144139	**12.37**	143415	**22.47**
9.60	0.3780	3-3/4	5-1/8	144140	**14.88**	-	-
9.70	0.3819	3-3/4	5-1/8	144141	**14.88**	-	-
9.75	0.3839	3-3/4	5-1/8	143615	**14.88**	-	-
9.80	0.3858	3-3/4	5-1/8	144142	**14.88**	143416	**31.19**
10.00	0.3937	3-3/4	5-1/8	144143	**15.32**	143417	**25.97**
10.10	0.3976	3-7/8	5-1/4	144144	**13.24**	-	-
10.20	0.4016	3-7/8	5-1/4	144145	**15.62**	-	-
10.25	0.4035	3-7/8	5-1/4	144146	**13.24**	-	-
10.30	0.4055	3-7/8	5-1/4	144147	**13.24**	-	-
10.40	0.4094	3-15/16	5-3/8	144148	**15.09**	-	-
10.50	0.4134	3-15/16	5-3/8	144149	**15.25**	143418	**30.05**
10.60	0.4173	3-15/16	5-3/8	144150	**15.09**	-	-
10.70	0.4213	3-15/16	5-1/2	144151	**15.09**	-	-
10.80	0.4252	4-1/16	5-1/2	144152	**19.56**	-	-
10.90	0.4370	4-1/16	5-1/2	144153	**12.67**	-	-
11.00	0.4331	4-1/16	5-1/2	144154	**16.35**	143419	**31.34**
11.10	0.4370	4-1/16	5-1/2	144155	**12.67**	-	-
11.20	0.4409	4-3/16	5-5/8	144156	**20.26**	-	-
11.25	0.4429	4-3/16	5-5/8	143616	**23.20**	-	-
11.30	0.4449	4-3/16	5-5/8	144157	**17.05**	-	-
11.40	0.4488	4-3/16	5-5/8	144158	**17.05**	-	-
11.50	0.4528	4-3/16	5-5/8	144159	**18.23**	143420	**38.78**
11.60	0.4567	4-3/16	5-5/8	144160	**18.24**	-	-
11.70	0.4606	4-3/16	5-5/8	144161	**18.24**	-	-
11.80	0.4646	4-3/8	5-7/8	144162	**21.51**	-	-
11.90	0.4685	4-3/8	5-7/8	144163	**18.24**	-	-
12.00	0.4724	4-3/8	5-7/8	144164	**20.26**	143421	**40.11**
12.10	0.4764	4-3/8	5-7/8	144165	**18.86**	-	-
12.20	0.4803	4-3/8	5-7/8	144166	**21.80**	-	-
12.25	0.4823	4-3/8	5-7/8	144167	**16.88**	-	-
12.30	0.4843	4-1/2	5-7/8	144168	**18.86**	-	-
12.40	0.4882	4-1/2	6	144169	**18.86**	-	-
12.50	0.4921	4-1/2	6	144170	**21.58**	143422	**41.58**
12.60	0.4961	4-1/2	6	144171	**18.86**	-	-
12.70	0.5000	4-1/2	6	144172	**15.54**	-	-
12.75	0.5020	4-1/2	6	143617	**41.14**	-	-
12.80	0.5039	4-1/2	6	144173	**21.41**	-	-
12.90	0.5070	4-1/2	6	144174	**21.41**	-	-
13.00	0.5118	4-1/2	6	144175	**37.86**	-	-
13.10	0.5157	4-1/2	6	144176	**28.33**	-	-
13.20	0.5197	4-1/2	6	144177	**20.12**	-	-
13.30	0.5236	4-1/2	6	144178	**28.33**	-	-
13.40	0.5376	4-13/16	6-5/8	144179	**19.36**	-	-
13.50	0.5315	4-13/16	6-5/8	144180	**43.90**	-	-
13.60	0.5354	4-13/16	6-5/8	144190	**28.33**	-	-
13.70	0.5394	4-13/16	6-5/8	144191	**28.33**	-	-
13.75	0.5413	4-13/16	6-5/8	144192	**22.21**	-	-
13.80	0.5433	4-13/16	6-5/8	144193	**45.52**	-	-
13.90	0.5472	4-13/16	6-5/8	144194	**31.44**	-	-
14.00	0.5512	4-13/16	6-5/8	144195	**45.52**	-	-
14.25	0.5610	4-13/16	6-5/8	144196	**22.21**	-	-
14.50	0.5709	4-13/16	6-5/8	143618	**48.58**	-	-
14.75	0.5709	5-3/16	7-1/8	144197	**39.30**	-	-
15.50	0.6102	5-3/16	7-1/8	144198	**57.16**	-	-
15.75	0.6201	5-5/16	7-1/8	144199	**35.74**	-	-
16.00	0.6299	5-3/16	7-1/8	144200	**60.66**	-	-
16.25	0.6398	5-3/16	7-1/8	144201	**36.59**	-	-
16.50	0.6490	5-3/16	7-1/8	144202	**68.25**	-	-
17.00	0.6693	5-5/8	7-5/8	144204	**70.46**	-	-
17.25	0.6791	5-5/8	7-5/8	144205	**40.63**	-	-
17.50	0.6890	5-5/8	7-5/8	144206	**72.78**	-	-
17.75	0.6988	5-5/8	7-5/8	144207	**50.27**	-	-
18.00	0.7087	5-5/8	7-5/8	144208	**50.27**	-	-
18.25	0.7185	5-5/8	7-5/8	144209	**42.79**	-	-
18.50	0.7283	5-5/8	7-5/8	144210	**52.78**	-	-
18.75	0.7382	5-5/8	7-5/8	144211	**52.78**	-	-
19.00	0.7480	5-5/8	7-5/8	144212	**52.78**	-	-
19.25	0.7579	5-5/8	7-5/8	144213	**58.48**	-	-
19.50	0.7677	5-5/8	7-5/8	144214	**58.48**	-	-
19.75	0.7776	5-5/8	7-5/8	144215	**47.41**	-	-
20.00	0.7874	5-5/8	7-5/8	144216	**58.48**	-	-

Left Hand HSS Drills

Fractional Sizes

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	143425	**11.75**
1/32	0.0312	1/2	1-3/8	143426	**8.84**
3/64	0.0469	3/4	1-3/4	143427	**5.52**
1/16	0.0625	7/8	1-7/8	143428	**5.52**
5/64	0.0781	1	2	143429	**5.86**
3/32	0.0938	1-1/4	2-1/4	143430	**5.86**
7/64	0.1094	1-1/2	2-5/8	143431	**5.86**
1/8	0.1250	1-5/8	2-3/4	143432	**5.86**
9/64	0.1406	1-3/4	2-7/8	143433	**5.89**
5/32	0.1562	2	3-1/8	143434	**6.30**
11/64	0.1719	2-1/8	3-1/4	143435	**6.85**
3/16	0.1875	2-5/16	3-1/2	143436	**6.96**
13/64	0.2031	2-7/16	3-5/8	143437	**7.59**
7/32	0.2188	2-1/2	3-3/4	143438	**8.03**
15/64	0.2344	2-5/8	3-7/8	143439	**10.50**
1/4	0.2500	2-3/4	4	143440	**10.13**
17/64	0.2656	2-7/8	4-1/8	143441	**11.23**
9/32	0.2812	2-15/16	4-1/4	143442	**11.56**
19/64	0.2969	3-1/16	4-3/8	143443	**12.82**
5/16	0.3125	3-3/16	4-1/2	143444	**13.92**
21/64	0.3281	3-5/16	4-5/8	143445	**14.99**
11/32	0.3438	3-7/16	4-3/4	143446	**15.91**
23/64	0.3594	3-1/2	4-7/8	143447	**19.19**
3/8	0.3750	3-5/8	5	143448	**19.45**
25/64	0.3906	3-3/4	5-1/8	143449	**22.10**
13/32	0.4062	3-7/8	5-1/4	143450	**23.87**
27/64	0.4219	3-15/16	5-3/8	143451	**25.89**
7/16	0.4375	4-1/16	5-1/2	143452	**26.08**
29/64	0.4531	4-3/16	5-5/8	143453	**30.86**
15/32	0.4688	4-5/16	5-3/4	143454	**31.64**
31/64	0.4844	4-3/8	5-7/8	143455	**34.66**
1/2	0.5000	4-1/2	6	143456	**35.28**

Left Hand HSS Drills — Cont'd

Letter Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
A	0.2340	2-5/8	3-7/8	143457	**14.11**
B	0.2380	2-3/4	4	143458	**14.11**
C	0.2420	2-3/4	4	143459	**14.11**
D	0.2460	2-3/4	4	143460	**14.11**
E	0.2500	2-3/4	4	143461	**10.13**
F	0.2570	2-7/8	4-1/8	143462	**15.62**
G	0.2610	2-7/8	4-1/8	143463	**15.62**
H	0.2660	2-7/8	4-1/8	143464	**15.62**
I	0.2720	2-7/8	4-1/8	143465	**15.62**
J	0.2770	2-7/8	4-1/8	143466	**15.62**
K	0.2810	2-15/16	4-1/4	143467	**15.62**
L	0.2900	2-15/16	4-1/4	143468	**17.68**
M	0.2950	3-1/16	4-3/8	143469	**17.68**
N	0.3020	3-1/16	4-3/8	143470	**17.68**
O	0.3160	3-3/16	4-1/2	143471	**20.33**
P	0.3230	3-5/16	4-5/8	143472	**22.47**
Q	0.3320	3-7/16	4-3/4	143473	**22.47**
R	0.3390	3-7/16	4-3/4	143474	**22.47**
S	0.3480	3-1/2	4-7/8	143475	**27.29**
T	0.3580	3-1/2	4-7/8	143476	**27.29**
U	0.3680	3-5/8	5	143477	**27.29**
V	0.3770	3-5/8	5	143478	**29.83**
W	0.3860	3-3/4	5-1/8	143479	**29.83**
X	0.3970	3-3/4	5-1/8	143480	**29.83**
Y	0.4040	3-7/8	5-1/4	143481	**31.75**
Z	0.4130	3-7/8	5-1/4	143482	**35.10**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	143483	**11.75**
2	0.2210	2-5/8	3-7/8	143484	**11.75**
3	0.2130	2-1/2	3-3/4	143485	**10.57**
4	0.2090	2-1/2	3-3/4	143486	**10.57**
5	0.2055	2-1/2	3-3/4	143487	**10.57**
6	0.2040	2-1/2	3-3/4	143488	**10.57**
7	0.2010	2-7/16	3-5/8	143489	**9.83**
8	0.1990	2-7/16	3-5/8	143490	**9.83**
9	0.1960	2-7/16	3-5/8	143491	**9.83**
10	0.1935	2-7/16	3-5/8	143492	**9.83**
11	0.1910	2-5/16	3-1/2	143493	**9.83**
12	0.1890	2-5/16	3-1/2	143494	**9.83**
13	0.1850	2-5/16	3-1/2	143495	**9.50**
14	0.1820	2-3/16	3-3/8	143496	**9.50**
15	0.1800	2-3/16	3-3/8	143497	**9.50**
16	0.1770	2-3/16	3-3/8	143498	**9.50**
17	0.1730	2-3/16	3-3/8	143499	**9.50**
18	0.1695	2-1/8	3-1/4	143500	**8.99**
19	0.1660	2-1/8	3-1/4	143501	**8.99**
20	0.1610	2-1/8	3-1/4	143502	**8.07**
21	0.1590	2-1/8	3-1/4	143503	**8.07**
22	0.1570	2	3-1/8	143504	**8.07**
23	0.1540	2	3-1/8	143505	**8.07**
24	0.1520	2	3-1/8	143506	**8.07**
25	0.1495	1-7/8	3	143507	**6.96**
26	0.1470	1-7/8	3	143508	**6.96**
27	0.1440	1-7/8	3	143509	**6.96**
28	0.1405	1-3/4	2-7/8	143510	**6.96**
29	0.1360	1-3/4	2-7/8	143511	**6.96**
30	0.1285	1-5/8	2-3/4	143512	**6.96**
31	0.1200	1-5/8	2-3/4	143513	**6.96**
32	0.1160	1-5/8	2-3/4	143514	**6.96**
33	0.1130	1-1/2	2-5/8	143515	**6.96**
34	0.1110	1-1/2	2-5/8	143516	**6.96**
35	0.1100	1-1/2	2-5/8	143517	**6.96**
36	0.1065	1-7/16	2-1/2	143518	**6.63**
37	0.1040	1-7/16	2-1/2	143519	**6.63**
39	0.0995	1-3/8	2-3/8	143521	**6.63**
40	0.0980	1-3/8	2-3/8	143522	**6.63**
41	0.0960	1-3/8	2-3/8	143523	**6.63**
42	0.0935	1-1/4	2-1/4	143524	**6.63**
43	0.0890	1-1/4	2-1/4	143525	**6.63**
44	0.0860	1-1/8	2-1/8	143526	**6.63**
45	0.0820	1-1/8	2-1/8	143527	**6.63**
46	0.0810	1-1/8	2-1/8	143528	**6.63**
47	0.0785	1	2	143529	**6.63**
48	0.0760	1	2	143530	**6.63**
49	0.0730	1	2	143531	**6.63**
50	0.0700	1	2	143532	**6.63**
51	0.0670	1	2	143533	**6.63**
52	0.0635	7/8	1-7/8	143534	**6.63**
53	0.0595	7/8	1-7/8	143535	**6.96**
54	0.0550	7/8	1-7/8	143536	**6.96**
55	0.0520	7/8	1-7/8	143537	**6.96**
56	0.0465	3/4	1-3/4	143538	**6.96**
57	0.0430	3/4	1-3/4	143539	**6.96**
58	0.0420	11/16	1-5/8	143540	**6.96**
59	0.0410	11/16	1-5/8	143541	**6.96**
60	0.0400	11/16	1-5/8	143543	**6.96**
61	0.0390	11/16	1-5/8	143544	**7.77**
62	0.0380	5/8	1-1/2	143545	**10.72**
63	0.0370	5/8	1-1/2	143546	**10.72**
64	0.0360	5/8	1-1/2	143547	**10.72**
65	0.0350	5/8	1-1/2	143548	**10.72**
66	0.0330	1/2	1-3/8	143549	**10.72**
67	0.0320	1/2	1-3/8	143550	**10.72**
68	0.0310	1/2	1-3/8	143551	**10.72**
69	0.0292	1/2	1-3/8	143552	**12.08**
70	0.0280	3/8	1-1/4	143553	**12.08**
71	0.0260	3/8	1-1/4	143554	**12.08**
72	0.0250	5/16	1-1/8	143555	**12.08**
73	0.0240	5/16	1-1/8	143556	**12.08**
74	0.0225	1/4	1	143557	**12.08**
75	0.0210	1/4	1	143558	**12.08**
76	0.0200	3/16	7/8	143559	**12.08**
77	0.0180	3/16	7/8	143560	**12.08**
78	0.0160	3/16	7/8	143561	**12.08**
79	0.0145	1/8	3/4	143562	**13.85**
80	0.0135	1/8	3/4	143563	**13.85**

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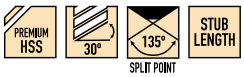
Premium HSS Stub Drills

These Premium HSS drills can be used in a variety of applications. Their surface treatment increases abrasion resistance, which reduces the amount of chip welding and improves chip flow.



Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	0.0400	1/2	1-3/8	128399	**2.06**
59	0.0410	1/2	1-3/8	128398	**2.06**
58	0.0420	1/2	1-3/8	128397	**2.06**
57	0.0430	1/2	1-3/8	128396	**2.06**
56	0.0465	1/2	1-3/8	128395	**2.06**
55	0.0520	5/8	1-5/8	128394	**2.06**
54	0.0540	5/8	1-5/8	128393	**2.06**
53	0.0595	5/8	1-5/8	128392	**2.06**
1/16	0.0625	5/8	1-5/8	128310	**2.05**
52	0.0635	11-16	1-11/16	128391	**2.06**
51	0.0670	11-16	1-11/16	128390	**2.06**
50	0.0700	11/16	1-11/16	128389	**2.06**
49	0.0730	11/16	1-11/16	128388	**2.06**
48	0.0760	11/16	1-11/16	128387	**2.06**
5/64	0.0781	11/16	1-11/16	128311	**2.05**
47	0.0785	11/16	1-11/16	128386	**2.06**
46	0.0810	3/4	1-3/4	128385	**2.06**
45	0.0820	3/4	1-3/4	128384	**2.06**
44	0.0860	3/4	1-3/4	128383	**2.06**
43	0.0890	3/4	1-3/4	128382	**2.06**
42	0.0935	3/4	1-3/4	128381	**2.06**
3/32	0.0938	3/4	1-3/4	128312	**2.05**
41	0.0960	13/16	1-13/16	128380	**2.06**
40	0.0980	13/16	1-13/16	128379	**2.02**
39	0.0995	13/16	1-13/16	128378	**2.02**
38	0.1015	13/16	1-13/16	128377	**2.02**
37	0.1040	13/16	1-13/16	128376	**2.02**
36	0.1065	13/16	1-13/16	128375	**2.02**
7/64	0.1094	13/16	1-13/16	128313	**2.05**
35	0.1100	7/8	1-7/8	128374	**2.02**
34	0.1110	7/8	1-7/8	128373	**2.02**
33	0.1130	7/8	1-7/8	128372	**2.02**
32	0.1160	7/8	1-7/8	128371	**2.02**
31	0.1200	7/8	1-7/8	128370	**2.02**
1/8	0.1250	7/8	1-7/8	128314	**2.05**
30	0.1285	15/16	1-15/16	128369	**2.02**
29	0.1360	15/16	1-15/16	128368	**2.02**
28	0.1405	15/16	1-15/16	128367	**2.02**
9/64	0.1406	15/16	1-15/16	128315	**2.25**
27	0.1440	1	2-1/16	128366	**2.06**
26	0.1470	1	2-1/16	128365	**2.06**
25	0.1495	1	2-1/16	128364	**2.06**
24	0.1520	1	2-1/16	128363	**2.06**
23	0.1540	1	2-1/16	128362	**2.06**
5/32	0.1562	1	2-1/16	128316	**2.40**
22	0.1570	1-1/16	2-1/8	128361	**2.06**
21	0.1590	1-1/16	2-1/8	128360	**2.06**
20	0.1610	1-1/16	2-1/8	128359	**2.25**
19	0.1660	1-1/16	2-1/8	128358	**2.25**
18	0.1695	1-1/16	2-1/8	128357	**2.25**
11/64	0.1719	1-1/16	2-1/8	128317	**2.44**
17	0.1730	1-1/8	2-3/16	128356	**2.44**
16	0.1770	1-1/8	2-3/16	128355	**2.44**
15	0.1800	1-1/8	2-3/16	128354	**2.44**
14	0.1820	1-1/8	2-3/16	128353	**2.44**
13	0.1850	1-1/8	2-3/16	128352	**2.44**
3/16	0.1875	1-1/8	2-3/16	128318	**2.66**
12	0.1890	1-3/16	2-1/4	128351	**2.44**
11	0.1910	1-3/16	2-1/4	128350	**2.44**
10	0.1935	1-3/16	2-1/4	128349	**2.44**
9	0.1960	1-3/16	2-1/4	128348	**2.44**
8	0.1991	1-3/16	2-1/4	128347	**2.44**
7	0.2010	1-3/16	2-1/4	128346	**2.44**
13/64	0.2031	1-3/16	2-1/4	128319	**3.14**
6	0.2040	1-1/4	2-3/8	128345	**3.02**
5	0.2055	1-1/4	2-3/8	128344	**3.02**
4	0.2090	1-1/4	2-3/8	128343	**3.02**
3	0.2130	1-1/4	2-3/8	128342	**3.02**
7/32	0.2188	1-1/4	2-3/8	128320	**3.02**
2	0.2210	1-5/16	2-7/16	128341	**3.38**
1	0.2280	1-5/16	2-7/16	128340	**3.38**
A	0.2340	1-5/16	2-7/16	128410	**2.90**
15/64	0.2344	1-5/16	2-7/16	128321	**3.04**
B	0.2380	1-3/8	2-1/2	128411	**3.14**
C	0.2420	1-3/8	2-1/2	128412	**3.14**
D	0.2460	1-3/8	2-1/2	128413	**3.14**
1/4	0.2500	1-3/8	2-1/2	128322	**3.16**
E	0.2500	1-3/8	2-1/2	128414	**3.14**
F	0.2570	1-7/16	2-5/8	128415	**4.00**
G	0.2610	1-7/16	2-5/8	128416	**4.53**
17/64	0.2656	1-7/16	2-5/8	128323	**4.24**
H	0.2660	1-1/2	2-11/16	128417	**4.35**
I	0.2720	1-1/2	2-11/16	128418	**4.48**
J	0.2770	1-1/2	2-11/16	128419	**4.48**
K	0.2810	1-1/2	2-11/16	128420	**4.77**
9/32	0.2812	1-1/2	2-11/16	128324	**4.53**
L	0.2900	1-9/16	2-3/4	128421	**4.90**
M	0.2950	1-9/16	2-3/4	128422	**4.86**
19/64	0.2969	1-9/16	2-3/4	128325	**4.90**
N	0.3020	1-5/8	2-13/16	128423	**4.95**
5/16	0.3125	1-5/8	2-13/16	128326	**4.85**
O	0.3160	1-11/16	2-15/16	128424	**5.90**
P	0.3230	1-11/16	2-15/16	128425	**5.80**
21/64	0.3281	1-11/16	2-15/16	128327	**5.55**
Q	0.3320	1-11/16	2-15/16	128426	**5.94**
R	0.3390	1-11/16	2-15/16	128427	**6.16**
11/32	0.3438	1-11/16	2-15/16	128328	**5.55**
S	0.3480	1-3/4	3-1/16	128428	**6.66**
T	0.3580	1-3/4	3-1/16	128429	**6.52**
23/64	0.3594	1-3/4	3-1/16	128329	**6.16**
U	0.3680	1-13/16	3-1/8	128430	**7.01**
3/8	0.3750	1-13/16	3-1/8	128330	**6.42**
V	0.3770	1-7/8	3-1/4	128431	**7.65**
W	0.3860	1-7/8	3-1/4	128432	**7.74**
25/64	0.3906	1-7/8	3-1/4	128331	**7.41**
X	0.3970	1-15/16	3-5/16	128434	**8.67**
Y	0.4040	1-15/16	3-5/16	128435	**8.47**
13/32	0.4062	1-15/16	3-5/16	128332	**7.74**
Z	0.4130	2	3-3/8	128436	**9.04**
27/64	0.4219	2	3-3/8	128333	**8.23**
7/16	0.4375	2-1/16	3-7/16	128334	**8.91**
29/64	0.4531	2-1/8	3-9/16	128335	**9.55**
15/32	0.4688	2-1/8	3-5/8	128336	**10.80**
31/64	0.4844	2-3/16	3-11/16	128337	**10.74**
1/2	0.5000	2-1/4	3-3/4	128338	**11.43**

Stub Drills HSS

- 135° heavy duty split point

Fractional Sizes

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	0.0625	5/8	1-5/8	118310	**1.93**
5/64	0.0781	11/16	1-11/16	118311	**1.93**
3/32	0.0938	3/4	1-3/4	118312	**1.93**
7/64	0.1094	13/16	1-13/16	118313	**1.93**
1/8	0.1250	7/8	1-7/8	118314	**1.93**
9/64	0.1406	15/16	1-15/16	118315	**1.99**
5/32	0.1562	1	2-1/16	118316	**2.11**
11/64	0.1719	1-1/16	2-1/8	118317	**2.31**
3/16	0.1875	1-1/8	2-3/16	118318	**2.34**
13/64	0.2031	1-3/16	2-1/4	118319	**2.80**
7/32	0.2188	1-1/4	2-3/8	118320	**2.82**
15/64	0.2344	1-5/16	2-7/16	118321	**2.93**
1/4	0.2500	1-3/8	2-1/2	118322	**3.04**

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
17/64	0.2656	1-7/16	2-5/8	118323	**3.75**
9/32	0.2812	1-1/2	2-11/16	118324	**4.25**
19/64	0.2969	1-9/16	2-3/4	118325	**4.33**
5/16	0.3125	1-5/8	2-13/16	118326	**4.55**
21/64	0.3281	1-11/16	2-15/16	118327	**5.16**
11/32	0.3438	1-11/16	3	118328	**5.34**
23/64	0.3594	1-3/4	3-1/16	118329	**5.73**
3/8	0.3750	1-13/16	3-1/8	118330	**5.85**
25/64	0.3906	1-7/8	3-1/4	118331	**6.92**
13/32	0.4062	1-15/16	3-5/16	118332	**7.13**
27/64	0.4219	2	3-3/8	118333	**7.60**
7/16	0.4375	2-1/16	3-7/16	118334	**7.95**
29/64	0.4531	2-1/8	3-9/16	118335	**9.22**
15/32	0.4688	2-1/8	3-5/8	118336	**9.56**
31/64	0.4844	2-3/16	3-11/16	118337	**10.04**
1/2	0.5000	2-1/4	3-3/4	118338	**10.68**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	1-5/16	2-7/16	118340	**3.39**
2	0.2210	1-5/16	2-7/16	118341	**3.39**
3	0.2130	1-1/4	2-3/8	118342	**3.15**
4	0.2090	1-1/4	2-3/8	118343	**3.15**
5	0.2055	1-1/4	2-3/8	118344	**3.15**
6	0.2040	1-1/4	2-3/8	118345	**3.15**
7	0.2010	1-3/16	2-1/4	118346	**2.67**
8	0.1990	1-3/16	2-1/4	118347	**2.67**
9	0.1960	1-3/16	2-1/4	118348	**2.67**
10	0.1935	1-3/16	2-1/4	118349	**2.67**
11	0.1910	1-3/16	2-1/4	118350	**2.67**
12	0.1890	1-3/16	2-1/4	118351	**2.67**
13	0.1850	1-1/8	2-3/16	118352	**2.67**
14	0.1820	1-1/8	2-3/16	118353	**2.67**
15	0.1800	1-1/8	2-3/16	118354	**2.67**
16	0.1770	1-1/8	2-3/16	118355	**2.67**
17	0.1730	1-1/8	2-3/16	118356	**2.67**
18	0.1695	1-1/16	2-1/8	118357	**2.31**
19	0.1660	1-1/16	2-1/8	118358	**2.31**
20	0.1610	1-1/16	2-1/8	118359	**2.31**
21	0.1590	1-1/16	2-1/8	118360	**2.11**
22	0.1570	1-1/16	2-1/8	118361	**2.11**
23	0.1540	1	2-1/16	118362	**2.11**
24	0.1520	1	2-1/16	118363	**2.11**
25	0.1495	1	2-1/16	118364	**2.11**
26	0.1470	1	2-1/16	118365	**2.11**
27	0.1440	1	2-1/16	118366	**2.11**
28	0.1405	15/16	1-15/16	118367	**1.93**
29	0.1360	15/16	1-15/16	118368	**1.93**
30	0.1285	15/16	1-15/16	118369	**1.93**
31	0.1200	7/8	1-7/8	118370	**1.93**
32	0.1160	7/8	1-7/8	118371	**1.93**
33	0.1130	7/8	1-7/8	118372	**1.93**
34	0.1110	7/8	1-7/8	118373	**1.93**
35	0.1100	7/8	1-7/8	118374	**1.93**
36	0.1065	13/16	1-13/16	118375	**1.93**
37	0.1040	13/16	1-13/16	118376	**1.93**
38	0.1015	13/16	1-13/16	118377	**1.93**
39	0.0995	13/16	1-13/16	118378	**1.93**
40	0.0980	13/16	1-13/16	118379	**1.93**

Prentice Drills

STM PREMIUM

- 1/2" shank
- 3" cutting length
- 6" overall length

Available in: HSS, HSS w/3 Flats & HSCO

Size (in.)	Decimal Equiv.	General Purpose Code No.	HSS Price $	General Purpose With 3 Flats Code No.	HSS Price $	HSCO Cobalt Code No.	Price $
33/64	0.5156	118400	**30.50**	118457	**43.39**	118501	**67.95**
17/32	0.5312	118401	**31.82**	118458	**44.49**	118502	**67.95**
35/64	0.5469	118402	**32.19**	118459	**46.11**	118503	**70.31**
9/16	0.5625	118403	**32.19**	118460	**44.86**	118504	**70.31**
37/64	0.5781	118404	**34.58**	118461	**49.54**	118505	**75.24**
19/32	0.5937	118405	**34.58**	118462	**48.21**	118506	**75.24**
39/64	0.6094	118406	**36.20**	118463	**49.17**	118507	**79.99**
5/8	0.6250	118407	**36.20**	118464	**49.17**	118508	**79.99**
41/64	0.6406	118408	**38.63**	118465	**51.60**	118509	**89.79**
21/32	0.6562	118409	**38.63**	118466	**51.60**	118510	**89.79**
43/64	0.6719	118410	**40.14**	118467	**53.26**	118511	**94.73**
11/16	0.6875	118411	**40.14**	118468	**53.26**	118512	**94.73**
45/64	0.7031	118412	**40.70**	118469	**53.66**	118513	**101.28**
23/32	0.7187	118413	**40.70**	118470	**53.66**	118514	**101.28**
47/64	0.7344	118414	**44.31**	118471	**57.27**	118515	**101.28**
3/4	0.7500	118415	**44.31**	118472	**57.27**	118516	**101.28**
49/64	0.7656	118416	**47.29**	118473	**60.25**	118517	**114.50**
25/32	0.7812	118417	**47.29**	118474	**60.25**	118518	**114.50**
51/64	0.7969	118418	**55.43**	118475	**68.39**	118519	**119.88**
13/16	0.8125	118419	**51.30**	118476	**64.27**	118520	**119.88**
53/64	0.8281	118420	**57.38**	118477	**70.34**	118521	**130.52**
27/32	0.8437	118421	**53.22**	118478	**66.18**	118522	**130.52**
55/64	0.8594	118422	**59.55**	118479	**75.13**	118523	**130.52**
7/8	0.8750	118423	**53.22**	118480	**66.18**	118524	**129.01**
57/64	0.8906	118424	**62.17**	118481	**75.13**	118525	**137.49**
29/32	0.9062	118425	**59.41**	118482	**72.37**	118526	**137.49**
59/64	0.9219	118426	**66.55**	118483	**79.52**	118527	**137.49**
15/16	0.9375	118427	**66.55**	118484	**79.52**	118528	**137.49**
61/64	0.9531	118428	**70.34**	118485	**83.31**	118529	**153.43**
31/32	0.9687	118429	**63.31**	118486	**79.52**	118530	**153.43**
63/64	0.9844	118430	**70.46**	118487	**83.42**	118531	**166.77**
1	1.0000	118431	**68.87**	118488	**81.98**	118532	**166.77**
1-1/32	1.0312	118432	**93.84**	118489	**106.81**	118534	**213.47**
1-1/16	1.0625	118433	**80.10**	118490	**93.07**	118536	**230.37**
1-3/32	1.0937	118434	**93.84**	118491	**106.81**	118538	**246.28**
1-1/8	1.1250	118435	**94.36**	118492	**107.32**	118540	**262.08**
1-5/32	1.1562	118436	**104.38**	118493	**117.34**	118542	**274.93**
1-3/16	1.1875	118437	**104.52**	118494	**117.49**	118544	**287.46**
1-7/32	1.2187	118438	**114.84**	118495	**127.80**	118546	**302.93**
1-1/4	1.2500	118439	**114.84**	118496	**127.80**	118548	**318.39**
1-9/32	1.2812	-	-	-	-	118550	**449.58**
1-5/16	1.3125	118441	**171.77**	118497	**184.74**	118552	**449.58**
1-11/32	1.3438	-	-	-	-	118554	**456.14**
1-3/8	1.3750	118443	**171.77**	118498	**184.74**	118556	**456.14**
1-13/32	1.4062	-	-	-	-	118558	**492.89**
1-7/16	1.4375	118445	**201.42**	118499	**215.09**	118560	**492.89**
1-15/32	1.4688	-	-	-	-	118562	**502.73**
1-1/2	1.5000	118447	**225.95**	118500	**238.91**	118564	**502.73**

Taper Length Drills

Taper length drills are designed for general purpose drilling where longer length is required.

STM PREMIUM

Fractional Sizes

Size (in.)	Decimal Equiv. (in.)	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt 135° Split Point Code No.	Price $
1/64	0.0156	5/16	1-1/2	116792	**10.21**	-	**-**
1/32	0.0312	3/4	2	116793	**8.04**	-	**-**
3/64	0.0469	1-1/8	2-1/4	116794	**3.82**	115001	**12.34**
1/16	0.0625	1-3/4	3	116795	**3.89**	115002	**10.83**
5/64	0.0781	2	3-3/4	116796	**5.78**	115003	**14.03**
3/32	0.0938	2-1/4	4-1/4	116797	**5.59**	115004	**14.70**
7/64	0.1094	2-1/2	4-5/8	116798	**6.96**	115005	**18.86**
1/8	0.1250	2-3/4	5-1/8	116799	**7.19**	115006	**18.64**
9/64	0.1406	3	5-3/8	116800	**9.45**	115007	**22.87**
5/32	0.1562	3	5-3/8	116801	**8.65**	115008	**24.79**
11/64	0.1719	3-3/8	5-3/4	116802	**10.21**	115009	**24.79**
3/16	0.1875	3-3/8	5-3/4	116803	**8.65**	115010	**24.79**
13/64	0.2031	3-5/8	6	116804	**11.62**	115011	**28.65**
7/32	0.2188	3-5/8	6	116805	**12.31**	115012	**28.65**
15/64	0.2344	3-3/4	6-1/8	116806	**12.31**	115013	**29.91**
1/4	0.2500	3-3/4	6-1/8	116807	**10.21**	115014	**28.36**
17/64	0.2656	3-7/8	6-1/4	116808	**12.77**	115015	**37.05**
9/32	0.2812	3-7/8	6-1/4	116809	**12.31**	115016	**35.03**
19/64	0.2969	4	6-3/8	116810	**14.11**	115017	**37.05**
5/16	0.3125	4	6-3/8	116811	**12.31**	115018	**35.03**
21/64	0.3281	4-1/8	6-1/2	116812	**14.47**	115019	**42.61**
11/32	0.3438	4-1/8	6-1/2	116813	**14.11**	115020	**41.07**
23/64	0.3594	4-1/4	6-3/4	116814	**16.45**	115021	**35.90**
3/8	0.3750	4-1/4	6-3/4	116815	**16.45**	115022	**46.48**
25/64	0.3906	4-3/8	7	116816	**17.54**	115023	**52.22**
13/32	0.4062	4-3/8	7	116817	**17.34**	115024	**48.73**
27/64	0.4219	4-5/8	7-1/4	116818	**18.70**	115025	**56.57**
7/16	0.4375	4-5/8	7-1/4	116819	**18.98**	115026	**52.85**
29/64	0.4531	4-3/4	7-1/2	116820	**21.10**	115027	**64.16**
15/32	0.4688	4-3/4	7-1/2	116821	**22.30**	115028	**45.65**
31/64	0.4844	4-3/4	7-3/4	116822	**24.53**	115029	**46.32**
1/2	0.5000	4-3/4	7-3/4	116823	**23.39**	115030	**66.26**

Size (in.)	Decimal Equiv. (in.)	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt 135° Split Point Code No.	Price $
33/64	0.5156	4-3/4	8	116824	**35.62**	115031	**112.85**
17/32	0.5312	4-3/4	8	116825	**34.52**	115032	**108.87**
35/64	0.5469	4-7/8	8-1/4	116826	**39.56**	115033	**121.98**
9/16	0.5625	4-7/8	8-1/4	116827	**36.40**	115034	**117.60**
37/64	0.5781	4-7/8	8-3/4	116828	**42.55**	115035	**82.35**
19/32	0.5938	4-7/8	8-3/4	116829	**42.55**	115036	**137.49**
39/64	0.6094	4-7/8	8-3/4	116830	**44.90**	115037	**141.76**
5/8	0.6250	4-7/8	8-3/4	116831	**42.55**	115038	**137.49**
41/64	0.6406	5-1/8	9	116832	**50.48**	115039	**160.84**
21/32	0.6562	5-1/8	9	116833	**48.80**	115040	**165.81**
43/64	0.6719	5-3/8	9-1/4	116834	**57.21**	115041	**183.82**
11/16	0.6875	5-3/8	9-1/4	116835	**54.90**	115042	**184.41**
45/64	0.7031	5-5/8	9-1/2	116836	**61.01**	115043	**202.05**
23/32	0.7188	5-5/8	9-1/2	116837	**59.92**	115044	**209.19**
47/64	0.7344	5-7/8	9-3/4	116838	**66.74**	115045	**212.69**
3/4	0.7500	5-7/8	9-3/4	116839	**63.39**	115046	**221.60**
49/64	0.7656	6	9-7/8	116840	**70.13**	115047	**230.89**
25/32	0.7812	6	9-7/8	116841	**70.13**	115048	**241.53**
51/64	0.7969	6-1/8	10	116842	**75.43**	115049	**259.98**
13/16	0.8125	6-1/8	10	116843	**74.26**	115050	**244.84**
53/64	0.8281	6-1/8	10	116844	**78.06**	115051	**264.22**
27/32	0.8438	6-1/8	10	116845	**78.06**	115052	**268.12**
55/64	0.8594	6-1/8	10	116846	**82.00**	115053	**272.54**
7/8	0.8750	6-1/8	10	116847	**81.20**	115054	**272.54**
57/64	0.8906	6-1/8	10	116848	**85.32**	115055	**278.95**
29/32	0.9062	6-1/8	10	116849	**85.32**	115056	**294.82**
59/64	0.9219	6-1/8	10-3/4	116850	**93.64**	115057	**308.38**
15/16	0.9375	6-1/8	10-3/4	116851	**92.89**	115058	**308.38**
61/64	0.9531	6-3/8	11	116852	**102.46**	115059	**340.93**
31/32	0.9688	6-3/8	11	116853	**102.46**	115060	**340.93**
63/64	0.9844	6-3/8	11	116854	**107.77**	115061	**347.12**
1	1.0000	6-3/8	11	116855	**106.95**	115062	**347.12**

STM PREMIUM

Store & organize all your drills in this cabinet.

See Page B5

Taper Length Drills

STM PREMIUM

- General purpose

Wire Gauge Sizes

HSS | SUPER COBALT | 118°

Size	Decimal Equiv.	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt Code No.	Price $
1	0.2280	3-3/4	6-1/8	115065	**14.84**	115145	**36.83**
2	0.2210	3-3/4	6-1/8	115066	**14.84**	115146	**36.83**
3	0.2130	3-5/8	6	115067	**14.84**	115147	**36.83**
4	0.2090	3-5/8	6	115068	**12.21**	115148	**36.83**
5	0.2055	3-5/8	6	115069	**14.84**	115149	**36.83**
6	0.2040	3-5/8	6	115070	**14.84**	115150	**36.83**
7	0.2010	3-5/8	6	115071	**14.11**	115151	**34.40**
8	0.1990	3-5/8	6	115072	**14.11**	115152	**33.77**
9	0.1960	3-5/8	6	115073	**14.11**	115153	**33.77**
10	0.1935	3-5/8	6	115074	**14.11**	115154	**33.77**
11	0.1910	3-5/8	6	115075	**14.11**	115155	**33.77**
12	0.1890	3-5/8	6	115076	**14.11**	115156	**33.77**
13	0.1850	3-3/8	5-3/4	115077	**13.37**	115157	**33.77**
14	0.1820	3-3/8	5-3/4	115078	**13.37**	115158	**33.77**
15	0.1800	3-3/8	5-3/4	115079	**13.37**	115159	**33.77**
16	0.1770	3-3/8	5-3/4	115080	**13.37**	115160	**31.60**
17	0.1730	3-3/8	5-3/4	115081	**13.37**	115161	**31.60**
18	0.1695	3-3/8	5-3/4	115082	**13.37**	115162	**31.60**
19	0.1660	3-3/8	5-3/4	115083	**13.37**	115163	**31.60**
20	0.1610	3-3/8	5-3/4	115084	**13.37**	115164	**31.60**
21	0.1590	3-3/8	5-3/4	115085	**13.37**	115165	**31.60**
22	0.1570	3-3/8	5-3/4	115086	**13.37**	115166	**31.60**
23	0.1540	3	5-3/8	115087	**13.37**	115167	**31.60**
24	0.1520	3	5-3/8	115088	**13.37**	115168	**31.60**
25	0.1495	3	5-3/8	115089	**12.67**	115169	**31.60**
26	0.1470	3	5-3/8	115090	**12.67**	115170	**31.60**
27	0.1440	3	5-3/8	115091	**12.67**	115171	**31.60**
28	0.1405	3	5-3/8	115092	**12.67**	115172	**30.20**
29	0.1360	3	5-3/8	115093	**12.67**	115173	**30.20**
30	0.1285	3	5-3/8	115094	**12.78**	115174	**30.20**
31	0.1200	2-3/4	5-1/8	115095	**12.78**	115175	**30.20**
32	0.1160	2-3/4	5-1/8	115096	**12.78**	115176	**30.20**
33	0.1130	2-3/4	5-1/8	115097	**12.78**	115177	**30.20**
34	0.1110	2-3/4	5-1/8	115098	**12.78**	115178	**30.20**
35	0.1100	2-3/4	5-1/8	115099	**12.78**	115179	**30.20**
36	0.1065	2-1/2	4-5/8	115100	**10.28**	115180	**27.66**
37	0.1040	2-1/2	4-5/8	115101	**10.28**	115181	**27.66**
38	0.1015	2-1/2	4-5/8	115102	**10.28**	115182	**27.66**
39	0.0995	2-1/2	4-5/8	115103	**10.28**	115183	**27.66**
40	0.0980	2-1/2	4-5/8	115104	**10.28**	115184	**25.89**
41	0.0960	2-1/2	4-5/8	115105	**10.28**	-	-
42	0.0935	2-1/4	4-1/4	115106	**8.03**	-	-
43	0.0890	2-1/4	4-1/4	115107	**8.03**	-	-
44	0.0860	2-1/4	4-1/4	115108	**8.03**	-	-
45	0.0820	2-1/4	4-1/4	115109	**8.03**	-	-
46	0.0810	2-1/4	4-1/4	115110	**8.03**	-	-
47	0.0785	2-1/4	4-1/4	115111	**8.03**	-	-
48	0.0760	2	3-3/4	115112	**8.77**	-	-
49	0.0730	2	3-3/4	115113	**8.77**	-	-
50	0.0700	2	3-3/4	115114	**8.77**	-	-
51	0.0670	2	3-3/4	115115	**8.77**	-	-
52	0.0635	2	3-3/4	115116	**8.77**	-	-
53	0.0595	1-3/4	3	115117	**8.77**	-	-
54	0.0550	1-3/4	3	115118	**8.77**	-	-
55	0.0520	1-3/4	3	115119	**8.77**	-	-
56	0.0465	1-1/8	2-1/4	115120	**8.77**	-	-
57	0.0430	1-1/8	2-1/4	115121	**8.77**	-	-
58	0.0420	1-1/8	2-1/4	115122	**8.77**	-	-
59	0.0410	1-1/8	2-1/4	115123	**8.77**	-	-
60	0.0400	1-1/8	2-1/4	115124	**8.77**	-	-
61	0.0390	1-1/8	2-1/4	115125	**8.77**	-	-
62	0.0380	3/4	2	115126	**8.77**	-	-
63	0.0370	3/4	2	115127	**8.77**	-	-
64	0.0360	3/4	2	115128	**8.77**	-	-
65	0.0350	3/4	2	115129	**8.77**	-	-
66	0.0330	3/4	2	115130	**8.77**	-	-
67	0.0320	3/4	2	115131	**8.77**	-	-
68	0.0310	3/4	2	115132	**8.77**	-	-
69	0.0292	3/4	2	115133	**8.77**	-	-
70	0.0280	3/4	2	115134	**8.77**	-	-
71	0.0260	3/4	2	115135	**8.77**	-	-
72	0.0250	5/16	1-1/2	115136	**8.77**	-	-
73	0.0240	5/16	1-1/2	115137	**8.77**	-	-
74	0.0225	5/16	1-1/2	115138	**8.77**	-	-
75	0.0210	5/16	1-1/2	115139	**8.77**	-	-
76	0.0200	5/16	1-1/2	115140	**9.10**	-	-
77	0.0180	5/16	1-1/2	115141	**9.10**	-	-
78	0.0160	5/16	1-1/2	115142	**9.10**	-	-
79	0.0145	5/16	1-1/2	115143	**9.10**	-	-
80	0.0135	5/16	1-1/2	115144	**9.10**	-	-

Letter Sizes

Size	Decimal Equiv.	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt Code No.	Price $
A	0.2340	3-3/4	6-1/8	115185	**16.57**	117842	**42.61**
B	0.2380	3-3/4	6-1/8	115186	**16.57**	117843	**42.61**
C	0.2420	3-3/4	6-1/8	115187	**16.57**	117844	**44.64**
D	0.2460	3-3/4	6-1/8	115188	**16.57**	117845	**44.64**
E	0.2500	3-3/4	6-1/8	115189	**9.24**	117846	**28.36**
F	0.2570	3-7/8	6-1/4	115190	**17.53**	117847	**53.48**
G	0.2610	3-7/8	6-1/4	115191	**19.23**	117848	**53.48**
H	0.2660	3-7/8	6-1/4	115192	**19.23**	117849	**53.48**
I	0.2720	3-7/8	6-1/4	115193	**19.23**	117850	**55.80**
J	0.2770	3-7/6	6-1/4	115194	**19.23**	117851	**55.80**
K	0.2810	3-7/8	6-1/4	115195	**19.23**	117852	**55.80**
L	0.2900	4	6-3/8	115196	**19.23**	117853	**58.56**
M	0.2950	4	6-3/8	115197	**19.45**	117854	**58.56**
N	0.3020	4	6-3/8	115198	**19.45**	117855	**59.81**
O	0.3160	4-1/8	6-1/2	115199	**19.45**	117856	**59.81**
P	0.3230	4-1/8	6-1/2	115200	**19.45**	117857	**61.84**
Q	0.3320	4-1/8	6-1/2	115201	**19.45**	117858	**61.84**
R	0.3390	4-1/8	6-1/2	115202	**21.07**	117859	**63.53**
S	0.3480	4-1/4	6-3/4	115203	**23.94**	117860	**69.72**
T	0.3580	4-1/4	6-3/4	115204	**23.94**	117861	**74.40**
U	0.3680	4-1/4	6-3/4	115205	**25.85**	117862	**78.26**
V	0.3770	4-3/8	7	115206	**26.89**	117863	**78.26**
W	0.3860	4-3/8	7	115207	**26.89**	117864	**78.26**
X	0.3970	4-3/8	7	115208	**26.89**	117865	**78.26**
Y	0.4040	4-3/8	7	115209	**28.76**	117866	**85.22**
Z	0.4130	4-5/8	7-1/4	115210	**31.05**	117867	**85.22**

Metric - HSS

Size (mm)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
1.00	0.0394	1-1/8	2-1/4	115211	**7.88**
1.05	0.0413	1-1/8	2-1/4	115212	**10.94**
1.10	0.0433	1-1/8	2-1/4	115213	**4.63**
1.15	0.0453	1-1/8	2-1/4	115214	**10.94**
1.20	0.0472	1-3/4	3	115215	**9.06**
1.25	0.0492	1-3/4	3	115216	**9.06**
1.30	0.0512	1-3/4	3	115217	**9.06**
1.35	0.0531	1-3/4	3	115218	**10.94**
1.40	0.0551	1-3/4	3	115219	**9.06**
1.45	0.0571	1-3/4	3	115220	**12.41**
1.50	0.0591	1-3/4	3	115221	**9.06**
1.55	0.0610	1-3/4	3	115222	**12.41**
1.60	0.0630	2	3-3/4	115223	**10.94**
1.65	0.0650	2	3-3/4	115224	**12.41**
1.70	0.0669	2	3-3/4	115225	**10.94**
1.75	0.0689	2	3-3/4	115226	**12.41**
1.80	0.0709	2	3-3/4	115227	**10.94**
1.85	0.0728	2	3-3/4	115228	**12.41**
1.90	0.0748	2	3-3/4	115229	**10.94**
1.95	0.0768	2	3-3/4	115230	**12.41**
2.00	0.0787	2-1/4	4-1/4	115231	**11.53**
2.05	0.0807	2-1/4	4-1/4	115232	**14.58**

Taper Length Drills – Metric - HSS — Cont'd

Size (mm)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
2.10	0.0827	2-1/4	4-1/4	115233	**12.41**
2.15	0.0846	2-1/4	4-1/4	115234	**13.85**
2.20	0.0866	2-1/4	4-1/4	115235	**12.41**
2.25	0.0886	2-1/4	4-1/4	115236	**14.58**
2.30	0.0906	2-1/4	4-1/4	115237	**12.41**
2.35	0.0925	2-1/4	4-1/4	115238	**17.20**
2.40	0.0945	2-1/2	4-5/8	115239	**15.91**
2.45	0.0965	2-1/2	4-5/8	115240	**17.20**
2.50	0.0984	2-1/2	4-5/8	115241	**15.91**
2.60	0.1024	2-1/2	4-5/8	115242	**17.49**
2.70	0.1063	2-1/2	4-5/8	115243	**17.49**
2.80	0.1102	2-3/4	5-1/8	115244	**17.49**
2.90	0.1142	2-3/4	5-1/8	115245	**17.49**
3.00	0.1181	2-3/4	5-1/8	115246	**14.73**
3.10	0.1220	2-3/4	5-1/8	115247	**16.35**
3.20	0.1260	3	5-3/8	115248	**18.16**
3.30	0.1299	3	5-3/8	115249	**18.16**
3.40	0.1339	3	5-3/8	115250	**19.56**
3.50	0.1378	3	5-3/8	115251	**18.16**
3.60	0.1417	3	5-3/8	115252	**20.26**
3.70	0.1457	3	5-3/8	115253	**20.26**
3.80	0.1496	3	5-3/8	115254	**20.26**
3.90	0.1535	3	5-3/8	115255	**21.14**
4.00	0.1575	3-3/8	5-3/4	115256	**18.16**
4.10	0.1614	3-3/8	5-3/4	115257	**21.14**
4.20	0.1654	3-3/8	5-3/4	115258	**18.16**
4.30	0.1693	3-3/8	5-3/4	115259	**21.14**
4.40	0.1732	3-3/8	5-3/4	115260	**21.14**
4.50	0.1772	3-3/8	5-3/4	115261	**18.16**
4.60	0.1811	3-3/8	5-3/4	115262	**20.40**
4.70	0.1850	3-3/8	5-3/4	115263	**26.26**
4.80	0.1890	3-5/8	6	115264	**22.76**
4.90	0.1929	3-5/8	6	115265	**22.76**
5.00	0.1968	3-5/8	6	115266	**21.14**
5.10	0.2008	3-5/8	6	115267	**26.26**
5.20	0.2047	3-5/8	6	115268	**26.26**
5.30	0.2087	3-5/8	6	115269	**26.26**
5.40	0.2126	3-5/8	6	115270	**26.26**
5.50	0.2165	3-5/8	6	115271	**21.14**
5.60	0.2205	3-3/4	6-1/8	115272	**24.01**
5.70	0.2244	3-3/4	6-1/8	115273	**24.01**
5.80	0.2283	3-3/4	6-1/8	115274	**26.26**
5.90	0.2323	3-3/4	6-1/8	115275	**13.22**
6.00	0.2362	3-3/4	6-1/8	115276	**21.14**
6.10	0.2402	3-3/4	6-1/8	115277	**32.08**
6.20	0.2441	3-3/4	6-1/8	115278	**32.08**
6.30	0.2480	3-3/4	6-1/8	115279	**32.08**
6.40	0.2520	3-7/8	6-1/4	115280	**26.26**
6.50	0.2559	3-7/8	6-1/4	115281	**26.26**
6.80	0.2677	3-7/8	6-1/4	115282	**27.70**
7.00	0.2756	3-7/8	6-1/4	115283	**27.70**
7.20	0.2835	4	6-3/8	115284	**28.29**
7.50	0.2953	4	6-3/8	115285	**28.29**
7.80	0.3071	4	6-3/8	115286	**30.64**
8.00	0.3150	4-1/8	6-1/2	115287	**31.75**
8.20	0.3228	4-1/8	6-1/2	115288	**34.44**
8.50	0.3346	4-1/8	6-1/2	115289	**34.44**
8.80	0.3465	4-1/4	6-3/4	115290	**41.10**
9.00	0.3543	4-1/4	6-3/4	115291	**36.46**
9.20	0.3622	4-1/4	6-3/4	115292	**40.11**
9.50	0.3740	4-1/4	6-3/4	115293	**40.11**
9.80	0.3858	4-3/8	7	115294	**42.28**
10.00	0.3937	4-3/8	7	115295	**40.11**
10.20	0.4016	4-3/8	7	115296	**42.28**
10.50	0.4134	4-5/8	7-1/4	115297	**42.28**
10.80	0.4252	4-5/8	7-1/4	115298	**48.87**
11.00	0.4331	4-5/8	7-1/4	115299	**42.28**
11.20	0.4409	4-3/4	7-1/2	115300	**42.28**
11.50	0.4528	4-3/4	7-1/2	115301	**48.87**
11.80	0.4646	4-3/4	7-1/2	115302	**58.26**
12.00	0.4724	4-3/4	7-3/4	115303	**51.05**
12.20	0.4803	4-3/4	7-3/4	115304	**59.81**
12.50	0.4921	4-3/4	7-3/4	115305	**51.05**
12.80	0.5039	4-3/4	8	115306	**77.31**
13.00	0.5118	4-3/4	8	115307	**71.45**
13.20	0.5197	4-3/4	8	115308	**99.18**
13.50	0.5315	4-3/4	8	115309	**83.12**
13.80	0.5433	4-7/8	8-1/4	115310	**99.18**
14.00	0.5512	4-7/8	8-1/4	115311	**83.12**
14.25	0.5610	4-7/8	8-1/4	115312	**109.38**
14.50	0.5709	4-7/8	8-3/4	115313	**99.18**
14.75	0.5807	4-7/8	8-3/4	115314	**109.38**
15.00	0.5906	4-7/8	8-3/4	115315	**100.62**
15.25	0.6004	4-7/8	8-3/4	115316	**119.59**
15.50	0.6102	4-7/8	8-3/4	115317	**103.57**
15.75	0.6201	4-7/8	8-3/4	115318	**119.59**
16.00	0.6299	5-1/8	9	115319	**115.94**
16.25	0.6938	5-1/8	9	115320	**129.79**
16.50	0.6496	5-1/8	9	115321	**119.59**
16.75	0.6594	5-3/8	9-1/4	115322	**144.37**
17.00	0.6693	5-3/8	9-1/4	115323	**61.34**
17.25	0.6791	5-3/8	9-1/4	115324	**150.23**
17.50	0.6890	5-5/8	9-1/2	115325	**144.37**
17.75	0.6988	5-5/8	9-1/2	115326	**167.72**
18.00	0.7087	5-5/8	9-1/2	115327	**150.23**
18.50	0.7283	5-7/8	9-3/4	115328	**167.72**
19.00	0.7480	5-7/8	9-3/4	115329	**170.63**
19.20	0.7559	6	9-7/8	115330	**52.41**
19.50	0.7677	6	9-7/8	115331	**177.92**
20.00	0.7874	6-1/8	10	115332	**188.13**
20.50	0.8071	6-1/8	10	115333	**196.89**
21.00	0.8268	6-1/8	10	115334	**201.27**
21.50	0.8465	6-1/8	10	115335	**211.48**
22.00	0.8661	6-1/8	10	115336	**211.48**
22.50	0.8858	6-1/8	10	115337	**217.30**
23.00	0.9055	6-1/8	10	115338	**221.68**
23.50	0.9252	6-1/8	10-3/4	115339	**240.65**
24.00	0.9449	6-3/8	11	115340	**262.52**
24.50	0.9646	6-3/8	11	115341	**277.11**
25.00	0.9843	6-3/8	11	115342	**277.11**
25.50	1.0039	6-1/2	11-1/8	115343	**323.77**
26.00	1.0236	6-1/2	11-1/8	115344	**335.45**
26.50	1.0433	6-5/8	11-1/4	115345	**350.03**
27.00	1.0630	6-5/8	11-1/4	115346	**364.62**
27.50	1.0827	6-7/8	11-1/2	115347	**379.20**
28.00	1.1024	7-1/8	11-3/4	115348	**393.78**
28.50	1.1220	7-1/8	11-3/4	115349	**401.08**
29.00	1.1417	7-1/4	11-7/8	115350	**422.95**
29.50	1.1614	7-3/8	12	115351	**436.06**
30.00	1.1811	7-3/8	12	115352	**452.12**
30.50	1.2008	7-1/2	12-1/8	115353	**466.71**
31.00	1.2205	7-7/8	12-1/2	115354	**478.38**
31.50	1.2402	7-7/8	12-1/2	115355	**525.05**
32.00	1.2598	8-1/2	14-1/8	115356	**568.80**
32.50	1.2795	8-1/2	14-1/8	115357	**583.38**
33.00	1.2992	8-5/8	14-1/4	115358	**605.26**
33.50	1.3189	8-3/4	14-3/8	115359	**619.85**
34.00	1.3386	8-3/4	14-3/8	115360	**631.52**
34.50	1.3583	8-7/8	14-1/2	115361	**647.54**
35.00	1.3780	9	14-5/8	115362	**656.31**
35.50	1.3976	9	14-5/8	115363	**670.89**
36.00	1.4173	9-1/8	14-3/4	115364	**700.06**
36.50	1.4370	9-1/8	14-3/4	115365	**721.94**
37.00	1.4567	9-1/4	14-7/8	115366	**745.29**
37.50	1.4764	9-3/8	15	115367	**794.86**
38.00	1.4961	9-3/8	15	115368	**829.85**

Aircraft Extension Drills

- 6" and 12" Overall Length
- Split Point
- Sizes smaller than 1/16" are not split point

STM PREMIUM

HSS COBALT

Size	Decimal Equiv.	Flute Length (in.)	HSS 6" O.A.L. Code No.	Price $	HSS 12" O.A.L. Code No.	Price $	Cobalt 6" O.A.L. Code No.	Price $	Cobalt 12" O.A.L. Code No.	Price $
60	0.0400	11/16	117300	**12.37**	117405	**19.59**	117521	**24.79**	-	**-**
59	0.0410	11/16	117301	**12.37**	117406	**19.59**	-	**-**	-	**-**
58	0.0420	11/16	117302	**12.34**	117407	**19.59**	-	**-**	-	**-**
57	0.0430	3/4	117303	**12.37**	117408	**18.19**	-	**-**	-	**-**
56	0.0465	3/4	117304	**10.17**	117409	**18.19**	117522	**24.79**	-	**-**
3/64	0.0469	3/4	117305	**9.72**	117410	**19.30**	-	**-**	-	**-**
55	0.0520	7/8	117306	**10.17**	117411	**18.19**	115605	**24.79**	-	**-**
54	0.0550	7/8	117307	**10.17**	117412	**18.19**	-	**-**	-	**-**
53	0.0595	7/8	117308	**5.30**	117413	**18.19**	117523	**24.79**	-	**-**
1/16	0.0625	7/8	117309	**5.30**	117414	**15.62**	117524	**11.64**	117582	**36.42**
52	0.0635	7/8	117310	**5.97**	117415	**17.20**	115608	**13.19**	115683	**36.42**
51	0.0670	1	117311	**5.97**	117416	**17.20**	115609	**13.19**	115684	**36.42**
50	0.0700	1	117312	**5.41**	117417	**18.41**	117525	**13.19**	117583	**36.42**
49	0.0730	1	117313	**5.97**	117418	**18.41**	115611	**13.19**	115686	**36.42**
48	0.0760	1	117314	**5.97**	117419	**18.41**	115612	**13.19**	115687	**36.42**
5/64	0.0781	1	117315	**5.30**	117420	**15.62**	117526	**11.64**	117584	**36.42**
47	0.0785	1	117316	**5.97**	117421	**18.41**	115614	**13.19**	115689	**36.42**
46	0.0810	1-1/8	117317	**5.97**	117422	**18.41**	115615	**13.19**	115690	**36.42**
45	0.0820	1-1/8	117318	**5.97**	117423	**18.41**	115616	**13.19**	115691	**36.42**
44	0.0860	1-1/8	117319	**5.97**	117424	**18.41**	117527	**13.19**	115692	**36.42**
43	0.0890	1-1/4	117320	**5.97**	117425	**18.41**	117528	**13.19**	115693	**36.42**
42	0.0935	1-1/4	117321	**4.75**	117426	**17.20**	115619	**10.53**	115694	**36.42**
3/32	0.0938	1-1/4	117322	**4.49**	117427	**16.21**	117529	**10.05**	117585	**26.11**
41	0.0960	1-3/8	117323	**4.75**	117428	**17.20**	117530	**10.53**	115696	**36.42**
40	0.0980	1-3/8	117324	**4.49**	117429	**14.07**	117531	**9.91**	117586	**26.19**
39	0.0995	1-3/8	117325	**5.52**	117430	**17.16**	115623	**10.53**	115698	**32.56**
38	0.1015	1-7/16	117326	**5.52**	117431	**17.16**	115624	**10.53**	115699	**32.56**
37	0.1040	1-7/16	117327	**5.52**	117432	**17.16**	115625	**10.53**	115700	**32.56**
36	0.1065	1-7/16	117328	**5.52**	117433	**17.16**	117532	**10.53**	115701	**32.56**
7/64	0.1094	1-1/2	117329	**4.49**	117434	**16.21**	117533	**10.05**	117587	**26.11**
35	0.1100	1-1/2	117330	**5.52**	117435	**17.16**	117534	**10.86**	115703	**32.56**
34	0.1110	1-1/2	117331	**3.20**	117436	**17.16**	117535	**10.86**	115704	**32.56**
33	0.1130	1-1/2	117332	**5.67**	117437	**17.16**	117536	**10.86**	115705	**32.56**
32	0.1160	1-5/8	117333	**5.67**	117438	**10.29**	117537	**10.86**	115706	**32.56**
31	0.1200	1-5/8	117334	**5.67**	117439	**14.07**	117538	**10.86**	115707	**32.56**
1/8	0.1250	1-5/8	117335	**4.49**	117440	**12.85**	117539	**8.99**	117588	**26.11**
30	0.1285	1-5/8	117336	**4.49**	117441	**14.07**	117540	**10.05**	117589	**26.19**
29	0.1360	1-3/4	117337	**5.63**	117442	**15.80**	117541	**6.69**	115710	**26.96**
28	0.1405	1-3/4	117338	**5.63**	117443	**15.80**	117542	**13.96**	115711	**32.56**
9/64	0.1406	1-3/4	117339	**5.45**	117444	**13.52**	117543	**12.23**	117590	**27.44**
27	0.1440	1-7/8	117340	**5.63**	117445	**15.80**	117544	**13.96**	115713	**19.15**
26	0.1470	1-7/8	117341	**6.08**	117446	**17.16**	117545	**13.96**	115714	**32.56**
25	0.1495	1-7/8	117342	**6.08**	117447	**17.16**	117546	**13.96**	115715	**32.56**
24	0.1520	2	117343	**6.08**	117448	**17.16**	117547	**13.96**	115716	**32.56**
23	0.1540	2	117344	**6.08**	117449	**17.16**	117548	**13.96**	115717	**32.56**
5/32	0.1562	2	117345	**5.45**	117450	**13.52**	117549	**11.23**	117591	**27.44**
22	0.1570	2	117346	**6.08**	117451	**17.16**	117550	**13.96**	115719	**32.56**
21	0.1590	2-1/8	117347	**5.67**	117452	**12.67**	117551	**12.19**	117592	**26.96**
20	0.1610	2-1/8	117348	**5.67**	117453	**12.67**	117552	**12.19**	117593	**17.72**
19	0.1660	2-1/8	117349	**6.26**	117454	**17.05**	117553	**14.73**	117594	**32.56**
18	0.1695	2-1/8	117350	**6.59**	117455	**17.05**	117554	**14.73**	115723	**32.56**
11/64	0.1719	2-1/8	117351	**5.86**	117456	**14.73**	117555	**12.08**	117595	**28.51**
17	0.1730	2-3/16	117352	**6.59**	117457	**17.05**	117556	**14.73**	115725	**32.56**
16	0.1770	2-3/16	117353	**6.59**	117458	**17.05**	117557	**14.73**	115726	**32.56**
15	0.1800	2-3/16	117354	**6.59**	117459	**17.05**	117558	**14.73**	115727	**32.56**
14	0.1820	2-3/16	117355	**6.59**	117460	**17.05**	117559	**14.73**	115728	**32.56**
13	0.1850	2-5/16	117356	**6.59**	117461	**15.73**	117560	**15.51**	115729	**32.56**
3/16	0.1875	2-5/16	117357	**5.86**	117462	**14.73**	117561	**12.08**	117596	**28.51**
12	0.1890	2-5/16	117358	**6.59**	117463	**17.05**	117562	**15.51**	115731	**32.56**
11	0.1910	2-5/16	117359	**6.59**	117464	**17.05**	117563	**14.18**	115732	**32.56**
10	0.1935	2-7/16	117360	**7.03**	117465	**15.21**	117564	**14.18**	117597	**28.51**
9	0.1960	2-7/16	117361	**7.40**	117466	**17.05**	117565	**17.05**	115734	**38.74**
8	0.1990	2-7/16	117362	**7.40**	117467	**17.05**	117566	**17.83**	115735	**38.74**
7	0.2010	2-7/16	117363	**7.40**	117468	**17.05**	117567	**17.83**	115736	**38.74**
13/64	0.2031	2-7/16	117364	**7.11**	117469	**16.46**	117568	**14.81**	117598	**34.66**
6	0.2040	2-1/2	117365	**7.92**	117470	**18.75**	117569	**17.83**	115738	**38.74**
5	0.2055	2-1/2	117366	**7.92**	117471	**18.75**	117570	**17.83**	115739	**38.74**

Aircraft Extension Drills — Cont'd

Size	Decimal Equiv.	Flute Length (in.)	HSS 6" O.A.L. Code No.	Price $	HSS 12" O.A.L. Code No.	Price $	Cobalt 6" O.A.L. Code No.	Price $	Cobalt 12" O.A.L. Code No.	Price $
4	0.2090	2-1/2	117367	**7.92**	117472	**19.78**	117571	**17.83**	115740	**38.74**
3	0.2130	2-1/2	117368	**7.92**	117473	**19.78**	117572	**17.83**	115741	**36.20**
7/32	0.2188	2-1/2	117369	**7.11**	117474	**16.46**	117573	**15.43**	117599	**34.66**
2	0.2210	2-5/8	117370	**8.25**	117475	**19.78**	117574	**17.83**	115743	**36.20**
1	0.2280	2-5/8	117371	**8.25**	117476	**19.78**	117575	**17.83**	117600	**36.20**
A	0.2340	2-5/8	117372	**13.07**	117477	**29.13**	-	**-**	-	**-**
15/64	0.2344	2-5/8	117373	**7.73**	117478	**17.75**	117576	**17.27**	117601	**36.28**
B	0.2380	2-3/4	117374	**13.07**	117479	**29.13**	-	**-**	-	**-**
C	0.2420	2-3/4	117375	**13.07**	117480	**29.13**	117577	**23.06**	-	**-**
D	0.2460	2-3/4	117376	**13.07**	117481	**29.13**	117578	**23.06**	-	**-**
1/4	0.2500	2-3/4	117377	**7.40**	117482	**16.54**	117579	**18.53**	117602	**36.28**
E	0.2500	2-3/4	117378	**11.20**	117483	**25.04**	117580	**18.27**	117603	**22.37**
F	0.2570	2-7/8	117379	**12.71**	117484	**27.84**	117581	**59.19**	-	**-**
G	0.2610	2-7/8	117380	**21.03**	117485	**29.13**	-	**-**	-	**-**
17/64	0.2656	2-7/8	117381	**16.46**	117486	**21.88**	115676	**40.29**	115748	**49.83**
H	0.2660	2-7/8	117382	**22.50**	117487	**31.82**	-	**-**	-	**-**
I	0.2720	2-7/8	117383	**22.50**	117488	**29.50**	-	**-**	-	**-**
J	0.2770	2-7/8	117384	**22.50**	117489	**31.82**	-	**-**	-	**-**
K	0.2810	2-5/16	117385	**22.50**	117490	**34.10**	115677	**46.48**		
9/32	0.2812	2-5/16	117386	**17.05**	117491	**21.88**	115678	**26.24**	117604	**58.85**
L	0.2900	2-5/16	117387	**27.29**	117492	**42.06**	-	**-**	-	**-**
M	0.2950	3-1/16	117388	**27.29**	117493	**42.06**	-	**-**	-	**-**
19/64	0.2969	3-1/16	117389	**18.93**	117494	**24.82**	115679	**51.49**	117605	**62.68**
N	0.3020	3-1/16	117390	**30.68**	117495	**44.31**	-	**-**	-	**-**
5/16	0.3125	3-3/16	117391	**20.55**	117496	**26.92**	115680	**54.58**	117606	**65.34**
O	0.3160	3-3/16	117392	**32.96**	117497	**47.73**	-	**-**	-	**-**
P	0.3230	3-5/16	115463	**32.96**	117498	**47.73**	-	**-**	-	**-**
21/64	0.3281	3-5/16	117393	**22.21**	117499	**28.62**	-	**-**	115752	**68.58**
Q	0.3320	3-7/16	115465	**32.96**	117500	**50.01**	-	**-**	-	**-**
R	0.3390	3-7/16	115466	**36.35**	117501	**51.71**	-	**-**	-	**-**
11/32	0.3438	3-7/16	117394	**22.06**	117502	**28.62**	-	**-**	117607	**68.36**
S	0.3480	3-1/2	115468	**38.63**	117503	**54.54**	-	**-**	-	**-**
T	0.3580	3-1/2	115469	**38.63**	117504	**54.54**	-	**-**	-	**-**
23/64	0.3594	3-1/2	117395	**24.79**	117505	**31.82**	115681	**60.81**	117608	**82.39**
U	0.3680	3-5/8	115471	**38.63**	117506	**54.54**	-	**-**	-	**-**
3/8	0.3750	3-5/8	117396	**25.23**	117507	**32.96**	-	**-**	117609	**82.39**
V	0.3770	3-5/8	115473	**42.06**	117508	**57.97**	-	**-**	-	**-**
W	0.3860	3-3/4	115474	**42.06**	117509	**57.97**	-	**-**	-	**-**
25/64	0.3906	3-3/4	117397	**29.68**	117510	**36.17**	-	**-**	-	**-**
X	0.3970	3-3/4	115476	**42.06**	117511	**60.22**	-	**-**	115756	**98.70**
Y	0.4040	3-7/8	115477	**42.06**	117512	**60.22**	-	**-**	-	**-**
13/32	0.4062	3-7/8	117398	**29.68**	117513	**37.23**	-	**-**	117610	**88.65**
Z	0.4130	3-7/8	115479	**47.73**	117514	**64.78**	-	**-**	-	**-**
27/64	0.4219	3-15/16	117399	**32.59**	117515	**38.63**	-	**-**	-	**-**
7/16	0.4375	4-1/16	117400	**32.59**	117516	**38.63**	-	**-**	117611	**96.86**
29/64	0.4531	4-3/16	117401	**35.80**	117517	**43.31**	-	**-**	115759	**96.86**
15/32	0.4688	4-5/16	117402	**37.16**	117518	**46.77**	-	**-**	115760	**99.96**
31/64	0.4844	4-3/8	117403	**37.49**	117519	**47.58**	-	**-**	115761	**99.96**
1/2	0.5000	4-1/2	117404	**38.30**	117520	**47.58**	-	**-**	117612	**102.42**

STM

Did you know?

You can extend the life of your drills with our STM Drill Sharpeners.

See Page I5

6" Extra Length Drills HSS

- 4" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/16	0.0625	116888	**15.84**
5/64	0.0781	116889	**16.25**
3/32	0.0938	116890	**12.46**
7/64	0.1094	116891	**13.54**
1/8	0.1250	116892	**13.54**
9/64	0.1406	116893	**17.20**
5/32	0.1562	116894	**17.20**
11/64	0.1719	116895	**19.26**
3/16	0.1875	116896	**19.26**

8" Extra Length Drills HSS

- 5-1/2" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/16	0.0625	116887	**12.24**
3/32	0.0938	116897	**19.13**
7/64	0.1094	116898	**19.13**
1/8	0.1250	116899	**19.97**
9/64	0.1406	116900	**20.26**
5/32	0.1562	116901	**20.26**
11/64	0.1719	116902	**20.93**
3/16	0.1875	116903	**20.93**
13/64	0.2031	116904	**21.62**
7/32	0.2188	116905	**21.62**
15/64	0.2344	116906	**21.62**
1/4	0.2500	116907	**22.08**
17/64	0.2656	116908	**24.81**
9/32	0.2812	116909	**24.81**
19/64	0.2969	116910	**25.55**
5/16	0.3125	116911	**25.84**
21/64	0.3281	116912	**26.64**
11/32	0.3438	116913	**26.92**
23/64	0.3594	116914	**29.63**
3/8	0.3750	116915	**30.38**
25/64	0.3906	116916	**32.92**
13/32	0.4062	116917	**32.92**
27/64	0.4219	116918	**35.00**
7/16	0.4219	116919	**35.00**
29/64	0.4531	116920	**40.09**
15/32	0.4688	116923	**40.09**
1/2	0.5000	116924	**41.38**

9" Extra Length Drills HSS

- 6-1/2" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
27/64	0.4219	116978	**36.03**
7/16	0.4375	116921	**36.03**
29/64	0.4531	116922	**41.54**
31/64	0.4844	116980	**42.89**
1/2	0.5000	116982	**42.42**

10" Extra Length Drills HSS

- 7-1/2" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/8	0.1250	116983	**21.42**
9/64	0.1406	116926	**21.42**
5/32	0.1562	116927	**21.42**
11/64	0.1719	116928	**22.30**
3/16	0.1875	116929	**22.30**
13/64	0.2031	116930	**22.30**
7/32	0.2188	116931	**22.30**
15/64	0.2344	116932	**22.30**
1/4	0.2500	116933	**23.54**
17/64	0.2344	116934	**26.46**
9/32	0.2812	116935	**26.46**
19/64	0.2969	116936	**25.42**
5/16	0.3125	116937	**27.52**
21/64	0.3281	116938	**37.86**
11/32	0.3438	116939	**28.76**
23/64	0.3594	116940	**31.32**
3/8	0.3750	116941	**32.13**
25/64	0.3906	116942	**35.22**
13/32	0.4062	116943	**35.22**
27/64	0.4219	116944	**36.83**
7/16	0.4375	116945	**36.83**
29/64	0.4531	116946	**42.75**
15/32	0.4688	116947	**42.75**
31/64	0.4844	116948	**43.96**
1/2	0.5000	116949	**43.83**

12" Extra Length Drills HSS

- 9" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
7/64	0.1094	116984	**29.43**
1/8	0.1250	116950	**24.00**
9/64	0.1406	116951	**25.28**
5/32	0.1562	116952	**25.28**
11/64	0.1719	116953	**26.92**
3/16	0.1875	116954	**26.92**
13/64	0.2031	116955	**26.92**
7/32	0.2188	116956	**28.80**
15/64	0.2344	116957	**28.80**
1/4	0.2500	116958	**28.80**
17/64	0.2656	116959	**30.02**
9/32	0.2812	116960	**30.02**
19/64	0.2969	116961	**32.69**
5/16	0.3125	116962	**32.69**
21/64	0.3281	116963	**35.56**
11/32	0.3438	116964	**35.56**
23/64	0.3594	116965	**38.01**
3/8	0.3750	116966	**38.01**
25/64	0.3906	116967	**41.85**
13/32	0.4062	116968	**41.85**
27/64	0.4219	116969	**43.63**
7/16	0.4375	116970	**43.63**
29/64	0.4531	116971	**51.58**
15/32	0.4688	116972	**51.58**
31/64	0.4844	116973	**54.44**
1/2	0.5000	116974	**54.44**
33/64	0.5156	116985	**68.53**
17/32	0.5312	116976	**80.77**
35/64	0.5469	116986	**80.39**
9/16	0.5625	116987	**80.39**
37/64	0.5781	116988	**85.62**
19/32	0.5938	116989	**85.62**
39/64	0.6094	116981	**95.87**
5/8	0.6250	116990	**90.37**
41/64	0.6406	116991	**109.81**
21/32	0.6562	116992	**109.81**
43/64	0.6719	116993	**117.08**
11/16	0.6875	116994	**118.23**
45/64	0.7031	116995	**122.70**
23/32	0.7188	116996	**122.70**
3/4	0.7500	116997	**132.57**
25/32	0.7812	116998	**145.49**
13/16	0.8125	116999	**156.81**
7/8	0.8750	117000	**188.25**

18" Extra Length Drills HSS

- 12" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
3/16	0.1875	117027	**54.58**
13/64	0.2031	117028	**54.58**
7/32	0.2188	117029	**56.13**
15/64	0.2344	117030	**56.13**
1/4	0.2500	117031	**54.58**
17/64	0.2656	117032	**59.59**
9/32	0.2812	117033	**59.59**
19/64	0.2969	117034	**63.08**
5/16	0.3125	117035	**63.08**
21/64	0.3281	117036	**64.48**
11/32	0.3438	117037	**64.48**
23/64	0.3594	117038	**65.91**
3/8	0.3750	117039	**65.91**
25/64	0.3906	117040	**69.21**
13/32	0.4062	117041	**69.21**
27/64	0.4219	117043	**73.17**
7/16	0.4375	117045	**73.17**
29/64	0.4531	117046	**85.32**
15/32	0.4688	117047	**85.32**
31/64	0.4844	117048	**88.79**
1/2	0.5000	117049	**88.79**
17/32	0.5312	117051	**133.97**
35/64	0.5469	117052	**134.73**
9/16	0.5625	117053	**140.54**
19/32	0.5938	117054	**146.94**
5/8	0.625	117055	**153.94**
21/32	0.6562	117056	**160.27**
11/16	0.6875	117057	**184.79**
23/32	0.7031	117059	**188.59**
3/4	0.7500	117060	**198.79**
25/32	0.7812	117061	**203.00**
13/16	0.8125	117062	**216.10**
7/8	0.8750	117064	**235.14**
1	1.000	117065	**272.70**

24" Extra Length Drills HSS

- 18" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
3/8	0.3750	117066	**154.61**
7/16	0.4375	117067	**112.28**
1/2	0.5000	117068	**136.42**
9/16	0.5625	117069	**208.22**
5/8	0.625	117070	**228.09**
3/4	0.7500	117071	**294.24**
7/8	0.8750	117072	**348.11**
1	1.000	117073	**403.90**

48" Extra Length Drills HSS

- 5-1/2" flute length
- Fractional sizes

Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/4	0.2500	117074	**121.06**
5/16	0.3125	117075	**129.79**
3/8	0.3750	117076	**144.37**
1/2	0.5000	117078	**180.83**

Taper Shank Drills HSS

- General purpose

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1/16	0.0625	1-1/4	4-5/8	1	114000	**26.74**
5/64	0.0781	1-3/8	4-3/4	1	114001	**26.74**
1/8	0.1250	1-7/8	5-1/8	1	114002	**22.91**
9/64	0.1406	2-1/8	5-3/8	1	114003	**22.91**
5/32	0.1562	2-1/8	5-3/8	1	114004	**22.91**
11/64	0.1719	2-1/2	5-3/4	1	114005	**22.91**
3/16	0.1875	2-1/2	5-3/4	1	114006	**22.13**
13/64	0.2031	2-3/4	6	1	114007	**22.91**
7/32	0.2188	2-3/4	6	1	114008	**22.91**
15/64	0.2344	2-7/8	6-1/8	1	114009	**22.91**
1/4	0.2500	2-7/8	6-1/8	1	114010	**22.91**
17/64	0.2656	3	6-1/4	1	114011	**23.61**
9/32	0.2812	3	6-1/4	1	114012	**23.61**
19/64	0.2969	3-1/8	6-3/8	1	114013	**23.61**
5/16	0.3125	3-1/8	6-3/8	1	114014	**23.61**
21/64	0.3281	3-1/4	6-1/2	1	114015	**31.45**
11/32	0.3438	3-1/4	6-1/2	1	114016	**31.45**
23/64	0.3594	3-1/2	6-3/4	1	114017	**31.45**
3/8	0.3750	3-1/2	6-3/4	1	114018	**31.45**
25/64	0.3906	3-5/8	7	1	114019	**33.22**
13/32	0.4062	3-5/8	7	1	114020	**33.44**
27/64	0.4219	3-7/8	7-1/4	1	114022	**34.44**
7/16	0.4375	3-7/8	7-1/4	1	114023	**34.44**
29/64	0.4531	4-1/8	7-1/2	1	114024	**39.22**
15/32	0.4688	4-1/8	7-1/2	1	114025	**40.62**
31/64	0.4844	4-3/8	8-1/4	2	114026	**34.51**
1/2	0.5000	4-3/8	8-1/4	2	114027	**36.17**
33/64	0.5156	4-5/8	8-1/2	2	114028	**41.25**
17/32	0.5312	4-5/8	8-1/2	2	114029	**41.69**
35/64	0.5469	4-7/8	8-3/4	2	114030	**44.71**
9/16	0.5625	4-7/8	8-3/4	2	114031	**41.69**
37/64	0.5781	4-7/8	8-3/4	2	114032	**47.73**
19/32	0.5938	4-7/8	8-3/4	2	114033	**46.88**
39/64	0.6094	4-7/8	8-3/4	2	114034	**46.88**
5/8	0.6250	4-7/8	8-3/4	2	114035	**46.88**
41/64	0.6406	5-1/8	9	2	114036	**51.67**
21/32	0.6562	5-1/8	9	2	114037	**51.67**
43/64	0.6719	5-3/8	9-1/4	2	114038	**55.43**
11/16	0.6875	5-3/8	9-1/4	2	114039	**52.30**
45/64	0.7031	5-5/8	9-1/2	2	114040	**57.75**
23/32	0.7188	5-5/8	9-1/2	2	114041	**57.75**
47/64	0.7344	5-7/8	9-3/4	2	114042	**61.32**
3/4	0.7500	5-7/8	9-3/4	2	114043	**58.41**
49/64	0.7656	6	9-7/8	2	114044	**73.73**
25/32	0.7812	6	9-7/8	2	114045	**76.57**
51/64	0.7969	6-1/8	10-3/4	3	114046	**80.73**
13/16	0.8125	6-1/8	10-3/4	3	114047	**78.34**
53/64	0.8281	6-1/8	10-3/4	3	114048	**87.03**
27/32	0.8438	6-1/8	10-3/4	3	114049	**87.03**
55/64	0.8594	6-1/8	10-3/4	3	114050	**90.49**
7/8	0.8750	6-1/8	10-3/4	3	114051	**85.22**
57/64	0.8906	6-1/8	10-3/4	3	114052	**92.74**
29/32	0.9062	6-1/8	10-3/4	3	114053	**91.67**
59/64	0.9219	6-1/8	10-3/4	3	114054	**94.28**
15/16	0.9375	6-1/8	10-3/4	3	114055	**94.28**
61/64	0.9531	6-3/8	11	3	114056	**101.54**
31/32	0.9688	6-3/8	11	3	114057	**101.54**
63/64	0.9844	6-3/8	11	3	114058	**103.71**
1	1.0000	6-3/8	11	3	114059	**95.21**
1-1/64	1.0156	6-1/2	11-1/8	3	114060	**111.89**
1-1/32	1.0312	6-1/2	11-1/8	3	114061	**115.87**
1-3/64	1.0469	6-5/8	11-1/4	3	114062	**125.55**
1-1/16	1.0625	6-5/8	11-1/4	3	114063	**118.30**
1-5/64	1.0781	6-7/8	12-1/2	4	114064	**135.57**
1-3/32	1.0938	6-7/8	12-1/2	4	114065	**135.57**
1-7/64	1.1094	7-1/8	12-3/4	4	114067	**140.98**
1-1/8	1.1250	7-1/8	12-3/4	4	114068	**138.44**

Taper Shank Drills HSS — Cont'd

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1-9/64	1.1406	7-1/4	12-7/8	4	114069	**149.42**
1-5/32	1.1562	7-1/4	12-7/8	4	114070	**149.42**
1-11/64	1.1719	7-3/8	13	4	114071	**151.08**
1-3/16	1.1875	7-3/8	13	4	114072	**151.08**
1-13/64	1.2031	7-1/2	13-1/8	4	114073	**161.68**
1-7/32	1.2188	7-1/2	13-1/8	4	114074	**161.68**
1-15/64	1.2344	7-7/8	13-1/2	4	114075	**176.34**
1-1/4	1.2500	7-7/8	13-1/2	4	114076	**170.96**
1-17/64	1.2656	8-1/2	14-1/8	4	114077	**203.30**
1-9/32	1.2812	8-1/2	14-1/8	4	114078	**208.57**
1-19/64	1.2969	8-5/8	14-1/4	4	114079	**216.45**
1-5/16	1.3125	8-5/8	14-1/4	4	114080	**208.57**
1-21/64	1.3281	8-3/4	14-3/8	4	114081	**223.78**
1-11/32	1.3438	8-3/4	14-3/8	4	114082	**223.78**
1-23/64	1.3594	8-7/8	14-1/2	4	114083	**228.64**
1-3/8	1.3750	8-7/8	14-1/2	4	114084	**228.64**
1-25/64	1.3906	9	14-5/8	4	114085	**234.90**
1-13/32	1.4062	9	14-5/8	4	114086	**234.90**
1-27/64	1.4219	9-1/8	14-3/4	4	114087	**243.26**
1-7/16	1.4375	9-1/8	14-3/4	4	114088	**243.26**
1-29/64	1.4531	9-1/4	14-7/8	4	114089	**254.79**
1-15/32	1.4688	9-1/4	14-7/8	4	114090	**254.79**
1-31/64	1.4844	9-3/8	15	4	114091	**262.56**
1-1/2	1.5000	9-3/8	15	4	114092	**262.56**
1-33/64	1.5156	9-3/8	16-3/8	5	114093	**426.01**
1-17/32	1.5312	9-3/8	16-3/8	5	114094	**337.99**
1-35/64	1.5469	9-5/8	16-5/8	5	114095	**448.00**
1-9/16	1.5625	9-5/8	16-5/8	5	114096	**337.99**
1-37/64	1.5781	9-7/8	16-7/8	5	114097	**448.00**
1-19/32	1.5938	9-7/8	16-7/8	5	114098	**337.99**
1-39/64	1.6094	10	17	5	114099	**459.89**
1-5/8	1.6250	10	17	5	114100	**347.60**
1-41/64	1.6406	10-1/8	17-1/8	5	114101	**481.62**
1-21/32	1.6562	10-1/8	17-1/8	5	114102	**369.00**
1-43/64	1.6719	10-1/8	17-1/8	5	114103	**524.35**
1-11/16	1.6875	10-1/8	17-1/8	5	114104	**556.31**
1-45/64	1.7031	10-1/8	17-1/8	5	114105	**524.35**
1-23/32	1.7188	10-1/8	17-1/8	5	114106	**401.08**
1-47/64	1.7344	10-1/8	17-1/8	5	114107	**546.11**
1-3/4	1.7500	10-1/8'	17-1/8	5	114108	**401.08**
1-25/32	1.7812	10-1/8	17-1/8	5	114109	**422.47**
1-13/16	1.8125	10-1/8	17-1/8	5	114110	**448.33**
1-27/32	1.8438	10-1/8	17-1/8	5	114111	**448.33**
1-7/8	1.8750	10-3/8	17-3/8	5	114112	**448.33**
1-29/32	1.9062	10-3/8	17-3/8	5	114113	**465.23**
1-15/16	1.9375	10-3/8	17-3/8	5	114114	**481.29**
1-31/32	1.9688	10-3/8	17-3/8	5	114115	**498.42**
2	2.0000	10-3/8	17-3/8	5	114116	**498.42**
2-1/32	2.0312	10-3/8	17-3/8	5	114117	**789.56**
2-1/16	2.0625	10-1/4	17-3/8	5	114118	**744.40**
2-3/32	2.0938	10-1/4	17-3/8	5	114119	**847.90**
2-1/8	2.1250	10-1/4	17-3/8	5	114120	**759.54**
2-5/32	2.1562	10-1/4	17-3/8	5	114121	**866.31**
2-3/16	2.1875	10-1/4	17-3/8	5	114122	**779.13**
2-7/32	2.2188	10-1/8	17-3/8	5	114123	**866.31**
2-1/4	2.2500	10-1/8	17-3/8	5	114124	**801.45**
2-9/32	2.2812	10-1/8	17-3/8	5	114125	**952.53**
2-5/16	2.3125	10-1/8	17-3/8	5	114126	**611.95**
2-11/32	2.3438	10-1/8	17-3/8	5	114127	**1,123.16**
2-3/8	2.3750	10-1/8	17-3/8	5	114128	**984.83**
2-13/32	2.4062	11-1/4	18-3/4	5	114129	**1,177.15**
2-7/16	2.4375	11-1/4	18-3/4	5	114130	**1,059.26**
2-15/32	2.4688	11-1/4	18-3/4	5	114131	**1,177.15**
2-1/2	2.5000	11-1/4	18-3/4	5	114132	**1,059.26**
2-17/32	2.5312	11-7/8	19-1/2	5	114133	**1,313.53**
2-9/16	2.5625	11-7/8	19-1/2	5	114134	**1,262.71**
2-5/8	2.6250	11-7/8	19-1/2	5	114135	**1,262.86**
2-11/16	2.6875	12-3/4	20-3/8	5	114136	**1,390.51**
2-23/32	2.7188	12-3/4	20-3/8	5	114137	**1,521.40**
2-3/4	2.7500	12-3/4	20-3/8	5	114138	**1,443.88**
2-13/16	2.8125	13-3/8	21-1/8	5	114139	**1,521.40**
2-27/32	2.8438	13-3/8	21-1/8	5	114140	**1,799.25**
2-7/8	2.8750	13-3/8	21-1/8	5	114141	**1,698.00**
2-15/16	2.9375	14	21-3/4	5	114142	**1,799.25**
3	3.0000	14	21-3/4	5	114143	**1,861.12**
3-1/16	3.0625	14-5/8	24-1/2	6	114144	**2,321.97**
3-1/8	3.1250	14-5/8	24-1/2	6	114145	**2,459.94**
3-3/16	3.1875	14-5/8	24-1/2	6	114146	**2,648.17**
3-1/4	3.2500	15-1/2	25-1/2	6	114147	**2,557.90**
3-5/16	3.3125	15-1/2	25-1/2	6	114148	**2,927.86**
3-3/8	3.3750	15-1/2	25-1/2	6	114149	**3,130.53**
3-7/16	3.4375	15-1/2	25-1/2	6	114150	**3,938.58**
3-1/2	3.5000	16-3/8	26-1/2	6	114151	**3,938.58**
3-5/8	3.6250	16-3/8	26-1/2	6	114152	**4,080.30**
3-3/4	3.7500	16-3/8	26-1/2	6	114153	**4,829.64**
3-7/8	3.8750	16-3/8	26-1/2	6	114154	**5,764.82**
4	4.0000	17-1/2	27-1/2	6	114155	**6,299.59**

HSCO Taper Shank Drills

STM PREMIUM

- Heavy duty

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSCO Code No.	Price $
1/2	0.5000	4-3/8	8-1/4	2	106302	**94.80**
33/64	0.5156	4-5/8	8-1/2	2	106304	**109.38**
17/32	0.5312	4-5/8	8-1/2	2	106306	**109.38**
35/64	0.5469	4-7/8	8-3/4	2	106308	**115.20**
9/16	0.5625	4-7/8	8-3/4	2	106310	**109.38**
37/64	0.5781	4-7/8	8-3/4	2	106312	**118.15**
19/32	0.5938	4-7/8	8-3/4	2	106314	**115.20**
39/64	0.6094	4-7/8	8-3/4	2	106316	**134.17**
5/8	0.625	4-7/8	8-3/4	2	106318	**160.80**
41/64	0.6406	5-1/8	9-3/4	3	106320	**153.14**
21/32	0.6562	5-1/8	9-3/4	3	106322	**141.46**
43/64	0.6719	5-3/8	10	3	106324	**160.43**
11/16	0.6875	5-3/8	10	3	106326	**153.14**
45/64	0.7031	5-5/8	10-1/4	3	106328	**172.11**
23/32	0.7188	5-5/8	10-1/4	3	106330	**160.43**
47/64	0.7344	5-7/8	10-1/2	3	106332	**177.92**
3/4	0.750	5-7/8	10-1/2	3	106334	**177.92**
49/64	0.7656	6	10-5/8	3	106336	**189.60**
25/32	0.7812	6	10-5/8	3	106338	**189.60**
51/64	0.7969	6-1/8	10-3/4	3	106340	**201.27**
13/16	0.8125	6-1/8	10-3/4	3	106342	**146.38**
53/64	0.8281	6-1/8	10-3/4	3	106344	**246.47**
27/32	0.8438	6-1/8	10-3/4	3	106346	**230.44**
55/64	0.8594	6-1/8	10-3/4	3	106348	**246.47**
7/8	0.875	6-1/8	10-3/4	3	106350	**230.44**
57/64	0.8906	6-1/8	10-3/4	3	106352	**274.20**
29/32	0.9062	6-1/8	10-3/4	3	106354	**274.20**
59/64	0.9219	6-1/8	10-3/4	3	106356	**284.40**
15/16	0.9375	6-1/8	10-3/4	3	106358	**240.50**
61/64	0.9531	6-3/8	11	3	106360	**272.25**
31/32	0.9688	6-3/8	11	3	106362	**272.25**
63/64	0.9844	6-3/8	11	3	106364	**272.25**
1	1.000	6-3/8	11	3	106366	**272.25**
1-1/64	1.0156	6-1/2	12-1/8	4	106367	**357.91**
1-1/32	1.0312	6-1/2	12-1/8	4	106368	**357.91**
1-3/64	1.0469	6-5/8	12-1/4	4	106369	**325.39**
1-1/16	1.0625	6-5/8	12-1/4	4	106370	**325.39**
1-1/8	1.125	7-1/8	12-3/4	4	106374	**381.04**
1-5/32	1.1562	7-1/4	12-7/8	4	106376	**444.13**
1-3/16	1.1875	7-3/8	13	4	106378	**444.17**
1-7/32	1.2188	7-1/2	13-1/8	4	106380	**466.45**
1-1/4	1.250	7-7/8	13-1/2	5	106382	**506.08**
1-5/16	1.3125	8-5/8	15/7/8	5	106386	**592.92**
1-3/8	1.375	8-7/8	15-7/8	5	106390	**636.05**
1-7/16	1.4375	9-1/8	16-1/8	5	106394	**750.04**
1-1/2	1.500	9-3/8	16-3/8	5	106398	**742.34**
1-5/8	1.625	10	17	5	106406	**962.58**
1-3/4	1.750	10-1/8	17-1/8	5	106414	**1,195.94**

Taper Shank Drills – Shank Larger Than Standard

STM PREMIUM

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
3/8	0.3750	3-1/2	7-3/8	2	114156	**41.73**
25/64	0.3906	3-5/8	7-1/2	2	114157	**43.09**
13/32	0.4062	3-5/8	7-1/2	2	114158	**43.09**
27/64	0.4219	3-7/8	7-3/4	2	114159	**44.49**
7/16	0.4375	3-7/8	7-3/4	2	114160	**44.49**
29/64	0.4531	4-1/8	8	2	114161	**53.37**
15/32	0.4688	4-1/8	8	2	114162	**53.37**
41/64	0.6406	5-1/8	9-3/4	3	114163	**70.68**
21/32	0.6562	5-1/8	9-3/4	3	114164	**70.68**
43/64	0.6719	5-3/8	10	3	114165	**75.87**
11/16	0.6875	5-3/8	10	3	114166	**74.29**
45/64	0.7031	5-5/8	10-1/4	3	114167	**82.09**
23/32	0.7188	5-5/8	10-1/4	3	114168	**82.09**
47/64	0.7344	5-7/8	10-1/2	3	114169	**88.87**
3/4	0.7500	5-7/8	10-1/2	3	114170	**83.42**
49/64	0.7656	6	10-5/8	3	114171	**98.78**
25/32	0.7812	6	10-5/8	3	114172	**100.18**
1	1.0000	6-3/8	12	4	114173	**133.58**
1-1/32	1.0312	6-1/2	12-1/8	4	114174	**150.56**
1-1/16	1.0625	6-5/8	12-1/4	4	114175	**157.34**

Taper Shank Drills – Shank Smaller Than Standard

STM PREMIUM

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
31/64	0.4844	4-3/8	7-3/4	1	114176	**42.39**
1/2	0.5000	4-3/8	7-3/4	1	114177	**37.01**
33/64	0.5156	4-5/8	8	1	114178	**46.52**
17/32	0.5312	4-5/8	8	1	114179	**46.52**
35/64	0.5469	4-7/8	8-1/4	1	114180	**49.68**
9/16	0.5625	4-7/8	8-1/4	1	114181	**46.63**
37/64	0.5781	4-7/8	8-1/4	1	114182	**52.67**
51/64	0.7969	6-1/8	10	2	114183	**99.26**
13/16	0.8125	6-1/8	10	2	114184	**91.96**
53/64	0.8281	6-1/8	10	2	114185	**106.40**
27/32	0.8438	6-1/8	10	2	114186	**106.40**
55/64	0.8594	6-1/8	10	2	114187	**112.29**
7/8	0.8750	6-1/8	10	2	114188	**112.29**
57/64	0.8906	6-1/8	10	2	114189	**120.32**
29/32	0.9062	6-1/8	10	2	114190	**120.32**
1	1.0000	6-1/4	10-1/8	2	114191	**130.49**
1-5/64	1.0781	6-7/8	11-1/2	3	114192	**176.49**
1-3/32	1.0938	6-7/8	11-1/2	3	114193	**176.49**
1-7/64	1.1094	7-1/8	11-3/4	3	114194	**181.83**
1-1/8	1.1250	7-1/8	11-3/4	3	114195	**180.80**
1-9/64	1.1406	7-1/4	11-7/8	3	114196	**202.16**
1-5/32	1.1562	7-1/4	11-7/8	3	114197	**202.16**
1-11/64	1.1719	7-3/8	12	3	114198	**196.78**
1-3/16	1.1875	7-3/8	12	3	114199	**196.78**
1-13/64	1.2031	7-1/2	12-1/8	3	114200	**223.34**
1-7/32	1.2188	7-1/2	12-1/8	3	114201	**223.34**
1-15/64	1.2344	7-7/8	12-1/2	3	114202	**223.34**
1-1/4	1.2500	7-7/8	12-1/2	3	114203	**212.84**
1-5/16	1.3125	8-5/8	13-1/4	3	114204	**294.68**
1-3/8	1.3750	8-7/8	13-1/2	3	114205	**316.26**
1-7/16	1.4375	9-1/8	13-3/4	3	114206	**330.03**
1-1/2	1.5000	9-3/8	14	3	114207	**359.79**
1-33/64	1.5156	9-3/8	15	4	114208	**426.01**
1-17/32	1.5312	9-3/8	15	4	114209	**388.26**
1-35/64	1.5469	9-5/8	15-1/4	4	114210	**448.00**
1-9/16	1.5625	9-5/8	15-1/4	4	114211	**388.26**
1-37/64	1.5781	9-7/8	15-1/2	4	114212	**448.00**
1-19/32	1.5938	9-7/8	15-1/2	4	114213	**392.13**
1-39/64	1.6094	10	15-5/8	4	114214	**459.89**
1-5/8	1.6250	10	15-5/8	4	114215	**405.42**
1-41/64	1.6406	10-1/8	15-3/4	4	114216	**481.62**
1-21/32	1.6562	10-1/8	15-3/4	4	114217	**439.16**
1-43/64	1.6719	10-1/8	15-3/4	4	114218	**524.35**
1-11/16	1.6875	10-1/8	15-3/4	4	114219	**445.57**
1-45/64	1.7031	10-1/8	15-3/4	4	114220	**524.35**
1-23/32	1.7188	10-1/8	15-3/4	4	114221	**491.31**
1-47/64	1.7344	10-3/8	16-1/4	4	114222	**546.11**
1-3/4	1.7500	10-3/8	16-1/4	4	114223	**497.35**
1-25/32	1.7812	10-3/8	16-1/4	4	114224	**501.62**
1-13/16	1.8125	10-3/8	16-1/4	4	114225	**532.63**
1-27/32	1.8438	10-3/8	16-1/4	4	114226	**566.92**
1-7/8	1.8750	10-1/2	16-1/2	4	114227	**566.92**
1-57/64	1.8906	10-1/2	16-1/2	4	114228	**631.04**
1-29/32	1.9062	10-1/2	16-1/2	4	114229	**583.38**
1-15/16	1.9375	10-5/8	16-5/8	4	114230	**619.81**
1-31/32	1.9688	10-5/8	16-5/8	4	114231	**724.07**
2	2.0000	10-5/8	16-5/8	4	114232	**607.14**
2-1/32	2.0312	10-3/8	16-1/4	4	114233	**514.19**
2-1/16	2.0625	10-1/4	16-1/4	4	114234	**789.56**
2-3/32	2.0938	10-1/4	16-1/4	4	114235	**847.90**
2-1/8	2.1250	10-1/4	16-1/4	4	114236	**847.90**
2-5/32	2.1562	10-1/4	16-1/4	4	114237	**866.31**
2-3/16	2.1875	10-1/4	16-1/4	4	114238	**866.31**
2-7/32	2.2188	10-1/8	16-1/4	4	114239	**866.31**
2-1/4	2.2500	10-1/8	16-1/8	4	114240	**866.31**
2-5/16	2.3125	10-1/8	16-1/8	4	114241	**952.53**
2-3/8	2.3750	10-1/8	16-1/8	4	114242	**1,123.16**
2-7/16	2.4375	11-1/4	17-1/4	4	114243	**1,177.15**
2-1/2	2.5000	11-1/4	17-1/4	4	114244	**1,177.15**
2-5/8	2.6250	11-7/8	18	4	114245	**1,262.71**
2-3/4	2.7500	12-3/4	19-1/8	4	114246	**1,486.86**
3-1/16	3.0625	14-1/4	22	5	114247	**2,321.97**
3-1/8	3.1250	14-1/4	22	5	114248	**2,459.94**
3-3/16	3.1875	14-1/4	22	5	114249	**2,648.17**
3-1/4	3.2500	15-1/4	23	5	114250	**1,232.17**
3-5/16	3.3125	15-1/4	23	5	114251	**2,927.86**
3-3/8	3.3750	15-1/4	23	5	114252	**3,130.53**
3-7/16	3.4375	15-1/4	23	5	114253	**3,938.58**
3-1/2	3.5000	16-1/4	24	5	114254	**3,938.58**
3-5/8	3.6250	16-1/4	24	5	114255	**4,080.30**

Taper Shank Drills HSS — Letter Sizes

STM PREMIUM

Furnished with #1 morse taper shank.

Size	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
A	0.2340	2-7/8	6-1/8	114256	**29.28**
B	0.2380	2-7/8	6-1/8	114257	**29.28**
C	0.2420	2-7/8	6-1/8	114258	**29.28**
D	0.2460	2-7/8	6-1/8	114259	**25.97**
E	0.2500	2-7/8	6-1/8	114260	**22.91**
F	0.2570	3	6-1/4	114261	**25.74**
G	0.2610	3	6-1/4	114262	**30.68**
H	0.2660	3	6-1/4	114263	**30.68**
I	0.2720	3	6-1/4	114264	**30.68**
J	0.2770	3	6-1/4	114265	**28.32**
K	0.2810	3	6-1/4	114266	**32.23**
L	0.2900	3-1/8	6-3/8	114267	**32.23**
M	0.2950	3-1/8	6-3/8	114268	**32.23**
N	0.3020	3-1/8	6-3/8	114269	**32.23**
O	0.3160	3-1/4	6-1/2	114270	**38.23**
P	0.3230	3-1/4	6-1/2	114271	**38.23**
Q	0.3320	3-1/4	6-1/2	114272	**40.11**
R	0.3390	3-1/4	6-1/2	114273	**44.09**
S	0.3480	3-1/2	6-3/4	114274	**46.18**
T	0.3580	3-1/2	6-3/4	114275	**46.18**
U	0.3680	3-1/2	6-3/4	114276	**46.18**
V	0.3770	3-5/8	7	114277	**42.59**
W	0.3860	3-5/8	7	114278	**48.69**
X	0.3970	3-5/8	7	114279	**50.20**
Y	0.4040	3-5/8	7	114280	**50.20**
Z	0.4130	3-7/8	7-1/4	114281	**52.45**

Taper Shank Drills HSS – Wire Gauge Sizes

STM PREMIUM

Furnished with #1 morse taper shank, flute length and overall length are approximately the same as corresponding fractional.

Size	Decimal Equiv.	HSS Code No.	Price $
1	0.2280	114282	**28.21**
2	0.2210	114283	**28.21**
3	0.2130	114284	**28.21**
4	0.2090	114285	**28.21**
5	0.2055	114286	**28.21**
6	0.2040	114287	**28.21**
7	0.2010	114288	**26.96**
8	0.1990	114289	**26.96**
9	0.1960	114290	**26.96**
10	0.1935	114291	**26.96**
11	0.1910	114292	**26.96**
12	0.1890	114293	**26.96**
13	0.1850	114294	**26.96**
14	0.1820	114295	**26.96**
15	0.1800	114296	**26.96**
16	0.1770	114297	**26.96**
17	0.1730	114298	**26.96**
18	0.1695	114299	**26.96**
19	0.1660	114300	**26.96**
20	0.1610	114301	**25.30**
21	0.1590	114302	**25.30**
22	0.1570	114303	**25.30**
23	0.1540	114304	**25.30**
24	0.1520	114305	**25.30**
25	0.1495	114306	**25.30**
26	0.1470	114307	**25.30**
27	0.1440	114308	**25.30**
28	0.1405	114309	**25.30**
29	0.1360	114310	**25.30**
30	0.1285	114311	**25.30**
31	0.1200	114312	**25.30**
37	0.1040	114313	**25.30**
39	0.0995	114314	**25.30**
40	0.0980	114315	**25.30**
44	0.0860	114316	**25.30**
47	0.0785	114317	**25.30**

Taper Shank Drills HSS — Metric

STM PREMIUM

Flute length and overall length are approximately the same as corresponding fractional.

Size (mm)	Decimal Equiv. (in.)	Flute Length	Overall Length	Morse Taper No.	HSS Code No.	Price $
3.00	0.1181	1-7/8	5-1/8	1	114318	**24.05**
3.20	0.1260	1-7/8	5-1/8	1	114319	**25.12**
3.50	0.1378	2-1/8	5-3/8	1	114320	**25.12**
3.80	0.1496	2-1/8	5-3/8	1	114321	**25.12**
4.00	0.1575	2-1/8	5-3/8	1	114322	**25.12**
4.20	0.1654	2-1/2	5-3/4	1	114323	**25.12**
4.50	0.1772	2-1/2	5-3/4	1	114324	**21.29**
4.80	0.1890	2-1/2	5-3/4	1	114325	**21.29**
5.00	0.1969	2-3/4	6	1	114326	**21.29**
5.20	0.2047	2-3/4	6	1	114327	**21.29**
5.50	0.2165	2-3/4	6	1	114328	**21.29**
5.80	0.2283	2-7/8	6-1/8	1	114329	**21.29**
6.00	0.2362	2-7/8	6-1/8	1	114330	**21.29**
6.20	0.2441	2-7/8	6-1/8	1	114331	**21.29**
6.50	0.2559	3	6-1/4	1	114332	**21.29**
6.80	0.2677	3	6-1/4	1	114333	**24.05**
7.00	0.2756	3	6-1/4	1	114334	**24.05**
7.20	0.2835	3-1/8	6-3/8	1	114335	**25.74**
7.50	0.2953	3-1/8	6-3/8	1	114336	**25.74**
7.80	0.3071	3-1/8	6-3/8	1	114337	**29.28**
8.00	0.3150	3-1/4	6-1/2	1	114338	**34.73**
8.20	0.3228	3-1/4	6-1/2	1	114339	**36.79**
8.50	0.3346	3-1/4	6-1/2	1	114340	**36.79**
8.80	0.3465	3-1/2	6-3/4	1	114341	**41.99**
9.00	0.3543	3-1/4	6-1/2	1	114342	**41.99**
9.20	0.3622	3-1/4	6-1/2	1	114343	**41.99**
9.50	0.3740	3-1/4	6-1/2	1	114344	**44.67**
9.80	0.3858	3-5/8	7	1	114345	**44.67**
10.00	0.3937	3-5/8	7	1	114346	**45.63**
10.20	0.4016	3-5/8	7	1	114347	**45.63**
10.50	0.4134	3-7/8	7-1/4	1	114348	**47.58**
10.80	0.4252	3-7/8	7-1/4	1	114349	**47.58**
11.00	0.4331	3-7/8	7-1/4	1	114350	**47.58**
11.20	0.4409	4-1/8	7-1/2	1	114351	**50.79**
11.50	0.4528	4-1/8	7-1/2	1	114352	**50.79**
11.80	0.4646	4-1/8	7-1/2	1	114353	**50.79**
12.00	0.4724	4-3/8	8-1/4	2	114354	**50.79**
12.20	0.4803	4-3/8	8-1/4	2	114355	**61.06**
12.50	0.4921	4-3/8	8-1/4	2	114356	**61.06**
12.80	0.5039	4-5/8	8-1/2	2	114357	**61.06**
13.00	0.5118	4-5/8	8-1/2	2	114358	**61.06**
13.20	0.5197	4-5/8	8-1/2	2	114359	**68.47**
13.50	0.5315	4-5/8	8-1/2	2	114360	**68.47**
13.80	0.5433	4-7/8	8-3/4	2	114361	**68.47**
14.00	0.5512	4-7/8	8-3/4	2	114362	**68.47**
14.25	0.5610	4-7/8	8-3/4	2	114363	**74.32**
14.50	0.5709	4-7/8	8-3/4	2	114364	**74.32**
14.75	0.5807	4-7/8	8-3/4	2	114365	**74.32**
15.00	0.5906	4-7/8	8-3/4	2	114366	**74.32**
15.25	0.6004	4-7/8	8-3/4	2	114367	**77.86**
15.50	0.6102	4-7/8	8-3/4	2	114368	**77.86**
15.75	0.6201	4-7/8	8-3/4	2	114369	**81.28**
16.00	0.6299	5-1/8	9	2	114370	**81.28**
16.25	0.6398	5-1/8	9	2	114371	**81.28**
16.50	0.6496	5-1/8	9	2	114372	**83.86**
16.75	0.6594	5-3/8	9-1/4	2	114373	**83.86**
17.00	0.6693	5-3/8	9-1/4	2	114374	**83.86**
17.25	0.6791	5-3/8	9-1/4	2	114375	**90.90**
17.50	0.6890	5-5/8	9-1/2	2	114376	**91.52**
18.00	0.7087	5-5/8	9-1/2	2	114377	**91.52**
18.50	0.7283	5-5/8	9-1/2	2	114378	**97.45**
19.00	0.7480	5-7/8	9-3/4	2	114379	**97.45**
19.50	0.7677	6	9-7/8	2	114380	**122.13**
20.00	0.7874	6	9-7/8	3	114381	**122.13**
20.50	0.8071	6-1/8	10-3/4	3	114382	**131.92**
21.00	0.8268	6-1/8	10-3/4	3	114383	**131.92**
21.50	0.8465	6-1/8	10-3/4	3	114384	**141.76**
22.00	0.8661	6-1/8	10-3/4	3	114385	**141.76**
22.50	0.8858	6-1/8	10-3/4	3	114386	**146.66**
23.00	0.9055	6-1/8	10-3/4	3	114387	**146.66**
23.50	0.9252	6-1/8	10-3/4	3	114388	**150.85**
24.00	0.9449	6-3/8	11	3	114389	**150.85**
24.50	0.9646	6-3/8	11	3	114390	**150.85**
25.00	0.9843	6-3/8	11	3	114391	**157.45**
25.50	1.0039	6-1/2	11-1/8	3	114392	**165.84**
26.00	1.0236	6-1/2	11-1/8	3	114393	**165.84**
26.50	1.0433	6-5/8	11-1/4	3	114394	**201.24**
27.00	1.0630	6-5/8	11-1/4	3	114395	**201.24**
27.50	1.0827	6-7/8	12-1/2	4	114396	**208.64**
28.00	1.1024	7-1/8	12-3/4	4	114397	**208.64**
28.50	1.1220	7-1/8	12-3/4	4	114398	**224.85**
29.00	1.1417	7-1/4	12-7/8	4	114399	**230.74**
29.50	1.1614	7-3/8	13	4	114400	**235.93**
30.00	1.1811	7-3/8	13	4	114401	**235.93**
30.50	1.2008	7-1/2	13-1/8	4	114402	**256.74**
31.00	1.2205	7-7/8	13-1/2	4	114403	**256.74**
31.50	1.2402	7-7/8	13-1/2	4	114404	**294.31**
32.00	1.2598	8-1/2	14-1/8	4	114405	**294.31**
32.50	1.2795	8-1/2	14-1/8	4	114406	**332.35**
33.00	1.2992	8-5/8	14-1/4	4	114407	**337.73**
33.50	1.3189	8-3/4	14-3/8	4	114408	**347.12**
34.00	1.3386	8-3/4	14-3/8	4	114409	**347.12**
34.50	1.3583	8-7/8	14-1/2	4	114410	**374.41**
35.00	1.3780	9	14-5/8	4	114411	**374.41**
35.50	1.3976	9	14-5/8	4	114412	**395.85**
36.00	1.4173	9-1/8	14-3/4	4	114413	**395.85**
36.50	1.4370	9-1/8	14-3/4	4	114414	**422.92**
37.00	1.4567	9-1/4	14-7/8	4	114415	**422.92**
37.50	1.4764	9-3/8	15	4	114416	**439.12**
38.00	1.4961	9-3/8	15	4	114417	**439.12**
39.00	1.5354	9-5/8	16-5/8	5	114418	**550.97**
40.00	1.5748	9-7/8	16-7/8	5	114419	**550.97**
41.00	1.6142	10	17	5	114420	**550.97**
42.00	1.6535	10-1/8	17-1/8	5	114421	**631.70**
43.00	1.6929	10-1/8	17-1/8	5	114422	**631.70**
44.00	1.7323	10-1/8	17-1/8	5	114423	**738.55**
45.00	1.7717	10-1/8	17-1/8	5	114424	**738.55**
46.00	1.8110	10-1/8	17-1/8	5	114425	**844.95**
47.00	1.8504	10-3/8	17-3/8	5	114426	**802.30**
48.00	1.8898	10-3/8	17-3/8	5	114427	**824.29**
49.00	1.9291	10-3/8	17-3/8	5	114428	**824.29**
50.00	1.9685	10-3/8	17-3/8	5	114429	**824.29**
51.00	2.0079	10-3/8	17-3/8	5	114430	**962.58**
57.00	2.2441	10-3/8	17-3/8	5	114431	**1,217.67**
59.00	2.3228	10-3/8	17-3/8	5	114432	**1,307.68**
65.00	2.5591	11-7/8	19-1/2	5	114433	**1,852.98**
66.00	2.5984	11-7/8	19-1/2	5	114434	**1,939.64**
69.00	2.7165	12-3/4	20-3/8	5	114435	**2,329.82**
70.00	2.7559	13-3/8	21-1/8	5	114436	**2,461.92**
72.00	2.8346	13-3/8	21-1/8	5	114437	**2,557.53**

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See Pages G18-43

Taper Shank Drills HSS – Titanium Coated

STM PREMIUM

Size (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS TiN Coated Code No.	Price $
5/16	3-1/8	6-3/8	1	114438	**72.19**
3/8	3-1/2	6-3/4	1	114439	**75.39**
7/16	3-7/8	7-1/4	1	114440	**82.20**
1/2	4-3/8	8-1/4	2	114441	**97.08**
33/64	4-5/8	8-1/2	2	114442	**115.90**
17/32	4-5/8	8-1/2	2	114443	**107.47**
9/16	4-7/8	8-3/4	2	114444	**119.14**
19/32	4-7/8	8-3/4	2	114445	**128.28**
5/8	4-7/8	8-3/4	2	114446	**129.94**
21/32	5-1/8	9	2	114447	**144.37**
11/16	5-3/8	9-1/4	2	114448	**149.20**
23/32	5-5/8	9-1/2	2	114449	**144.37**
3/4	5-7/8	9-3/4	2	114450	**100.17**
25/32	6	9-7/8	2	114451	**208.57**
13/16	6-1/8	10-3/4	3	114452	**218.18**
27/32	6-1/8	10-3/4	3	114453	**234.24**
7/8	6-1/8	10-3/4	3	114454	**240.65**
29/32	6-1/8	10-3/4	3	114455	**256.70**
15/16	6-1/8	10-3/4	3	114456	**156.48**
31/32	6-3/8	11	3	114457	**264.70**
63/64	6-3/8	11	3	114458	**291.99**
1	6-3/8	11	3	114459	**269.52**
1-1/32	6-1/2	11-1/8	3	114460	**296.81**
1-1/16	6-5/8	11-1/4	3	114461	**308.01**
1-3/32	6-7/8	12-1/2	4	114462	**365.79**
1-1/8	7-1/8	12-3/4	4	114463	**212.95**
1-5/32	7-1/4	12-7/8	4	114464	**401.08**
1-3/16	7-3/8	13	4	114465	**417.13**
1-7/32	7-1/2	13-1/8	4	114466	**449.21**
1-1/4	7-7/8	13-1/2	4	114467	**465.23**
1-5/16	8-5/8	14-1/4	4	114468	**221.68**
1-3/8	8-7/8	14-1/2	4	114469	**625.66**
1-1/2	9-3/8	15	4	114470	**721.94**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Extra Length Taper Shank Drills HSS — 8"-12" Overall Length

- Taper shank

Size	Decimal Equiv.	Morse Taper No.	Flute Length	8" O.A.L. Code No.	Price $	Flute Length	10" O.A.L. Code No.	Price $	Flute Length	12" O.A.L. Code No.	Price $
1/8	0.1250	1	5	114471	**77.71**	-	-	**-**	9	114512	**111.01**
9/64	0.1406	1	5	114472	**81.50**	-	-	**-**	-	-	**-**
5/32	0.1562	1	5	114473	**81.50**	7	114489	**93.70**	-	-	**-**
11/64	0.1719	1	5	114474	**81.50**	7	114490	**95.61**	9	114513	**112.63**
3/16	0.1875	1	5	114475	**81.50**	-	-	**-**	9	114514	**112.63**
13/64	0.2031	1	5	114476	**81.50**	7	114491	**98.74**	9	114515	**115.20**
7/32	0.2188	1	5	114477	**81.50**	7	114492	**98.74**	9	114516	**115.20**
15/64	0.2344	1	5	114478	**81.50**	7	114493	**98.74**	9	114517	**115.20**
1/4	0.2500	1	5	114479	**81.50**	7	114494	**98.74**	9	114518	**115.20**
17/64	0.2656	1	5	114480	**88.28**	-	-	**-**	9	114519	**126.11**
9/32	0.2812	1	5	114481	**88.28**	7	114495	**107.76**	9	114520	**126.11**
19/64	0.2969	1	5	114482	**88.24**	7	114496	**77.19**	9	114521	**126.11**
5/16	0.3125	1	5	114483	**88.24**	-	-	**-**	9	114522	**126.11**
21/64	0.3281	1	5	114484	**99.22**	7	114497	**116.71**	9	114523	**137.34**
11/32	0.3438	1	5	114485	**99.22**	-	-	**-**	9	114524	**137.34**
23/64	0.3594	1	5	114486	**102.02**	7	114498	**119.99**	9	114525	**141.17**
3/8	0.3750	1	5	114487	**102.02**	7	114499	**119.99**	9	114526	**141.17**
25/64	0.3906	1	-	-	**-**	-	-	**-**	9	114527	**148.24**
13/32	0.4062	1	-	-	**-**	-	-	**-**	9	114528	**148.24**
27/64	0.4219	1	-	-	**-**	-	-	**-**	9	114529	**153.36**
7/16	0.4375	1	-	-	**-**	7	114500	**127.80**	9	114530	**153.36**
29/64	0.4531	1	-	-	**-**	7	114501	**140.36**	9	114531	**165.11**
15/32	0.4688	1	5	114488	**112.29**	7	114502	**135.28**	9	114532	**159.14**
31/64	0.4844	2	-	-	**-**	6	114503	**154.91**	8	114533	**182.23**
1/2	0.5000	2	-	-	**-**	6	114504	**149.46**	8	114534	**175.83**
33/64	0.5156	2	-	-	**-**	6	114505	**154.91**	8	114535	**182.23**
17/32	0.5312	2	-	-	**-**	6	114506	**149.46**	8	114536	**176.49**
35/64	0.5469	2	-	-	**-**	6	114507	**151.59**	8	114537	**184.81**
9/16	0.5625	2	-	-	**-**	6	114508	**151.59**	8	114538	**187.32**
37/64	0.5781	2	-	-	**-**	6	114509	**159.14**	8	114539	**187.32**
19/32	0.5938	2	-	-	**-**	6	114510	**153.54**	8	114540	**180.65**
39/64	0.6094	2	-	-	**-**	6	114511	**163.63**	8	114541	**199.76**
5/8	0.6250	2	-	-	**-**	-	-	**-**	8	114542	**153.13**
41/64	0.6406	2	-	-	**-**	-	-	**-**	8	114543	**205.99**
21/32	0.6562	2	-	-	**-**	-	-	**-**	8	114544	**205.99**
43/64	0.6719	2	-	-	**-**	-	-	**-**	8	114545	**224.59**
11/16	0.6875	2	-	-	**-**	-	-	**-**	8	114546	**224.59**
45/64	0.7031	2	-	-	**-**	-	-	**-**	8	114547	**239.36**
23/32	0.7188	2	-	-	**-**	-	-	**-**	8	114548	**239.36**
47/64	0.7344	2	-	-	**-**	-	-	**-**	8	114549	**248.93**
3/4	0.7500	2	-	-	**-**	-	-	**-**	8	114550	**248.93**
49/64	0.7656	2	-	-	**-**	-	-	**-**	8	114551	**262.85**
25/32	0.7812	2	-	-	**-**	-	-	**-**	8	114552	**262.85**
51/64	0.7969	3	-	-	**-**	-	-	**-**	7	114553	**277.40**
13/16	0.8125	3	-	-	**-**	-	-	**-**	7	114554	**277.40**
53/64	0.8281	3	-	-	**-**	-	-	**-**	7	114555	**277.40**
27/32	0.8438	3	-	-	**-**	-	-	**-**	7	114556	**277.40**
55/64	0.8594	3	-	-	**-**	-	-	**-**	7	114557	**277.40**
7/8	0.8750	3	-	-	**-**	-	-	**-**	7	114558	**277.40**
57/64	0.8906	3	-	-	**-**	-	-	**-**	7	114559	**304.95**
29/32	0.9062	3	-	-	**-**	-	-	**-**	7	114560	**304.95**
59/64	0.9219	3	-	-	**-**	-	-	**-**	7	114561	**314.97**
15/16	0.9375	3	-	-	**-**	-	-	**-**	7	114562	**314.97**
31/32	0.9688	3	-	-	**-**	-	-	**-**	7	114563	**329.96**
1	1.0000	3	-	-	**-**	-	-	**-**	7	114564	**332.43**

Extra Length Taper Shank Drills HSS — 14"-18" Overall Length

STM PREMIUM

Size	Decimal Equiv.	Morse Taper No.	Flute Length	14" O.A.L. HSS Code No.	Price $	Flute Length	15" O.A.L. HSS Code No.	Price $	Flute Length	18" O.A.L. HSS Code No.	Price $
3/16	0.1875	1	-	-	-	12	114588	150.16	-	-	-
13/64	0.2031	1	-	-	-	12	114589	150.16	-	-	-
7/32	0.2188	1	-	-	-	12	114590	150.16	-	-	-
15/64	0.2344	1	-	-	-	12	114591	150.16	-	-	-
1/4	0.2500	1	-	-	-	12	114592	150.16	15	114651	195.71
17/64	0.2656	1	-	-	-	12	114593	158.52	15	114652	198.92
9/32	0.2812	1	-	-	-	12	114594	158.52	15	114653	198.92
19/64	0.2969	1	-	-	-	12	114595	166.84	15	114654	204.07
5/16	0.3125	1	-	-	-	12	114596	166.84	15	114655	204.07
21/64	0.3281	1	-	-	-	12	114597	175.20	15	114656	211.77
11/32	0.3438	1	-	-	-	12	114598	175.20	15	114657	211.77
23/64	0.3594	1	-	-	-	12	114599	195.20	15	114658	221.38
3/8	0.3750	1	-	-	-	12	114600	195.20	15	114659	221.38
25/64	0.3906	1	-	-	-	12	114601	195.20	15	114660	221.38
13/32	0.4062	1	-	-	-	12	114602	195.20	15	114661	221.38
27/64	0.4219	1	-	-	-	12	114603	195.20	15	114662	221.38
7/16	0.4375	1	-	-	-	12	114604	195.20	15	114663	221.38
29/64	0.4531	1	11	114565	179.03	12	114605	200.21	15	114664	221.38
15/32	0.4688	1	11	114566	179.03	-	-	-	15	114665	221.38
31/64	0.4844	2	10	114567	181.76	11	114606	203.12	14	114666	221.38
1/2	0.5000	2	10	114568	181.76	11	114607	203.12	14	114667	221.38
33/64	0.5156	2	10	114569	183.52	11	114608	203.12	14	114668	221.38
17/32	0.5312	2	-	-	-	11	114609	203.12	14	114669	221.38
35/64	0.5469	2	10	114570	199.58	11	114610	205.99	14	114670	224.59
9/16	0.5625	2	10	114571	199.58	11	114611	205.99	14	114671	224.59
37/64	0.5781	2	10	114572	199.58	11	114612	208.90	14	114672	227.17
19/32	0.5938	2	-	-	-	11	114613	208.90	14	114673	227.17
39/64	0.6094	2	10	114573	210.48	11	114614	222.93	14	114674	243.52
5/8	0.6250	2	10	114574	210.48	11	114615	222.93	14	114675	243.52
41/64	0.6406	2	10	114575	225.55	11	114616	238.73	14	114676	261.49
21/32	0.6562	2	10	114576	225.55	11	114617	238.73	14	114677	261.49
43/64	0.6719	2	-	-	-	11	114618	261.57	14	114678	286.65
11/16	0.6875	2	-	-	-	11	114619	261.57	14	114679	286.65
45/64	0.7031	2	10	114577	247.05	11	114620	270.48	14	114680	308.49
23/32	0.7188	2	10	114578	247.05	11	114621	194.61	14	114681	308.49
47/64	0.7344	2	10	114579	268.23	11	114622	289.85	14	114682	318.25
3/4	0.7500	2	10	114580	268.23	11	114623	289.85	14	114683	318.25
49/64	0.7656	2	10	114581	281.09	11	114624	305.76	14	114684	335.37
25/32	0.7812	2	10	114582	281.09	11	114625	305.76	14	114685	335.37
51/64	0.7969	3	-	-	-	10	114626	305.76	13	114686	335.37
13/16	0.8125	3	-	-	-	10	114627	305.76	14	114687	423.43
53/64	0.8281	3	-	-	-	10	114628	305.76	13	114688	441.99
27/32	0.8438	3	9	114583	291.32	10	114629	305.76	13	114689	441.99
55/64	0.8594	3	-	-	-	10	114630	305.76	13	114690	457.79
7/8	0.8750	3	9	114584	323.44	10	114631	305.76	13	114691	457.79
57/64	0.8906	3	9	114585	323.44	10	114632	344.28	13	114692	473.85
29/32	0.9062	3	-	-	-	10	114633	344.28	13	114693	473.85
59/64	0.9219	3	-	-	-	10	114634	344.28	13	114694	481.77
15/16	0.9375	3	-	-	-	10	114635	361.93	13	114695	481.77
61/64	0.9531	3	-	-	-	10	114636	367.27	13	114696	489.73
31/32	0.9688	3	9	114586	351.65	10	114637	367.27	13	114697	489.73
63/64	0.9844	3	9	114587	351.65	10	114638	371.87	13	114698	517.53
1	1.0000	3	-	-	-	10	114639	371.87	13	114699	517.53
1-1/32	1.0312	3	-	-	-	10	114640	373.68	13	114700	444.57
1-3/64	1.0469	3	-	-	-	10	114641	380.56	13	114701	561.36
1-1/16	1.0625	3	-	-	-	10	114642	373.68	13	114702	561.36
1-5/64	1.0781	4	-	-	-	9	114643	400.41	12	114703	567.18
1-3/32	1.0938	4	-	-	-	10	114644	400.41	12	114704	567.18
1-1/8	1.1250	4	-	-	-	10	114645	400.41	12	114705	567.18
1-5/32	1.1562	4	-	-	-	10	114646	408.44	12	114706	630.78
1-11/64	1.1719	4	-	-	-	10	114647	412.97	12	114707	358.44
1-3/16	1.1875	4	-	-	-	10	114648	412.97	12	114708	632.00
1-7/32	1.2188	4	-	-	-	9	114649	437.98	12	114709	663.60
1-15/64	1.2344	4	-	-	-	-	-	-	12	114710	663.60
1-1/4	1.2500	4	-	-	-	9	114650	437.98	12	114711	663.60
1-9/32	1.2813	4	-	-	-	-	-	-	12	114712	751.11
1-5/16	1.3125	4	-	-	-	-	-	-	12	114713	751.11
1-11/32	1.3438	4	-	-	-	-	-	-	12	114714	841.45
1-23/64	1.3594	4	-	-	-	-	-	-	12	114715	841.45
1-3/8	1.3750	4	-	-	-	-	-	-	12	114716	841.45
1-13/32	1.4062	4	-	-	-	-	-	-	12	114717	866.97
1-7/16	1.4375	4	-	-	-	-	-	-	12	114718	866.97
1-15/32	1.4688	4	-	-	-	-	-	-	12	114719	939.90
1-1/2	1.5000	4	-	-	-	-	-	-	12	114720	939.90
1-9/16	1.5625	5	-	-	-	-	-	-	10	114721	829.11
1-5/8	1.6250	5	-	-	-	-	-	-	10	114722	1,116.53
1-11/16	1.6875	5	-	-	-	-	-	-	10	114723	1,191.08
1-3/4	1.7500	5	-	-	-	-	-	-	10	114724	1,336.92
1-7/8	1.8750	5	-	-	-	-	-	-	10	114725	1,616.46

Extra Length Taper Shank Drills HSS — 20"-36" Overall Length

- Taper shank

Size	Decimal Equiv.	Morse Taper No.	Flute Length	20" O.A.L. Code No.	Price $	Flute Length	24" O.A.L. HSS Code No.	Price $	Flute Length	30" O.A.L. HSS Code No.	Price $	Flute Length	36" O.A.L. HSS Code No.	Price $
3/8	0.3750	1	-	-	-	21	114747	**310.59**	-	-	-	-	-	-
25/64	0.3906	1	-	-	-	21	114748	**310.59**	-	-	-	-	-	-
13/32	0.4062	1	-	-	-	21	114749	**310.59**	-	-	-	-	-	-
27/64	0.4219	1	-	-	-	21	114750	**310.59**	-	-	-	-	-	-
7/16	0.4375	1	-	-	-	21	114751	**310.59**	-	-	-	-	-	-
29/64	0.4531	1	-	-	-	21	114752	**310.59**	-	-	-	-	-	-
15/32	0.4688	1	-	-	-	21	114753	**310.59**	-	-	-	-	-	-
31/64	0.4844	2	-	-	-	21	114754	**310.59**	-	-	-	-	-	-
1/2	0.5000	2	-	-	-	20	114755	**310.59**	-	-	-	-	-	-
33/64	0.5156	2	16	114726	**282.37**	20	114756	**322.74**	-	-	-	-	-	-
17/32	0.5312	2	-	-	-	20	114757	**322.74**	-	-	-	-	-	-
35/64	0.5469	2	-	-	-	20	114758	**322.74**	-	-	-	-	-	-
9/16	0.5625	2	-	-	-	20	114759	**322.74**	-	-	-	-	-	-
37/64	0.5781	2	-	-	-	20	114760	**322.74**	-	-	-	-	-	-
19/32	0.5938	2	-	-	-	20	114761	**322.74**	-	-	-	-	-	-
39/64	0.6094	2	-	-	-	20	114762	**322.74**	-	-	-	-	-	-
5/8	0.6250	2	-	-	-	20	114763	**322.74**	-	-	-	-	-	-
41/64	0.6406	2	-	-	-	20	114764	**322.74**	-	-	-	-	-	-
21/32	0.6562	2	16	114727	**345.24**	20	114765	**322.74**	-	-	-	-	-	-
43/64	0.6719	2	-	-	-	20	114766	**341.12**	-	-	-	-	-	-
11/16	0.6875	2	-	-	-	20	114767	**341.12**	-	-	-	-	-	-
45/64	0.7031	2	-	-	-	20	114768	**352.57**	-	-	-	-	-	-
23/32	0.7188	2	-	-	-	20	114769	**352.57**	-	-	-	-	-	-
47/64	0.7344	2	-	-	-	20	114770	**372.50**	-	-	-	-	-	-
3/4	0.7500	2	-	-	-	20	114771	**372.50**	26	114832	**512.08**	-	-	-
49/64	0.7656	2	-	-	-	20	114772	**384.39**	-	-	-	-	-	-
25/32	0.7812	2	-	-	-	20	114773	**384.39**	-	-	-	-	-	-
51/64	0.7969	3	-	-	-	19	114774	**404.72**	-	-	-	-	-	-
13/16	0.8125	3	15	114728	**370.91**	19	114775	**404.72**	25	114833	**603.24**	-	-	-
53/64	0.8281	3	-	-	-	19	114776	**465.82**	-	-	-	-	-	-
27/32	0.8438	3	15	114729	**383.77**	19	114777	**465.82**	-	-	-	-	-	-
55/64	0.8594	3	-	-	-	19	114778	**487.04**	-	-	-	-	-	-
7/8	0.8750	3	15	114730	**410.69**	19	114779	**487.04**	25	114834	**691.77**	-	-	-
57/64	0.8906	3	-	-	-	19	114780	**487.04**	-	-	-	-	-	-
29/32	0.9062	3	15	114731	**417.13**	19	114781	**487.04**	-	-	-	-	-	-
59/64	0.9219	3	-	-	-	19	114782	**507.26**	-	-	-	-	-	-
15/16	0.9375	3	15	114732	**417.13**	19	114783	**363.27**	25	114835	**601.21**	-	-	-
61/64	0.9531	3	-	-	-	19	114784	**559.04**	-	-	-	-	-	-
31/32	0.9688	3	15	114733	**447.92**	19	114785	**559.04**	-	-	-	-	-	-
63/64	0.9844	3	-	-	-	19	114786	**569.32**	-	-	-	-	-	-
1	1.0000	3	-	-	-	19	114787	**569.32**	25	114836	**823.96**	-	-	-
1-1/32	1.0312	3	-	-	-	19	114788	**583.94**	-	-	-	-	-	-
1-3/64	1.0469	3	-	-	-	19	114789	**583.94**	-	-	-	-	-	-
1-1/16	1.0625	3	15	114734	**486.41**	18	114790	**583.94**	25	114837	**823.96**	-	-	-
1-5/64	1.0781	4	-	-	-	18	114791	**641.65**	-	-	-	-	-	-
1-3/32	1.0938	4	14	114735	**512.08**	18	114792	**641.65**	-	-	-	-	-	-
1-1/8	1.1250	4	14	114736	**512.08**	18	114793	**641.65**	24	114838	**940.78**	-	-	-
1-5/32	1.1562	4	14	114737	**596.79**	18	114794	**690.37**	-	-	-	-	-	-
1-11/64	1.1719	4	-	-	-	18	114795	**716.30**	-	-	-	-	-	-
1-3/16	1.1875	4	14	114738	**596.79**	18	114796	**716.30**	24	114839	**1,025.49**	-	-	-
1-7/32	1.2188	4	14	114739	**596.79**	18	114797	**724.59**	-	-	-	-	-	-
1-15/64	1.2344	4	-	-	-	18	114798	**724.59**	-	-	-	-	-	-
1-1/4	1.2500	4	14	114740	**596.79**	18	114799	**724.59**	24	114840	**1,110.20**	-	-	-
1-9/32	1.2813	4	-	-	-	18	114800	**820.46**	-	-	-	-	-	-
1-5/16	1.3125	4	-	-	-	18	114801	**820.46**	24	114841	**1,260.35**	-	-	-
1-11/32	1.3438	4	14	114741	**753.39**	-	-	-	-	-	-	-	-	-
1-23/64	1.3594	4	-	-	-	18	114802	**657.14**	-	-	-	-	-	-
1-3/8	1.3750	4	14	114742	**753.39**	18	114803	**917.65**	24	114842	**1,372.02**	-	-	-
1-13/32	1.4062	4	14	114743	**802.15**	18	114804	**948.74**	-	-	-	-	-	-
1-7/16	1.4375	4	14	114744	**802.15**	18	114805	**948.74**	24	114843	**1,411.80**	-	-	-
1-15/32	1.4688	4	-	-	-	18	114806	**679.39**	-	-	-	-	-	-
1-1/2	1.5000	4	-	-	-	18	114807	**1,033.33**	24	114844	**1,538.86**	29	114865	**2,364.77**
1-9/16	1.5625	5	-	-	-	17	114808	**736.50**	-	-	-	-	-	-
1-5/8	1.6250	5	-	-	-	17	114809	**1,142.87**	23	114845	**1,718.55**	-	-	-
1-11/16	1.6875	5	-	-	-	17	114810	**1,301.68**	-	-	-	-	-	-
1-3/4	1.7500	5	-	-	-	17	114811	**1,455.55**	23	114846	**1,899.50**	29	114866	**2,918.25**
1-25/32	1.7812	5	13	114745	**1,347.60**	-	-	-	-	-	-	-	-	-
1-7/8	1.8750	5	-	-	-	17	114812	**1,787.31**	23	114847	**2,126.66**	-	-	-
1-15/16	1.9375	5	-	-	-	17	114813	**1,035.91**	-	-	-	-	-	-

Extra Length Taper Shank Drills HSS — Cont'd

Size	Decimal Equiv.	Morse Taper No.	Flute Length	20" O.A.L. HSS Code No.	Price $	Flute Length	24" O.A.L. HSS Code No.	Price $	Flute Length	30" O.A.L. HSS Code No.	Price $	Flute Length	36" O.A.L. HSS Code No.	Price $
2	2.0000	5	-	-	-	17	114814	**2,128.98**	23	114848	**2,419.28**	29	114867	**3,906.50**
2-1/16	2.0625	5	-	-	-	17	114815	**2,294.17**	23	114849	**2,669.57**	-	-	-
2-1/8	2.1250	5	-	-	-	17	114816	**2,294.17**	23	114850	**2,669.57**	29	114868	**4,561.04**
2-3/16	2.1875	5	-	-	-	17	114817	**2,521.44**	-	-	-	-	-	-
2-7/32	2.2188	5	13	114746	**1,381.12**	17	114818	**2,746.58**	-	-	-	-	-	-
2-1/4	2.2500	5	-	-	-	17	114819	**2,521.44**	23	114851	**2,864.66**	29	114869	**3,456.55**
2-5/16	2.3125	5	-	-	-	17	114820	**2,748.76**	23	114852	**3,125.19**	-	-	-
2-3/8	2.3750	5	-	-	-	17	114821	**2,748.76**	23	114853	**3,125.19**	29	114870	**5,467.49**
2-7/16	2.4375	5	-	-	-	17	114822	**2,933.68**	23	114854	**3,335.67**	-	-	-
2-1/2	2.5000	5	-	-	-	17	114823	**2,933.68**	23	114855	**3,335.67**	29	114871	**5,467.49**
2-9/16	2.5625	5	-	-	-	17	114824	**3,118.64**	23	114856	**1,804.66**	-	-	-
2-5/8	2.6250	5	-	-	-	17	114825	**3,118.64**	23	114857	**3,541.04**	29	114872	**6,199.04**
2-11/16	2.6875	5	-	-	-	17	114826	**3,377.00**	-	-	-	-	-	-
2-3/4	2.7500	5	-	-	-	17	114827	**3,377.00**	23	114858	**3,836.23**	29	114873	**7,230.61**
2-13/16	2.8125	5	-	-	-	17	114828	**3,635.36**	-	-	-	-	-	-
2-7/8	2.8750	5	-	-	-	17	114829	**3,635.36**	23	114859	**4,054.41**	-	-	-
2-15/16	2.9375	5	-	-	-	17	114830	**4,153.48**	-	-	-	-	-	-
3	3.0000	5	-	-	-	17	114831	**4,153.48**	23	114860	**4,723.09**	29	114874	**8,831.71**
3-1/8	3.1250	5	-	-	-	-	-	-	23	114861	**5,364.81**	29	114875	**8,831.71**
3-1/4	3.2500	5	-	-	-	-	-	-	23	114862	**5,200.52**	29	114876	**8,203.84**
3-3/8	3.3750	5	-	-	-	-	-	-	23	114863	**8,683.77**	29	114877	**11,995.83**
3-1/2	3.5000	5	-	-	-	-	-	-	23	114864	**11,088.97**	29	114878	**14,405.94**

Oil Hole Drills HSS — Straight Shank

These drills are designed with oil holes the length of the land section of the drill to deliver a high pressure oil flow to the cutting edges. The resulting coolant flow flushes chips out of the hole to reduce heat and chip packing problems common to deep hole drilling applications. Surface speeds may be increased 30% or more over standard drill styles.

STM PREMIUM

HSS | 118° NOTCHED POINT

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
15/64	0.2344	3-3/8	5-3/4	114879	**538.53**
15/64	0.2344	5-1/8	7-1/2	114880	**284.72**
1/4	0.2500	3-3/4	6-1/8	114881	**254.11**
9/32	0.2812	4	6-3/8	114882	**538.53**
19/64	0.2969	4	6-3/8	114883	**538.53**
5/16	0.3125	4	6-3/8	114884	**538.53**
21/64	0.3281	4-1/8	6-1/2	114885	**538.53**
11/32	0.3438	4-1/8	6-1/2	114886	**538.53**
23/64	0.3594	4-1/4	6-3/4	114887	**538.53**
3/8	0.3750	4-1/4	6-3/4	114888	**536.06**
25/64	0.3906	4-3/8	7	114889	**546.08**
13/32	0.4062	4-3/8	7	114890	**546.08**
27/64	0.4219	4-5/8	7-1/4	114891	**566.04**
7/16	0.4375	4-5/8	7-1/4	114892	**566.04**
29/64	0.4531	4-7/8	7-1/2	114893	**577.97**
15/32	0.4688	4-7/8	7-1/2	114894	**577.97**
31/64	0.4844	5	7-3/4	114895	**585.30**
1/2	0.5000	5	7-3/4	114896	**585.30**
33/64	0.5156	5-1/4	8	114897	**276.59**
17/32	0.5312	5-1/4	8	114898	**593.92**
35/64	0.5469	5-3/8	8-1/4	114899	**607.84**
9/16	0.5625	5-3/8	8-1/4	114900	**607.84**
37/64	0.5781	5-5/8	8-1/2	114901	**614.65**
19/32	0.5938	5-5/8	8-1/2	114902	**614.65**
39/64	0.6094	5-3/4	8-3/4	114903	**644.37**
5/8	0.6250	5-3/4	8-3/4	114904	**644.37**
41/64	0.6406	5-7/8	9	114905	**644.37**
21/32	0.6562	5-7/8	9	114906	**644.37**
43/64	0.6719	6	9-1/4	114907	**659.00**
11/16	0.6875	6	9-1/4	114908	**659.00**
45/64	0.7031	6-3/16	9-1/2	114909	**314.95**
23/32	0.7188	6-3/16	9-1/2	114910	**676.12**
47/64	0.7344	6-3/8	9-3/4	114911	**722.93**
3/4	0.7500	6-3/8	9-3/4	114912	**722.93**
49/64	0.7656	6-1/2	9-7/8	114913	**735.34**
25/32	0.7812	6-1/2	9-7/8	114914	**735.34**
51/64	0.7969	6-5/8	10	114915	**752.54**
13/16	0.8125	6-5/8	10	114916	**752.54**
53/64	0.8281	6-3/4	10-1/4	114917	**767.42**
27/32	0.8438	6-3/8	10-1/4	114918	**767.42**
55/64	0.8594	7	10-1/2	114919	**830.81**
7/8	0.8750	7	10-1/2	114920	**830.81**
57/64	0.8906	7	10-5/8	114921	**890.14**

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
29/32	0.9062	7	10-5/8	114922	**890.14**
59/64	0.9219	7	10-3/4	114923	**951.68**
15/16	0.9375	7	10-3/4	114924	**951.68**
61/64	0.9531	7-1/8	10-7/8	114925	**998.16**
31/32	0.9688	7-1/8	10-7/8	114926	**998.16**
63/64	0.9844	7-3/16	11	114927	**1,047.70**
1	1.0000	7-3/16	11	114928	**1,047.70**
1-1/64	1.0156	7-5/16	11-1/8	114929	**1,106.33**
1-1/32	1.0312	7-5/16	11-1/8	114930	**1,106.33**
1-3/64	1.0469	7-3/8	11-1/4	114931	**1,151.12**
1-1/16	1.0625	7-3/8	11-1/4	114932	**1,151.12**
1-5/64	1.0781	7-5/8	11-1/2	114933	**1,197.59**
1-3/32	1.0938	7-5/8	11-1/2	114934	**1,197.59**
1-7/64	1.1094	7-7/8	11-3/4	114935	**1,258.81**
1-1/8	1.1250	7-7/8	11-3/4	114936	**1,258.81**
1-9/64	1.1406	8	11-7/8	114937	**1,320.57**
1-5/32	1.1562	8	11-7/8	114938	**1,320.57**
1-11/64	1.1719	8-1/8	12	114939	**1,382.08**
1-3/16	1.1875	8-1/8	12	114940	**1,382.08**
1-13/64	1.2031	8-1/8	12-1/8	114941	**1,443.36**
1-7/32	1.2188	8-1/8	12-1/8	114942	**1,443.36**
1-15/64	1.2344	8-1/2	12-1/2	114943	**1,502.51**
1-1/4	1.2500	8-1/2	12-1/2	114944	**1,502.51**
1-17/64	1.2656	9-1/4	14-1/8	114945	**1,599.26**
1-9/32	1.2812	9-1/4	14-1/8	114946	**1,599.26**
1-19/64	1.2969	9-1/4	14-1/4	114947	**1,667.14**
1-5/16	1.3125	9-1/4	14-1/4	114948	**1,667.14**
1-21/64	1.3281	9-1/2	14-3/8	114949	**1,774.53**
1-11/32	1.3438	9-1/2	14-3/8	114950	**1,774.53**
1-23/64	1.3594	9-1/2	14-1/2	114951	**1,871.54**
1-3/8	1.3750	9-1/2	14-1/2	114952	**1,871.54**
1-13/32	1.4062	9-1/2	14-5/8	114953	**2,095.10**
1-7/16	1.4375	9-1/8	14-3/4	114954	**2,095.10**
1-15/32	1.4688	9-1/8	14-7/8	114955	**2,266.95**
1-1/2	1.5000	9-5/8	15	114956	**2,266.95**
1-9/16	1.5625	9-5/8	15-1/4	114957	**2,512.97**
1-5/8	1.6250	9-7/8	15-5/8	114958	**2,719.84**
1-11/16	1.6875	10	15-3/4	114959	**3,089.62**
1-3/4	1.7500	10-1/2	16-1/4	114960	**3,263.78**
1-13/16	1.8125	10-1/2	16-1/4	114961	**3,290.45**
1-7/8	1.8750	10-3/4	16-1/2	114962	**3,618.53**
1-15/16	1.9375	10-3/4	16-5/8	114963	**3,886.21**
2	2.0000	10-3/4	16-5/8	114964	**4,081.40**

Coolant Inducer Socket

For use with taper shank oil hole drills.

Morse Taper Hole and Shank Size	Overall Length	Code No.	Price $
2	6-7/8	114965	**382.37**
3	8-1/2	114966	**467.41**
4	10-1/2	114967	**1,039.37**
5	13-3/4	114968	**2,001.07**

Oil Hole Drills HSS — Taper Shank

Oil Hole Drills feature coolant passages throughout the length of the body. These allow a coolant (air, oil or vapour mist) to reach the cutting edges. The resulting flow cools and lubricates the cutting edges and also aids in the extraction of chips.

- Standard length

118° NOTCHED POINT HSS

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
3/8	0.3750	3-1/2	7-5/8	2	114969	**861.56**
25/64	0.3906	3-5/8	8	2	114970	**861.56**
13/32	0.4062	3-5/8	8	2	114971	**861.56**
27/64	0.4219	3-7/8	8-1/8	2	114972	**861.56**
7/16	0.4375	3-7/8	8-3/8	2	114973	**861.56**
29/64	0.4531	4-1/8	8-3/4	2	114974	**861.56**
15/32	0.4688	4-1/8	8-3/4	3	114975	**807.57**
31/64	0.4844	4-3/8	9	3	114976	**807.57**
1/2	0.5000	4-3/8	9	3	114977	**394.80**
33/64	0.5156	4-5/8	9-1/4	3	114978	**807.57**
17/32	0.5312	4-5/8	9-1/4	3	114979	**807.57**
35/64	0.5469	4-7/8	9-1/2	3	114980	**807.57**
9/16	0.5625	4-7/8	9-1/2	3	114981	**722.64**
37/64	0.5781	4-7/8	9-1/2	3	114982	**807.57**
19/32	0.5938	4-7/8	9-1/2	3	114983	**722.64**
39/64	0.6094	4-7/8	9-1/2	3	114984	**722.64**
5/8	0.6250	4-7/8	9-1/2	3	114985	**722.64**
41/64	0.6406	5-1/8	9-3/4	3	114986	**722.64**
21/32	0.6562	5-1/8	9-3/4	3	114987	**723.82**
43/64	0.6719	5-3/8	10	3	114988	**733.91**
11/16	0.6875	5-3/8	10	3	114989	**733.91**
45/64	0.7031	5-5/8	10-1/4	3	114990	**744.00**
23/32	0.7188	5-5/8	10-1/4	3	114991	**744.00**
47/64	0.7344	5-7/8	10-1/2	3	114992	**744.00**
3/4	0.7500	5-7/8	10-1/2	3	114993	**744.00**
49/64	0.7656	6	10-5/8	3	114994	**751.25**
25/32	0.7812	6	10-5/8	3	114995	**751.25**
51/64	0.7969	6-1/8	10-3/4	3	114996	**751.25**
13/16	0.8125	6-1/8	10-3/4	3	114997	**751.25**
53/64	0.8281	6-1/8	10-3/4	3	114998	**817.55**
27/32	0.8438	6-1/8	10-3/4	3	114999	**817.55**
55/64	0.8594	6-1/8	10-3/4	3	115800	**817.55**
7/8	0.8750	6-1/8	10-3/4	3	115801	**817.55**
57/64	0.8906	6-1/8	10-3/4	3	115802	**820.02**
29/32	0.9062	6-1/8	10-3/4	3	115803	**820.02**
59/64	0.9219	6-1/8	10-3/4	3	115804	**820.02**
15/16	0.9375	6-1/8	10-3/4	3	115805	**820.02**
61/64	0.9531	6-3/8	11	3	115806	**966.89**
31/32	0.9688	6-3/8	11	3	115807	**966.89**
63/64	0.9844	6-3/8	11	3	115808	**966.89**
1	1.0000	6-3/8	11	3	115809	**966.89**
1-1/64	1.0156	6-1/2	11-1/8	3	115810	**1,047.40**
1-1/32	1.0312	6-1/2	11-1/8	3	115811	**1,047.40**
1-3/64	1.0469	6-5/8	11-1/4	3	115812	**1,047.40**
1-1/16	1.0625	6-5/8	11-1/4	3	115813	**1,047.40**
1-5/64	1.0781	6-7/8	12-1/2	4	115814	**1,237.22**
1-3/32	1.0938	6-7/8	12-1/2	4	115815	**1,237.22**
1-7/64	1.1094	7-1/8	12-3/4	4	115816	**1,353.24**
1-1/8	1.1250	7-1/8	12-3/4	4	115817	**1,353.24**
1-9/64	1.1406	7-1/4	12-7/8	4	115818	**1,353.24**
1-5/32	1.1562	7-1/4	12-7/8	4	115819	**1,353.24**
1-11/64	1.1719	7-3/8	13	4	115820	**1,361.56**
1-3/16	1.1875	7-3/8	13	4	115821	**1,361.56**
1-13/64	1.2031	7-1/2	13-1/8	4	115822	**1,549.39**
1-7/32	1.2188	7-1/2	13-1/8	4	115823	**1,549.39**
1-15/64	1.2344	7-7/8	13-1/2	4	115824	**1,549.39**
1-1/4	1.2500	7-7/8	13-1/2	4	115825	**1,549.39**
1-17/64	1.2656	8-1/2	14-1/8	4	115826	**1,883.37**
1-9/32	1.2812	8-1/2	14-1/8	4	115827	**1,883.37**
1-19/64	1.2969	8-5/8	14-1/4	4	115828	**2,026.30**
1-5/16	1.3125	8-5/8	14-1/4	4	115829	**2,026.30**
1-21-64	1.3281	8-3/4	14-3/8	4	115830	**2,026.30**
1-11/32	1.3438	8-3/4	14-3/8	4	115831	**2,026.30**
1-23/64	1.3594	8-7/8	14-1/2	4	115832	**2,242.93**
1-3/8	1.3750	8-7/8	14-1/2	4	115833	**2,242.93**
1-13/32	1.4062	9	14-5/8	4	115834	**2,242.93**
1-7/16	1.4375	9-1/8	14-3/4	4	115835	**2,242.93**
1-15/32	1.4688	9-1/4	14-7/8	4	115836	**2,341.34**
1-1/2	1.5000	9-3/8	15	4	115837	**2,341.34**
1-9/16	1.5625	9-5/8	15-1/4	4	115838	**2,452.72**
1-5/8	1.6250	10	15-5/8	4	115839	**2,637.86**
1-11/16	1.6875	10-1/8	15-3/4	4	115840	**3,100.66**
1-3/4	1.7500	10-1/8	16	4	115841	**3,193.22**
1-13/16	1.8125	10-1/8	17-1/8	5	115842	**3,331.99**
1-7/8	1.8750	10-3/8	17-3/8	5	115843	**3,517.17**
1-15/16	1.9375	10-3/8	17-3/8	5	115844	**3,725.37**
2	2.0000	10-3/8	17-3/8	5	115845	**3,817.96**

Extra Length Oil Hole Drills

* Shank larger than standard

118° NOTCHED POINT

Size (in.)	Decimal Equiv.	Morse Taper No.	10-1/2" OAL HSS 6" Fl. Code No.	Price $	12-1/2" OAL HSS 8" Fl. Code No.	Price $	14-1/2" OAL HSS 10" Fl. Code No.	Price $
31/64	0.4844	3	115846	**886.38**	-	**-**	-	**-**
1/2	0.5000	3	115847	**886.38**	115850	**963.61**	115870	**1,146.47**
33/64	0.5156	3	115848	**886.38**	115851	**963.61**	115871	**1,146.47**
17/32	0.5312	3	115849	**886.38**	115852	**963.61**	115872	**1,146.47**
9/16	0.5625	3	-	**-**	115853	**963.61**	115873	**1,146.47**
19/32	0.5938	3	-	**-**	115854	**963.61**	115874	**1,146.47**
5/8	0.6250	3	-	**-**	115855	**963.61**	115875	**1,146.47**
41/64	0.6406	3	-	**-**	115856	**963.61**	115876	**1,146.47**
21/32	0.6562	3	-	**-**	115857	**963.61**	115877	**1,146.47**
11/16	0.6875	3	-	**-**	115858	**963.61**	115878	**1,146.47**
23/32	0.7188	3	-	**-**	115859	**963.61**	115879	**1,146.47**
47/64	0.7344	3	-	**-**	115860	**963.61**	115880	**1,146.47**
3/4	0.7500	3	-	**-**	115861	**963.61**	115881	**1,146.47**
49/64	0.7656	3	-	**-**	115862	**1,011.64**	115882	**1,191.67**
25/32	0.7812	3	-	**-**	115863	**1,011.83**	115883	**1,189.75**
13/16	0.8125	3	-	**-**	115864	**1,011.83**	115884	**1,189.75**
27/32	0.8438	3	-	**-**	115865	**1,037.61**	115885	**1,223.82**
7/8	0.8750	3	-	**-**	115866	**1,050.86**	115886	**1,223.82**
29/32	0.9062	3	-	**-**	115867	**1,050.86**	115887	**1,246.65**
15/16	0.9375	3	-	**-**	115868	**1,050.86**	115888	**1,246.65**
31/32	0.9688	3	-	**-**	115869	**1,106.70**	115889	**1,293.79**
63/64	0.9844	3	-	**-**	115890	**1,203.08**	115893	**1,401.01**
1	1.0000	3	-	**-**	115891	**1,203.08**	115894	**1,401.01**
1-1/32	1.0312	3	-	**-**	115892	**1,246.95**	115895	**1,448.63**
1-1/16	1.0625	3	-	**-**	-	**-**	115896	**1,448.63**
1-1/8*	1.1250	4	-	**-**	-	**-**	115897	**1,816.96**
1-3/16*	1.1875	4	-	**-**	-	**-**	115898	**1,949.11**
1-1/4*	1.2500	4	-	**-**	-	**-**	115899	**2,161.73**

Taper Shank Core Drills HSS

STM PREMIUM

- Used to open out existing pre-drilled holes
- 4-flute

118° NOTCHED POINT

Size (in.)	Morse Taper No.	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
13/32	1	3-5/8	7	106500	**85.98**
7/16	1	3-7/8	7-1/4	106501	**90.20**
15/32	1	4-1/8	7-1/4	106502	**42.91**
31/64	2	4-3/8	8-1/4	106503	**62.55**
1/2	2	4-3/8	8-1/4	106504	**108.72**
33/64	2	4-5/8	8-1/2	106505	**69.34**
17/32	2	4-5/8	8-1/2	106506	**120.58**
9/16	2	4-7/8	8-3/4	106507	**131.61**
19/32	2	4-7/8	8-3/4	106508	**124.34**
39/64	2	4-7/8	8-3/4	106509	**109.75**
5/8	2	4-7/8	8-3/4	106510	**143.47**
41/64	2	5-1/8	9	106511	**91.15**
21/32	2	5-1/8	9	106512	**158.74**
11/16	2	5-3/8	9-1/2	106513	**170.31**
45/64	2	5-5/8	9-1/2	106514	**159.10**
23/32	2	5-5/8	9-1/2	106515	**186.24**
47/64	2	5-5/8	9-1/2	106516	**113.63**
3/4	2	5-7/8	9-3/4	106517	**197.83**
49/64	2	6	9-7/8	106518	**212.57**
25/32	2	6	9-7/8	106519	**205.05**
51/64	3	6-1/8	10-3/4	106520	**190.93**
13/16	3	6-1/8	10-3/4	106521	**235.72**
27/32	3	6-1/8	10-3/4	106522	**191.81**
55/64	3	6-1/8	10-3/4	106523	**201.13**
7/8	3	6-1/8	10-3/4	106524	**259.40**
29/32	3	6-1/8	10-3/4	106525	**129.85**
59/64	3	6-1/8	10-3/4	106526	**164.87**
15/16	3	6-1/8	10-3/4	106527	**286.80**
61/64	3	6-3/8	11	106528	**150.27**
31/32	3	6-3/8	11	106529	**313.64**
63/64	3	6-3/8	11	106530	**332.98**
1	3	6-3/8	11	106532	**332.98**
1-1/32	3	6-1/2	11-1/8	106533	**255.97**
1-3/64	3	6-5/8	11-1/4	106534	**313.64**
1-1/16	3	6-5/8	11-1/4	106535	**284.18**
1-5/64	4	6-7/8	12-1/2	106536	**352.56**
1-3/32	4	6-7/8	12-1/2	106537	**410.37**
1-1/8	4	7-1/8	12-3/4	106538	**433.26**
1-5/32	4	7-1/4	12-7/8	106539	**463.91**
1-11/64	4	7-3/8	13	106540	**280.27**
1-3/16	4	7-3/8	13	106541	**487.22**
1-13/64	4	7-1/2	13-1/8	106542	**462.08**
1-7/32	4	7-1/2	13-1/8	106543	**514.32**
1-15/64	4	7-1/8	13-1/2	106544	**500.97**
1-1/4	4	7-1/8	13-1/2	106545	**564.34**
1-17/64	4	8-1/2	14-1/8	106546	**431.17**
1-9/32	4	8-1/2	14-1/8	106547	**645.66**
1-5/16	4	8-5/8	14-1/4	106548	**438.09**
1-11/32	4	8-3/4	14-3/8	106549	**335.16**
1-3/8	4	8-7/8	14-1/2	106550	**478.86**
1-13/32	4	9	14-5/8	106551	**347.29**
1-7/16	4	9-1/8	14-3/4	106552	**796.35**
1-15/32	4	9-1/4	14-7/8	106553	**540.70**
1-1/2	4	9-3/8	15	106554	**865.98**
1-17/32	5	9-3/8	16-3/8	106555	**965.85**
1-35/64	5	9-5/8	16-5/8	106556	**465.14**
1-9/16	5	9-5/8	16-5/8	106557	**1,019.93**
1-37/64	5	9-7/8	16-7/8	106558	**489.79**
1-19/32	5	9-7/8	16-7/8	106559	**1,074.70**
1-39/64	5	10	17	106560	**640.36**
1-5/8	5	10	17	106561	**1,112.58**
1-21/32	5	10-1/8	17-1/8	106562	**1,155.08**
1-11/16	5	10-1/8	17-1/8	106563	**1,197.60**
1-23/32	5	10-1/8	17-1/8	106564	**1,236.69**
1-3/4	5	10-1/8	17-1/8	106565	**1,274.84**
1-25/32	5	10-1/8	17-1/8	106566	**1,320.89**
1-13/16	5	10-1/8	17-1/8	106567	**651.12**
1-27/32	5	10-1/8	17-1/8	106568	**1,444.32**
1-7/8	5	10-3/8	17-3/8	106569	**1,476.36**
1-29/32	5	10-3/8	17-3/8	106570	**1,529.62**
1-15/16	5	10-3/8	17-3/8	106571	**1,576.62**
1-31/32	5	10-3/8	17-3/8	106572	**1,626.63**
2	5	10-3/8	17-3/8	106573	**1,672.95**
2-1/32	5	10-3/8	17-3/8	106574	**1,719.01**
2-1/16	5	10-1/4	17-3/8	106575	**1,769.83**
2-1/8	5	10-1/4	17-3/8	106576	**1,861.91**
2-3/16	5	10-1/4	17-3/8	106577	**1,950.90**
2-1/4	5	10-1/8	17-3/8	106578	**2,047.34**
2-5/16	5	10-1/8	17-3/8	106579	**1,882.91**
2-3/8	5	10-1/8	17-3/8	106580	**1,882.91**
2-7/16	5	11-1/4	18-3/4	106581	**2,761.82**
2-1/2	5	11-1/4	18-3/4	106582	**2,857.48**
2-9/16	5	11-7/8	19-1/2	106583	**2,752.50**
2-5/8	5	11-7/8	18-3/4	106584	**3,320.43**
2-11/16	5	12-3/4	20-3/8	106585	**3,667.58**
2-3/4	5	12-3/4	20-3/8	106586	**3,860.77**
2-13/16	5	13-3/8	21-1/8	106587	**4,208.47**
2-7/8	5	13-3/8	21-1/8	106588	**4,439.81**
2-15/16	5	14	21-3/4	106589	**2,254.59**
3	5	14	21-3/4	106590	**2,402.28**

Carbide Tipped Drills

STM PREMIUM

Designed for drilling abrasive and non-ferrous materials such as castings, hard rubber, and copper alloys. **They are NOT recommended for drilling steel or other ferrous materials.**

- High speed steel bodies

118° JOBBERS LENGTH

Fractional Sizes

Size (in.)	Decimal Equiv.	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	0.1250	1-5/8	2-3/4	115900	**24.82**
9/64	0.1406	1-3/4	2-7/8	115901	**26.26**
5/32	0.1562	2	3-1/8	115902	**26.26**
11/64	0.1719	2-1/8	3-1/4	115903	**28.03**
3/16	0.1875	2-5/16	3-1/2	115904	**42.28**
13/64	0.2031	2-7/16	3-5/8	115905	**30.61**
7/32	0.2188	2-1/2	3-3/4	115906	**30.61**
15/64	0.2344	2-5/8	3-7/8	115907	**33.70**
1/4	0.2500	2-3/4	4	115908	**33.04**
17/64	0.2656	2-7/8	4-1/8	115909	**39.67**
9/32	0.2812	2-15/16	4-1/4	115910	**38.93**
19/64	0.2969	3-1/16	4-3/8	115911	**42.87**
5/16	0.3125	3-3/16	4-1/2	115912	**42.10**
21/64	0.3281	3-5/16	4-5/8	115913	**45.56**
11/32	0.3438	3-7/16	4-3/4	115914	**44.71**
23/64	0.3594	3-1/2	4-7/8	115915	**48.43**
3/8	0.3750	3-5/8	5	115916	**47.51**
25/64	0.3906	3-3/4	5-1/8	115917	**52.70**
13/32	0.4062	3-7/8	5-1/4	115918	**51.78**
27/64	0.4219	3-15/16	5-3/8	115919	**57.16**
7/16	0.4375	4-1/16	5-1/2	115920	**56.13**
29/64	0.4531	4-3/16	5-5/8	115921	**64.23**
15/32	0.4688	4-5/16	5-3/4	115922	**63.13**
31/64	0.4844	4-3/8	5-7/8	115923	**71.89**
1/2	0.5000	4-1/2	6	115924	**70.57**
33/64	0.5156	4-13/16	6-5/8	115925	**108.28**
17/32	0.5312	4-13/16	6-5/8	115926	**108.28**
35/64	0.5469	4-13/16	6-5/8	115927	**109.46**
9/16	0.5625	4-13/16	6-5/8	115928	**109.46**
37/64	0.5781	4-13/16	6-5/8	115929	**120.80**
19/32	0.5938	5-3/16	7-1/8	115930	**117.23**
39/64	0.6094	5-3/16	7-1/8	115931	**138.70**
5/8	0.6250	5-3/16	7-1/8	115932	**132.77**
41/64	0.6406	5-3/16	7-1/8	115933	**153.21**
21/32	0.6562	5-3/16	7-1/8	115934	**134.98**
43/64	0.6719	5-5/8	7-5/8	115935	**175.86**
11/16	0.6875	5-5/8	7-5/8	115936	**137.67**

Carbide Tipped Drills — Cont'd

Letter Sizes

Size	Decimal Equiv.	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
A	0.2340	2-5/8	3-7/8	115937	**35.98**
B	0.2380	2-3/4	4	115938	**35.98**
C	0.2420	2-3/4	4	115939	**35.98**
D	0.2460	2-3/4	4	115940	**35.98**
E	0.2500	2-3/4	4	115941	**34.36**
F	0.2570	2-7/8	4-1/8	115942	**40.66**
G	0.2610	2-7/8	4-1/8	115943	**41.29**
H	0.2660	2-7/8	4-1/8	115944	**41.29**
I	0.2720	2-7/8	4-1/8	115945	**41.29**
J	0.2770	2-7/8	4-1/8	115946	**34.87**
K	0.2810	2-15/16	4-1/4	115947	**40.70**
L	0.2900	2-15/16	4-1/4	115948	**40.70**
M	0.2950	3-1/16	4-3/8	115949	**43.02**
N	0.3020	3-1/16	4-3/8	115950	**43.02**
O	0.3160	3-3/16	4-1/2	115951	**43.02**
P	0.3230	3-5/16	4-5/8	115952	**45.82**
Q	0.3320	3-7/16	4-3/4	115953	**45.82**
R	0.3390	3-7/16	4-3/4	115954	**47.62**
S	0.3480	3-1/2	4-7/8	115955	**48.62**
T	0.3580	3-1/2	4-7/8	115956	**48.62**
U	0.3680	3-5/8	5	115957	**48.62**
V	0.3770	3-5/8	5	115958	**49.65**
W	0.3860	3-3/4	5-1/8	115959	**54.10**
X	0.3970	3-3/4	5-1/8	115960	**54.10**
Y	0.4040	3-7/8	5-1/4	115961	**54.10**
Z	0.4130	3-7/8	5-1/4	115962	**62.32**

Wire Gauge Sizes

Size	Decimal Equiv.	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	115963	**31.27**
2	0.2210	2-5/8	3-7/8	115964	**31.27**
3	0.2130	2-1/2	3-3/4	115965	**29.68**
4	0.2090	2-1/2	3-3/4	115966	**29.68**
5	0.2055	2-1/2	3-3/4	115967	**29.68**
6	0.2040	2-1/2	3-3/4	115968	**29.68**
7	0.2010	2-7/16	3-5/8	115969	**29.68**
8	0.1990	2-7/16	3-5/8	115970	**29.68**
9	0.1960	2-7/16	3-5/8	115971	**29.68**
10	0.1935	2-7/16	3-5/8	115972	**29.68**
11	0.1910	2-5/16	3-1/2	115973	**29.68**
12	0.1890	2-5/16	3-1/2	115974	**29.68**
13	0.1850	2-5/16	3-1/2	115975	**28.03**
14	0.1820	2-3/16	3-3/8	115976	**28.03**
15	0.1800	2-3/16	3-3/8	115977	**28.03**
16	0.1770	2-3/16	3-3/8	115978	**28.03**
17	0.1730	2-3/16	3-3/8	115979	**28.03**
18	0.1695	2-1/8	3-1/4	115980	**28.03**
19	0.1660	2-1/8	3-1/4	115981	**28.03**
20	0.1610	2-1/8	3-1/4	115982	**28.03**
21	0.1590	2-1/8	3-1/4	115983	**28.03**
22	0.1570	2	3-1/8	115984	**28.03**
23	0.1540	2	3-1/8	115985	**26.52**
24	0.1520	2	3-1/8	115986	**26.52**
25	0.1495	1-7/8	3	115987	**26.52**
26	0.1470	1-7/8	3	115988	**26.52**
27	0.1440	1-7/8	3	115989	**26.52**
28	0.1405	1-3/4	2-7/8	115990	**26.04**
29	0.1360	1-3/4	2-7/8	115991	**25.27**
30	0.1285	1-5/8	2-3/4	115992	**25.27**
31	0.1200	1-5/8	2-3/4	115993	**25.27**
32	0.1160	1-5/8	2-3/4	115994	**25.27**

Carbide Tipped Drills — Taper Length

STM PREMIUM

- High Speed Steel bodies

Size	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	2-3/4	5-1/8	115995	**46.52**
9/64	3	5-3/8	115996	**46.52**
5/32	3	5-3/8	115997	**49.02**
11/64	3-3/8	5-3/4	115998	**49.87**
3/16	3-3/8	5-3/4	115999	**49.87**
5 mm	3-1/2	6-1/4	116000	**53.00**
13/64	3-5/8	6	116001	**52.74**
7/32	3-5/8	6	116002	**52.74**
15/64	3-3/4	6-1/8	116003	**60.66**
"C"	3-1/2	6-1/4	116004	**60.99**
6.3 mm	3-1/2	6-1/4	116005	**66.92**
1/4	3-3/4	6-1/8	116006	**59.55**
"F"	3-1/2	6-1/4	116007	**62.61**
17/64	3-7/8	6-1/4	116008	**68.06**
9/32	3-7/8	6-1/4	116009	**66.81**
19/64	4	6-3/8	116010	**73.48**
5/16	4	6-3/8	116011	**72.11**
"O"	3-1/2	6-1/4	116012	**67.13**
21/64	4-1/8	6-1/2	116013	**80.88**
11/32	4-1/8	6-1/2	116014	**79.44**
23/64	4-1/4	6-3/4	116015	**88.76**
9.4 mm	4	7	116016	**87.29**
3/8	4-1/4	6-3/4	116017	**87.14**
25/64	4-3/8	7	116018	**97.75**
13/32	4-3/8	7	116019	**95.98**
27/64	4-5/8	7-1/4	116020	**112.52**
7/16	4-5/8	7-1/4	116021	**110.49**
29/64	4-3/4	7-1/2	116022	**119.51**
15/32	4-3/4	7-1/2	116023	**117.34**
12 mm	5-1/2	7-1/4	116024	**128.39**
31/64	4-3/4	7-3/4	116025	**130.16**
1/2	4-3/4	7-3/4	116026	**127.80**
33/64	4-3/4	8	116027	**167.72**
17/32	4-3/4	8	116028	**165.48**
35/64	4-7/8	8-1/4	116029	**173.28**
9/16	4-7/8	8-1/4	116030	**167.10**
37/64	4-7/8	8-1/4	116031	**182.86**
19/32	4-7/8	8-1/4	116032	**179.66**
39/64	4-7/8	8-3/4	116033	**87.51**
5/8	4-7/8	8-3/4	116034	**203.15**
41/64	5-1/8	8-3/4	116035	**218.55**
21/32	5-1/8	9	116036	**210.74**
43/64	5-3/8	9	116037	**222.30**
11/16	5-3/8	9-1/4	116038	**214.39**
45/64	5-5/8	9-1/4	116039	**224.77**
23/32	5-5/8	9-1/2	116040	**219.03**
47/64	5-7/8	9-1/2	116041	**228.49**
3/4	5-7/8	9-3/4	116042	**223.85**
49/64	6	9-3/4	116043	**251.73**
25/32	6	9-7/8	116044	**242.34**
51/64	6-1/8	9-7/8	116045	**252.84**
13/16	6-1/8	10	116046	**243.52**
53/64	6-1/8	10	116047	**252.84**
27/32	6-1/8	10	116048	**243.52**
55/64	6-1/8	10	116049	**267.02**
7/8	6-1/8	10	116050	**268.89**
57/64	6-1/8	10	116051	**278.47**
29/32	6-1/8	10	116052	**310.48**
59/64	6-1/8	10-3/4	116053	**278.29**
15/16	6-1/8	10-3/4	116054	**283.11**
61/64	6-3/8	11	116055	**292.13**
31/32	6-3/8	11	116056	**330.00**
63/64	6-3/8	11	116057	**299.50**
1	6-3/8	11	116058	**305.50**

Carbide Tipped Drills — Taper Shank

STM PREMIUM

- High Speed Steel bodies

Size (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	Code No.	Price $
1/4	2-7/8	6-1/8	1	116059	**96.24**
17/64	3	6-1/4	1	116060	**100.03**
9/32	3	6-1/4	1	116061	**98.19**
19/64	3-1/8	6-3/8	1	116062	**100.03**
5/16	3-1/8	6-3/8	1	116063	**98.19**
21/64	3-1/4	6-1/2	1	116064	**127.10**
11/32	3-1/4	6-1/2	1	116065	**124.82**
23/64	3-1/2	6-3/4	1	116066	**127.10**
3/8	3-1/2	6-3/4	1	116067	**124.82**
25/64	3-5/8	7	1	116068	**147.54**
13/32	3-5/8	7	1	116069	**144.85**
27/64	3-7/8	7-1/4	1	116070	**147.54**
7/16	3-7/8	7-1/4	1	116071	**144.85**
29/64	4-1/8	7-1/2	1	116072	**178.40**
15/32	4-1/8	7-1/2	1	116073	**175.16**
31/64	4-3/8	8-1/4	2	116074	**178.40**
1/2	4-3/8	8-1/4	2	116075	**183.89**
33/64	4-5/8	8-1/2	2	116076	**199.69**
17/32	4-5/8	8-1/2	2	116077	**192.58**
35/64	4-7/8	8-3/4	2	116078	**202.42**
9/16	4-7/8	8-3/4	2	116079	**195.20**
37/64	4-7/8	8-3/4	2	116080	**211.85**
19/32	4-7/8	8-3/4	2	116081	**204.33**
39/64	4-7/8	8-3/4	2	116082	**241.12**
5/8	4-7/8	8-3/4	2	116083	**232.47**
41/64	5-1/8	9	2	116084	**255.64**
21/32	5-1/8	9	2	116085	**246.50**
43/64	5-3/8	9-1/4	2	116086	**247.68**
11/16	5-3/8	9-1/4	2	116087	**238.84**
45/64	5-5/8	9-1/2	2	116088	**254.35**
23/32	5-5/8	9-1/2	2	116089	**245.32**
47/64	5-7/8	9-3/4	2	116090	**259.61**
3/4	5-7/8	9-3/4	2	116091	**250.37**
49/64	6	9-7/8	2	116092	**271.33**
25/32	6-1/8	9-7/8	2	116093	**273.98**
51/64	6-1/8	10-3/4	3	116094	**280.24**
13/16	6-1/8	10-3/4	3	116095	**297.29**
53/64	6-1/8	10-3/4	3	116096	**319.90**
27/32	6-1/8	10-3/4	3	116097	**318.47**
55/64	6-1/8	10-3/4	3	116098	**301.53**
7/8	6-1/8	10-3/4	3	116099	**301.53**
57/64	6-1/8	10-3/4	3	116100	**309.41**
29/32	6-1/8	10-3/4	3	116101	**309.41**
59/64	6-1/8	10-3/4	3	116102	**323.00**
15/16	6-1/8	10-3/4	3	116103	**323.00**
61/64	6-3/8	11	3	116104	**346.64**
31/32	6-3/8	11	3	116105	**341.74**
63/64	6-3/8	11	3	116106	**346.64**
1	6-3/8	11	3	116107	**336.22**
1-1/32	6-1/2	11-1/8	3	116108	**415.66**
1-1/16	6-5/8	11-1/4	4	116109	**421.15**
1-3/32	6-7/8	12-1/2	4	116110	**455.77**
1-1/8	7-1/8	12-3/4	4	116111	**467.08**
1-5/32	7-1/4	12-7/8	4	116112	**528.69**
1-3/16	7-3/8	13	4	116113	**534.18**
1-7/32	7-1/2	13-1/8	4	116114	**565.15**
1-1/4	7-7/8	13-1/2	4	116115	**572.45**

Die Drills — Carbide Tipped

STM PREMIUM

Negative angle cutting edge for extra strength and for drilling hardened steel.
* Solid carbide

Size	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16*	-	1-1/2	116116	**31.16**
5/64*	-	1-1/2	116117	**31.16**
3/32*	-	2	116118	**35.28**
7/64*	-	2	116119	**35.28**
1/8*	-	2	116120	**35.28**
9/64*	-	2	116121	**37.68**
5/32*	-	2	116122	**43.50**
11/64	1-1/2	3-1/2	116123	**65.59**
3/16	1-1/2	3-1/2	116124	**65.59**
13/64	1-3/4	3-3/4	116125	**67.66**
7/32	1-3/4	3-3/4	116126	**67.66**
15/64	2	4	116127	**70.09**
1/4	2	4	116128	**70.09**
17/64	2-1/4	4-1/4	116129	**74.06**
9/32	2-1/4	4-1/4	116130	**74.06**
19/64	2-1/2	4-1/2	116131	**77.42**
5/16	2-1/2	4-1/2	116132	**77.42**
21/64	2-3/4	4-3/4	116133	**83.42**
11/32	2-3/4	4-3/4	116134	**83.42**
23/64	3	5	116135	**88.83**
3/8	3	5	116136	**88.83**
25/64	3	5-1/4	116137	**103.60**
13/32	3	5-1/4	116138	**103.64**
27/64	3	5-1/2	116139	**120.36**
7/16	3	5-1/2	116140	**120.36**
29/64	3-1/4	5-3/4	116141	**132.33**
15/32	3-1/4	5-3/4	116142	**132.33**
31/64	3-1/2	6	116143	**155.09**
1/2	3-1/2	6	116144	**155.09**
17/32	3-1/2	6	116145	**187.28**
9/16	3-1/2	6	116146	**187.28**
19/32	4	7	116147	**204.33**
5/8	4	7	116148	**204.33**
21/32	4-1/2	7-1/2	116149	**215.23**
11/16	4-1/2	7-1/2	116150	**221.27**
23/32	4-3/4	8	116151	**236.26**
3/4	4-3/4	8	116152	**238.33**
13/16	4-3/4	8	116153	**410.21**
7/8	4-3/4	8	116154	**426.60**
15/16	4-3/4	8	116155	**472.53**
1	4-3/4	8	116156	**490.57**

RC65 Straight Flute Drills — Carbide Tipped

STM PREMIUM

For drilling and centre drilling heat treated high speed steel up to 65HRC. The special point design provides a free cutting action that minimizes heat and produces a smooth finish.

Size (in.)	Flute Length (in.)	Overall Length (in.)	Approx. RPM	Code No.	Price $
1/8	1/2	3	2000	116157	**106.36**
5/32	1/2	3	1800	116158	**114.95**
3/16	3/4	3-1/4	1600	116159	**80.39**
7/32	1-1/4	3-1/4	1400	116160	**101.65**
1/4	1-1/2	3-1/2	1200	116161	**106.36**
5/16	1-3/4	3-3/4	1000	116162	**112.04**
3/8	2	4	800	116163	**120.76**
7/16	2-1/4	4-1/2	800	116164	**161.61**
1/2	2-1/2	5	700	116165	**195.46**
5/8	2-1/2	5	700	116166	**245.36**

Carbide Tipped Stub Drills

- Carbide tipped

Size	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	7/8	1-7/8	116167	**40.18**
9/64	15/16	1-15/16	116168	**43.50**
5/32	1	2-1/16	116169	**45.56**
3/16	1-1/8	2-3/16	116170	**48.84**
7/32	1-1/4	2-3/8	116171	**49.17**
1/4	1-3/8	2-1/2	116172	**52.52**
9/32	1-1/2	2-11/16	116173	**63.16**
5/16	1-5/8	2-13/16	116174	**69.72**
3/8	3-1/8	3-1/8	116175	**77.53**
7/16	3-7/16	3-7/16	116176	**91.08**
1/2	2-1/4	3-3/4	116177	**114.80**

Carbide Tipped Masonry Drills

- Straight shank
- Rotary

4" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/8 (3" OAL)	1/8	116178	**6.00**
5/32 (3" OAL)	5/32	116179	**6.33**
11/64 (3" OAL)	11/64	116180	**6.33**
3/16	3/16	116181	**6.45**
7/32	7/32	116182	**6.63**
1/4	1/4	116183	**6.74**
9/32	1/4	116184	**6.92**
5/16	1/4	116185	**7.03**
3/8	1/4	116186	**7.59**
1/2	1/4	116187	**8.80**

6" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/8	1/8	116188	**6.33**
3/16	3/16	116189	**6.48**
1/4	1/4	116190	**6.74**
9/32	1/4	116191	**7.51**
5/16	1/4	116192	**7.81**
3/8	1/4	116193	**7.73**
7/16	1/4	116194	**8.62**
7/16	3/8	116195	**8.62**
1/2	1/4	116196	**9.32**
1/2	3/8	116197	**9.32**
9/16	3/8	116198	**12.93**
9/16	1/2	116199	**12.93**
5/8	1/2	116200	**22.80**
11/16	1/2	116201	**24.90**
3/4	1/2	116202	**17.75**
7/8	1/2	116203	**22.58**
1	1/2	116204	**27.66**
1-1/8	1/2	116205	**39.70**
1-1/4	1/2	116206	**51.75**
1-3/8	1/2	116207	**69.79**
1-1/2	1/2	116208	**71.60**

12" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/8	1/8	116209	**14.92**
3/16	3/16	116210	**15.36**
1/4	1/4	116211	**15.58**
5/16	1/4	116212	**16.54**
3/8	1/4	116213	**28.25**
7/16	3/8	116214	**33.74**
1/2	3/8	116215	**22.72**
9/16	1/2	116216	**25.85**
5/8	1/2	116217	**27.43**
11/16	1/2	116218	**33.55**
3/4	1/2	116219	**34.29**
7/8	1/2	116220	**40.77**
1	1/2	116221	**46.92**
1-1/8	1/2	116222	**58.96**

18" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/4	1/4	116223	**26.66**
3/16	3/16	116224	**28.17**
5/16	1/4	116225	**30.09**
3/8	5/16	116226	**32.08**
7/16	3/8	116227	**38.52**
1/2	3/8	116228	**39.44**
9/16	1/2	116229	**39.44**
5/8	1/2	116230	**33.15**
11/16	1/2	116231	**56.17**
3/4	1/2	116232	**57.49**
7/8	1/2	116233	**69.53**
1	1/2	116234	**78.89**
1-1/8	1/2	116235	**112.29**
1-1/4	1/2	116236	**119.00**
1-1/2	1/2	116237	**153.76**

Solid Carbide Centre Drills

MICRO GRAIN CARBIDE | REG LENGTH

Catalog No.	Body Diameter (in.)	Drill Diameter (in.)	Overall Length (in.)	Code No.	Price $
1	1/8	3/64	1-1/4	170700	**16.84**
2	3/16	5/64	1-7/8	170702	**25.89**
3	1/4	7/64	2	170704	**30.86**
4	5/16	1/8	2-1/8	170706	**42.28**
5	7/16	3/16	2-3/4	170708	**63.97**
6	1/2	7/32	3	170710	**87.37**

60° Carbide and HSS Combined Drill & Countersinks

- For centering and spot drilling applications when high accuracy is necessary
- Use carbide for highly abrasive or tough materials in production runs

Size	Drill Dia. (in.)	Body Dia. (in.)	HSS	HSS Code No.	Price $	Carbide	Carbide Code No.	Price $
00	0.025	1/8	HS00CD	121810	**11.64**	C00CD	121830	**38.95**
0	0.031	1/8	HS0CD	121812	**11.64**	C0CD	121832	**34.14**
1	3/64	1/8	HS1CD	121814	**8.72**	C1CD	121834	**27.99**
2	5/64	3/16	HS2CD	121816	**9.18**	C2CD	121836	**44.33**
3	7/64	1/4	HS3CD	121818	**9.52**	C3CD	121838	**43.31**
4	1/8	5/16	HS4CD	121820	**10.08**	C4CD	121840	**59.21**
5	3/16	7/16	HS5CD	121822	**16.68**	C5CD	121842	**89.77**
6	7/32	1/2	HS6CD	121824	**25.40**	C6CD	121844	**122.46**
7	1/4	5/8	HS7CD	121826	**47.12**	C7CD	121846	**237.87**
8	5/16	3/4	HS8CD	121828	**61.22**	C8CD	121848	**295.06**

Combined Drills & Countersinks — Plain Type

- 60° countersink

HSS | COBALT | CARBIDE

Size	Body Dia. (in.)	Drill Dia./ Length (in.)	O.A.L. (in.)	HSS Code No.	Price $	Cobalt Code No.	Price $	Solid Carbide Code No.	Price $
1	1/8	3/64	1-1/4	116238	**6.00**	116248	**21.88**	116256	**34.03**
2	3/16	5/64	1-7/8	116239	**6.00**	116249	**22.32**	116257	**53.29**
3	1/4	7/64	2	116240	**6.08**	116250	**23.39**	116258	**63.49**
4	5/16	1/8	2-1/8	116241	**6.22**	116251	**24.01**	116259	**87.18**
5	7/16	3/16	2-3/4	116242	**9.32**	116252	**44.67**	116260	**132.22**
6	1/2	7/32	3	116243	**13.96**	116253	**60.11**	116261	**192.18**
7	5/8	1/4	3-1/4	116244	**20.26**	116254	**61.47**	-	**-**
8	3/4	5/16	3-1/2	116245	**28.21**	116255	**110.86**	-	**-**
9	7/8	11/32	3-5/8	116246	**52.92**	-	**-**	-	**-**
10	1	3/8	3-3/4	116247	**69.20**	-	**-**	-	**-**

Combined Drills & Countersinks — Bell Type

STM PREMIUM

- 60° countersink

HSS COBALT

Size	Body Dia. (in.)	Drill Dia./ Length (in.)	O.A.L. (in.)	Bell Dia.	HSS Code No.	Price $	Cobalt Code No.	Price $
11	1/8	3/64	1-1/4	0.1000	116262	**9.10**	116272	**20.99**
12	3/16	1/16	1-7/8	0.1500	116263	**9.10**	116273	**22.10**
13	1/4	3/32	2	0.2000	116264	**9.50**	116274	**27.07**
14	5/16	7/64	2-1/8	0.2500	116265	**9.50**	116275	**26.52**
15	7/16	5/32	2-3/4	0.3500	116266	**15.51**	116276	**38.67**
16	1/2	3/16	3	0.4000	116267	**20.85**	116277	**43.31**
17	5/8	7/32	3-1/4	0.5000	116268	**29.43**	116278	**64.08**
18	3/4	1/4	3-1/2	0.6000	116269	**40.66**	116279	**80.44**
20	1	3/8	3-3/4	0.8000	116271	**78.08**	-	**-**

Combined Drills & Countersinks — Long Series

STM PREMIUM

HSS

Size	Body Dia. (in.)	Drill Dia. (in.)	Overall Length (in.)	HSS Code No.	Price $
1	1/8	3/64	3	116280	**18.23**
1	1/8	3/64	4	116281	**20.88**
1	1/8	3/64	5	116282	**31.42**
1	1/8	3/64	6	116283	**41.54**
2	3/16	5/64	4	116284	**24.93**
2	3/16	5/64	5	116285	**32.08**
2	3/16	5/64	6	116286	**41.58**
3	1/4	7/64	4	116287	**26.30**
3	1/4	7/64	5	116288	**34.58**
3	1/4	7/64	6	116289	**41.95**
4	5/16	1/8	4	116290	**29.17**
4	5/16	1/8	5	116291	**37.38**
4	5/16	1/8	6	116292	**43.02**
4-1/2	3/8	9/64	4	116294	**32.74**
4-1/2	3/8	9/64	5	116295	**38.74**
4-1/2	3/8	9/64	6	116296	**57.27**
5	7/16	3/16	4	116297	**38.30**
5	7/16	3/16	5	116298	**44.38**
5	7/16	3/16	6	116299	**49.83**
6	1/2	7/32	5	116300	**48.03**
6	1/2	7/32	6	116301	**60.59**
7	5/8	1/4	6	116302	**107.10**
8	3/4	5/16	6	116305	**115.46**

60° HSS Combined Drill & Countersinks

SOWA

- 60° countersink

HSS 118°

Size	Body Dia.	Drill Dia.	Drill Length	Overall Length	Code No.	Price $
#000	1/8"	0.020"	0.5-0.8mm	31mm	121907	**8.25**
#00	1/8"	0.025"	0.7-1.0mm	31mm	121908	**7.82**
#0	1/8"	1/32"	0.9-1.2mm	31mm	121910	**7.18**
1	1/8"	3/64"	1.4-1.7mm	31mm	121911	**6.86**
2	3/16"	5/64"	2.4-2.7mm	47mm	121912	**7.18**
3	1/4"	7/64"	3.3-3.9mm	50mm	121913	**7.60**
4	5/16"	1/8"	3.8-4.4mm	54mm	121914	**8.67**
4-1/2	3/8"	9/64"	4.3-4.9mm	63mm	121919	**11.35**
5	7/16"	3/16"	5.9-6.5mm	70mm	121915	**13.07**
6	1/2"	7/32"	6.9-7.5mm	76mm	121916	**17.24**
7	5/8"	1/4"	8.0-8.6mm	82mm	121917	**30.85**
8	3/4"	5/16"	10.0-10.6mm	89mm	121918	**50.56**
Set		**Contents**				
5pcs		#1 - 5			121920	**45.85**

60° Combined Drill & Countersinks - Long Series

SOWA

- 60° countersink

HSS 118°

Size	Body Dia.	Drill Dia.	Drill Length	Overall Length	Code No.	Price $
1	1/8"	3/64"	1.4-1.7mm	4"	121931	**17.67**
2	3/16"	5/64"	2.4-2.7mm	4"	121932	**17.67**
3	1/4"	7/64"	3.3-3.9mm	4"	121933	**19.60**
4	5/16"	1/8"	3.8-4.4mm	4"	121934	**20.99**
5	7/16"	3/16"	5.9-6.5mm	4"	121935	**27.10**

60° HSS Combined Drill & Countersinks TiN Coated

SOWA

- 60° countersink

TiN 118°

Size	Body Dia.	Drill Dia.	Drill Length	Overall Length	Code No.	Price $
1	1/8"	3/64"	1.4-1.7mm	31mm	121921	**11.57**
2	3/16"	5/64"	2.4-2.7mm	47mm	121922	**13.07**
3	1/4"	7/64"	3.3-3.9mm	50mm	121923	**14.56**
4	5/16"	1/8"	3.8-4.4mm	54mm	121924	**17.04**
4-1/2	3/8"	9/64"	4.3-4.9mm	63mm	121929	**21.86**
5	7/16"	3/16"	5.9-6.5mm	70mm	121925	**24.74**
6	1/2"	7/32"	6.9-7.5mm	76mm	121926	**30.10**
7	5/8"	1/4"	8.0-8.6mm	82mm	121927	**44.99**
8	3/4'	5/16"	10.0-10.6mm	89mm	121928	**69.31**

Combined Drills & Countersinks HSS — Metric Sizes

PREMIUM

- Plain type
- 60° countersink

HSS

Size (mm)	Drill Diameter (in.)	Body Diameter (in.)	Overall Length (in.)	HSS Code No.	Price $
0.50 *	0.0197	1/8	13/16	116306	**19.78**
0.80 *	0.0315	1/8	13/16	116307	**14.58**
1.00	0.0394	1/8	1-1/4	116308	**14.58**
1.25	0.0492	1/8	1-1/4	116309	**14.58**
1.60	0.0630	5/32	1-5/16	116310	**13.85**
2.00	0.0787	0.1969	1-9/16	116311	**15.47**
2.50	0.0984	1/4	1-3/4	116312	**17.49**
3.15	0.1240	0.3150	2	116313	**21.43**
4.00	0.1575	0.3937	2-1/4	116314	**36.61**
5.00	0.1969	0.4921	2-1/2	116315	**50.60**
6.30	0.2480	0.6299	2-3/4	116316	**74.10**
8.00	0.3150	0.7874	3-1/8	116317	**115.20**

* Single end

Missile & Aircraft Series HSS

PREMIUM

HSS

Size	Body Dia. (in.)	Drill Dia. (in.)	Drill Length (in.)	Overall Length (in.)	HSS Code No.	Price $
000	1/8	0.020	0.02	1-1/4	116318	**7.14**
00	1/8	0.025	0.025	1-1/4	116319	**7.14**
0	1/8	1/32	1/32	1-1/4	116320	**7.14**

Carbide Tipped Combined Drills & Countersinks

PREMIUM

These drills are used for centre drilling hardened high speed steel in the range up to 65HRC.

- 60° countersink

120°

Size	Body Diameter (in.)	Drill Diameter (in.)	Overall Length (in.)	Code No.	Price $
4-1	5/16	3/32	2-1/8	116321	**133.73**
4-2	5/16	1/8	2-1/8	116322	**121.58**
6-1	1/2	7/32	3	116323	**170.82**
6-2	1/2	9/32	3	116324	**170.82**

Spotting & Centering Drills HSS

PREMIUM

To provide greater rigidity, these drills are made with short overall and flute lengths.

118°

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Right Hand Code No.	Price $	Left Hand Code No.	Price $
3/8	0.3750	1	2	116325	**14.29**	116336	**26.44**
7/16	0.4375	1	2	116326	**27.99**	116337	**35.95**
1/2	0.5000	1	2	116327	**25.08**	116338	**38.56**
5/8	0.6250	1-1/8	2-1/4	116328	**39.81**	116339	**60.18**
3/4	0.7500	1-1/8	2-1/4	116329	**56.72**	116340	**83.86**
7/8	0.8750	1-1/4	2-1/2	116330	**81.54**	116341	**118.52**
1	1.0000	1-1/4	2-1/2	116331	**91.60**	116342	**127.17**
1-1/4	1.2500	2	4	116332	**182.31**	116343	**280.35**
1-1/2	1.5000	2-1/2	5	116333	**284.40**	116344	**382.85**
1-3/4	1.7500	2-3/4	5-1/2	116334	**430.25**	116345	**587.03**
2	2.000	3	6	116335	**510.46**	-	**-**

NC/CNC Spotting Drills HSS

PREMIUM

These drills are used for perfect alignment of the follow-on tool.

- Standard length
- Right hand cut

90° 120°

Size (in.)	Decimal Equiv. (in.)	Overall Length (in.)	90° Flute Length	HSS Code No.	Price $	120° Flute Length	HSS Code No.	Price $
1/4	0.2500	2-1/2	3/4	116346	**29.83**	21/32	116352	**30.16**
3/8	0.3750	3-1/8	1-1/8	116347	**32.08**	1	116353	**32.48**
1/2	0.5000	3-3/4	1-3/8	116348	**41.07**	1-3/16	116354	**41.58**
5/8	0.6250	4-3/8	1-5/8	116349	**54.32**	1-15/32	116355	**53.88**
3/4	0.7500	5	1-7/8	116350	**68.58**	1-3/4	116356	**69.28**
1	1.0000	6	2-1/4	116351	**115.76**	2-3/32	116357	**116.97**

Centre Drills HSS

PREMIUM

These drills are used for starting and centering screw machine operations. Their short flute and overall length increase rigidity while minimizing runout.

118°

Size	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
#56	0.0465	3/8	1-3/16	116358	**3.06**
1/16	0.0625	3/8	1-3/16	116359	**3.06**
5/64	0.0781	3/4	1-1/4	116360	**3.06**
3/32	0.0938	3/4	1-1/4	116361	**3.35**
#41	0.0960	3/4	1-1/4	116362	**5.08**
#40	0.0980	3/4	1-1/4	116363	**3.35**
7/64	0.1094	3/4	1-1/4	116364	**3.35**
1/8	0.1250	3/4	1-1/4	116365	**2.84**
#30	0.1285	3/4	1-1/4	116366	**2.95**
9/64	0.1406	3/4	1-1/4	116367	**4.42**
5/32	0.1562	1	1-1/2	116368	**4.94**
#21	0.1590	1	1-1/2	116369	**4.94**
#20	0.1610	1	1-1/2	116370	**4.94**
11/64	0.1719	1	1-1/2	116371	**4.94**
3/16	0.1875	1	1-1/2	116372	**4.94**
13/64	0.2031	1	1-1/2	116373	**4.94**
#5	0.2055	1	1-1/2	116374	**4.94**
7/32	0.2188	1	1-1/2	116375	**4.94**
1/4	0.2500	1	1-1/2	116376	**5.52**
9/32	0.2812	1	1-1/2	116377	**7.70**
5/16	0.3125	1	1-1/2	116378	**9.10**
29/64	0.4531	1	1-1/2	116379	**22.21**

GS Tooling Drill Chucks

High precision & premium tolerance for improved life.

See Pages G70-71

Spotting & Centering Drills HSS

Dia. (in.)	Overall Length (in.)	Flute Length (in.)	HSS Code No.	Price $
7/16	2	1	144312	**21.80**
5/8	2-1/4	1-1/8	144314	**25.06**
3/4	2-1/4	1-1/8	144315	**38.02**
7/8	2-1/2	1-1/4	144316	**87.74**
1	2-1/2	1-1/4	144317	**116.77**
1-1/4	4	2	144318	**173.17**
1-1/2	5	2-1/2	144319	**255.45**

90° HSS Stub NC Spot Drills

Dia. (in.)	Overall Length (in.)	Flute Length (in.)	Overall Length	Code No.	Price $
1/8	1-1/4	0.380	32mm	121939	**9.21**
3/16	1-3/8	0.500	35mm	121940	**10.18**
1/4	1-1/2	0.640	38mm	121941	**10.61**
5/16	1-1/2	0.640	38mm	121942	**13.07**
3/8	2	1	51mm	121943	**14.14**
7/16	2	1	51mm	121944	**18.85**
1/2	2	1	51mm	121945	**22.39**
5/8	2-1/4	1-1/8	57mm	121946	**38.88**
3/4	2-1/4	1-1/8	57mm	121947	**51.74**
7/8	2-1/2	1-1/4	64mm	121948	**65.88**
1	2-1/2	1-1/4	64mm	121949	**80.02**

118° HSS Stub NC Spot Drills

Dia. (in.)	Overall Length (in.)	Flute Length (in.)	Overall Length	Code No.	Price $
1/8	1-1/4	0.380	32mm	121950	**9.21**
3/16	1-3/8	0.500	35mm	121951	**10.18**
1/4	1-1/2	0.640	38mm	121952	**10.61**
5/16	1-1/2	0.640	38mm	121953	**13.07**
3/8	2	1	51mm	121954	**14.14**
7/16	2	1	51mm	121956	**18.85**
1/2	2	1	51mm	121957	**22.39**
5/8	2-1/4	1-1/8	57mm	121958	**38.88**
3/4	2-1/4	1-1/8	57mm	121959	**51.74**
7/8	2-1/2	1-1/4	64mm	121960	**65.88**
1	2-1/2	1-1/4	64mm	121961	**80.02**

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Images are representational only and may not reflect actual product.

Vent Drills HSS

These drills are used for the tire mould industry.

Size	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
74	0.0225	1	2	116380	**10.79**
74	0.0225	1	3	116381	**11.56**
73	0.0240	5/8	1-1/2	116382	**10.53**
69	0.0292	2	3	116383	**12.15**
68	0.0320	2	6	116384	**18.23**
60	0.0400	3	4	116385	**13.19**
58	0.0420	3	4	116386	**7.22**
57	0.0430	4	6	116387	**19.26**
57	0.0430	2	3	116388	**11.34**
57	0.0430	3	4	116389	**13.19**
3/64	0.0469	2	3	116390	**5.26**
55	0.0520	2-1/4	3	116391	**11.97**
55	0.0520	2-1/2	4-1/2	116392	**10.53**
55	0.0520	3	4	116393	**13.66**
55	0.0520	3-1/2	6-1/4	116394	**20.26**
54	0.0550	4	6	116395	**19.26**
1/16	0.0625	2-1/2	3-1/2	116396	**12.56**
1/16	0.0625	3	4	116397	**13.66**
1/16	0.0625	4	5	116398	**17.24**
1/16	0.0625	4	6	116400	**20.07**
52	0.0635	4	5	116401	**17.24**
50	0.0700	3	4	116402	**14.58**
50	0.0700	3	5	116403	**18.23**
50	0.0700	4	6	116404	**20.77**

Drill & Reamer Blanks HSS

Made from hardened (63-65 HRC) high speed steel and ground, can be used as punches, gauges, pins or ground for special tools.

Drill Blanks

- to 1/2" + 0.0000/ - 0.0003", to 1 " + 0.0000"/ - 0.0005"

Reamer Blanks

- + 0.0002"/ - 0.0000"

Fractional Sizes

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $	Reamer Blank Code No.	Price $
1/64	0.0156	3/4	116405	**2.98**	116670	**4.09**
1/32	0.0312	1-3/8	116406	**2.98**	116671	**4.09**
3/64	0.0469	1-3/4	116407	**3.24**	116672	**4.46**
1/16	0.0625	1-7/8	116408	**3.17**	116673	**4.31**
5/64	0.0781	2	116409	**3.35**	116674	**4.57**
3/32	0.0938	2-1/4	116410	**3.24**	116675	**4.46**
7/64	0.1094	2-5/8	116411	**3.35**	116676	**4.57**
1/8	0.1250	2-3/4	116412	**3.17**	116677	**4.35**
9/64	0.1406	2-7/8	116413	**3.35**	116678	**4.57**
5/32	0.1562	3-1/8	116414	**3.68**	116679	**5.05**
11/64	0.1719	3-1/4	116415	**3.68**	116680	**5.05**
3/16	0.1875	3-1/2	116416	**4.12**	116681	**5.63**
13/64	0.2031	3-5/8	116417	**5.38**	116682	**7.37**
7/32	0.2188	3-3/4	116418	**5.41**	116683	**7.40**
15/64	0.2344	3-7/8	116419	**6.08**	116684	**8.32**
1/4	0.2500	4	116420	**6.30**	116685	**8.58**
17/64	0.2656	4-1/8	116421	**7.14**	116686	**9.76**
9/32	0.2812	4-1/4	116422	**7.70**	116687	**10.53**
19/64	0.2969	4-3/8	116423	**8.58**	116688	**11.68**
5/16	0.3125	4-1/2	116424	**8.40**	116689	**11.45**
21/64	0.3281	4-5/8	116425	**9.72**	116690	**13.26**
11/32	0.3438	4-3/4	116426	**10.42**	116691	**14.22**
23/64	0.3594	4-7/8	116427	**11.71**	116692	**15.95**
3/8	0.3750	5	116428	**12.26**	116693	**16.72**
25/64	0.3906	5-1/8	116429	**13.37**	116694	**18.27**
13/32	0.4062	5-1/4	116430	**14.51**	116695	**19.78**
27/64	0.4219	5-3/8	116431	**16.24**	116696	**22.13**
7/16	0.4375	5-1/2	116432	**17.86**	116697	**24.38**
29/64	0.4531	5-5/8	116433	**18.82**	116698	**25.71**

Drill & Reamer Blanks HSS — Cont'd

Fractional Sizes

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $	Reamer Blank Code No.	Price $
15/32	0.4688	5-3/4	116434	**19.15**	116699	**26.11**
31/64	0.4844	5-7/8	116435	**17.55**	116700	**29.61**
1/2	0.5000	6	116436	**21.88**	116701	**29.83**
33/64	0.5156	6	116437	**38.30**	-	-
17/32	0.5312	6	116438	**40.14**	-	-
35/64	0.5469	6	116439	**38.30**	-	-
9/16	0.5625	6	116440	**41.84**	-	-
37/64	0.5781	6	116441	**47.95**	-	-
19/32	0.5938	6	116442	**47.95**	-	-
39/64	0.6094	6	116443	**47.07**	-	-
5/8	0.6250	6	116444	**47.07**	-	-
41/64	0.6406	6	116445	**55.47**	-	-
21/32	0.6562	6	116446	**55.47**	-	-
43/64	0.6719	6	116447	**60.77**	-	-
11/16	0.6875	6	116448	**60.77**	-	-
45/64	0.7031	6	116449	**60.77**	-	-
23/32	0.7188	6	116450	**60.77**	-	-
47/64	0.7344	6	116451	**62.98**	-	-
3/4	0.7500	6	116452	**62.98**	-	-
49/64	0.7656	6	116453	**68.72**	-	-
25/32	0.7812	6	116454	**68.72**	-	-
51/64	0.7969	6	116455	**73.22**	-	-
13/16	0.8125	6	116456	**73.22**	-	-
53/64	0.8281	6	116457	**81.25**	-	-
27/32	0.8438	6	116458	**81.25**	-	-
55/64	0.8594	6	116459	**86.22**	-	-
7/8	0.8750	6	116460	**86.22**	-	-
57/64	0.8906	6	116461	**93.81**	-	-
29/32	0.9062	6	116462	**93.81**	-	-
59/64	0.9219	6	116463	**99.55**	-	-
15/16	0.9375	6	116464	**99.55**	-	-
61/64	0.9531	6	116465	**103.53**	-	-
31/32	0.9688	6	116466	**103.53**	-	-
63/64	0.9844	6	116467	**109.09**	-	-
1	1.0000	6	116468	**109.09**	-	-

Letter Sizes

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $	Reamer Blank Code No.	Price $
A	0.2340	3-7/8	116469	**6.37**	116495	**8.69**
B	0.2380	4	116470	**6.37**	116496	**8.69**
C	0.2420	4	116471	**6.37**	116497	**8.69**
D	0.2460	4	116472	**6.37**	116498	**8.69**
E	0.2500	4	116473	**6.30**	116499	**8.58**
F	0.2570	4-1/8	116474	**7.11**	116500	**9.69**
G	0.2610	4-1/8	116475	**7.11**	116501	**9.69**
H	0.2660	4-1/8	116476	**7.11**	116502	**9.69**
I	0.2720	4-1/8	116477	**7.66**	116503	**10.42**
J	0.2770	4-1/8	116478	**7.66**	116504	**10.42**
K	0.2810	4-1/4	116479	**5.26**	116505	**10.79**
L	0.2900	4-1/4	116480	**7.92**	116506	**10.79**
M	0.2950	4-3/8	116481	**8.80**	116507	**12.01**
N	0.3020	4-3/8	116482	**8.80**	116508	**12.01**
O	0.3160	4-1/2	116483	**8.73**	116509	**11.90**
P	0.3230	4-5/8	116484	**9.39**	116510	**12.78**
Q	0.3320	4-3/4	116485	**9.39**	116511	**12.78**
R	0.3390	4-3/4	116486	**10.61**	116512	**14.47**
S	0.3480	4-7/8	116487	**12.12**	116513	**16.50**
T	0.3580	4-7/8	116488	**12.12**	116514	**16.50**
U	0.3680	5	116489	**12.85**	116515	**17.49**
V	0.3770	5	116490	**12.85**	116516	**17.49**
W	0.3860	5-1/8	116491	**13.92**	116517	**19.00**
X	0.3970	5-1/8	116492	**13.92**	116518	**19.00**
Y	0.4040	5-1/4	116493	**15.06**	116519	**20.55**
Z	0.4130	5-1/4	116494	**15.06**	116520	**20.55**

Wire Gauge Sizes

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $	Reamer Blank Code No.	Price $
1	0.2280	3-7/8	116521	**5.19**	116601	**7.11**
2	0.2210	3-7/8	116522	**5.19**	116602	**7.11**
3	0.2130	3-3/4	116523	**5.19**	116603	**7.11**
4	0.2090	3-3/4	116524	**5.19**	116604	**7.11**
5	0.2055	3-3/4	116525	**5.19**	116605	**7.11**
6	0.2040	3-3/4	116526	**5.01**	116606	**6.81**
7	0.2010	3-5/8	116527	**5.01**	116607	**6.81**
8	0.1990	3-5/8	116528	**5.01**	116608	**6.81**
9	0.1960	3-5/8	116529	**5.01**	116609	**6.81**
10	0.1935	3-5/8	116530	**5.01**	116610	**6.81**
11	0.1910	3-1/2	116531	**3.98**	116611	**5.41**
12	0.1890	3-1/2	116532	**3.98**	116612	**5.41**
13	0.1850	3-1/2	116533	**3.98**	116613	**5.41**
14	0.1820	3-3/8	116534	**3.98**	116614	**5.41**
15	0.1800	3-3/8	116535	**3.98**	116615	**5.41**
16	0.1770	3-3/8	116536	**3.50**	116616	**4.79**
17	0.1730	3-3/8	116537	**3.50**	116617	**4.79**
18	0.1695	3-1/4	116538	**3.50**	116618	**4.79**
19	0.1660	3-1/4	116539	**3.50**	116619	**4.79**
20	0.1610	3-1/4	116540	**3.50**	116620	**4.79**
21	0.1590	3-1/4	116541	**3.50**	116621	**4.79**
22	0.1570	3-1/8	116542	**3.50**	116622	**4.79**
23	0.1540	3-1/8	116543	**3.50**	116623	**4.79**
24	0.1520	3-1/8	116544	**3.50**	116624	**4.79**
25	0.1495	3	116545	**3.50**	116625	**4.79**
26	0.1470	3	116546	**3.13**	116626	**4.27**
27	0.1440	3	116547	**3.13**	116627	**4.27**
28	0.1405	2-7/8	116548	**3.13**	116628	**4.27**
29	0.1360	2-7/8	116549	**3.13**	116629	**4.27**
30	0.1285	2-3/4	116550	**3.13**	116630	**4.27**
31	0.1200	2-3/4	116551	**3.13**	116631	**4.27**
32	0.1160	2-3/4	116552	**3.13**	116632	**4.27**
33	0.1130	2-5/8	116553	**3.13**	116633	**4.27**
34	0.1110	2-5/8	116554	**3.13**	116634	**4.27**
35	0.1100	2-5/8	116555	**3.13**	116635	**4.27**
36	0.1065	2-1/2	116556	**3.13**	116636	**4.27**
37	0.1040	2-1/2	116557	**3.13**	116637	**4.27**
38	0.1015	2-1/2	116558	**3.13**	116638	**4.27**
39	0.0995	2-3/8	116559	**3.13**	116639	**4.27**
40	0.0980	2-3/8	116560	**3.13**	116640	**4.27**
41	0.0960	2-3/8	116561	**3.98**	116641	**5.41**
42	0.0935	2-1/4	116562	**3.98**	116642	**5.41**
43	0.0890	2-1/4	116563	**3.98**	116643	**5.41**
44	0.0860	2-1/8	116564	**3.98**	116644	**5.41**
45	0.0820	2-1/8	116565	**3.98**	116645	**5.41**
46	0.0810	2-1/8	116566	**3.98**	116646	**5.41**
47	0.0785	2	116567	**3.98**	116647	**5.41**
48	0.0760	2	116568	**3.98**	116648	**5.41**
49	0.0730	2	116569	**3.98**	116649	**5.41**
50	0.0700	2	116570	**3.98**	116650	**5.41**
51	0.0670	2	116571	**3.98**	116651	**5.41**
52	0.0635	1-7/8	116572	**3.98**	116652	**5.41**
53	0.0595	1-7/8	116573	**3.98**	116653	**5.41**
54	0.0550	1-7/8	116574	**3.98**	116654	**5.41**
55	0.0520	1-7/8	116575	**3.98**	116655	**5.41**
56	0.0465	1-3/4	116576	**3.98**	116656	**5.41**
57	0.0430	1-3/4	116577	**3.98**	116657	**5.41**
58	0.0420	1-5/8	116578	**3.98**	116658	**5.41**
59	0.0410	1-5/8	116579	**3.98**	116659	**5.41**
60	0.0400	1-5/8	116580	**3.98**	116660	**5.41**
61	0.0390	1-5/8	116581	**3.98**	-	-
62	0.0380	1-1/2	116582	**3.98**	-	-
63	0.0370	1-1/2	116583	**3.98**	-	-
64	0.0360	1-1/2	116584	**3.98**	-	-
65	0.0350	1-1/2	116585	**3.98**	-	-
66	0.0330	1-3/8	116586	**3.98**	-	-
67	0.0320	1-3/8	116587	**3.98**	-	-
68	0.0310	1-3/8	116588	**3.98**	-	-
69	0.0292	1-3/8	116589	**3.98**	-	-
70	0.0280	1-1/4	116590	**3.98**	-	-
71	0.0260	1-1/4	116591	**3.98**	-	-
72	0.0250	1-1/8	116592	**3.98**	-	-
73	0.0240	1-1/8	116593	**3.98**	-	-
74	0.0225	1	116594	**3.98**	-	-
75	0.0210	1	116595	**3.98**	-	-
76	0.0200	7/8	116596	**3.98**	-	-
77	0.0180	7/8	116597	**3.98**	-	-
78	0.0160	7/8	116598	**3.98**	-	-
79	0.0145	3/4	116599	**3.98**	-	-
80	0.0135	3/4	116600	**3.98**	-	-

HSS (M4) Spade Drill

For general purpose applications in a variety of materials and for drilling in applications where added toughness is required such as unstable set ups on manual machines or cross hole drilling.

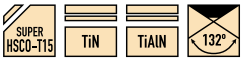
HSS-M4 | TiN | TiAlN | SERIES 5 132° | SERIES 35 144°

Speeds & Feeds ➤ P. B47-48

Series Min. to Max	Diameter Inch Metric	Diameter Decimal (in.)	TiN Coated Code No.	Price $	TiAlN Coated Code No.	Price $
1 0.690" to 0.960" (5/32") Thick	45/64"	0.7031	162360	**38.10**	162500	**44.85**
	18mm	0.7087	162361	**37.32**	162501	**44.85**
	23/32"	0.7188	162362	**38.10**	162502	**44.85**
	18.50mm	0.7283	162363	**37.32**	162503	**44.85**
	47/64"	0.7344	162364	**38.10**	162504	**44.85**
	19mm	0.7480	162365	**38.10**	162505	**44.85**
	3/4"	0.7500	162366	**38.10**	162506	**45.77**
	49/64"	0.7656	162368	**38.10**	162508	**44.85**
	19.50mm	0.7677	162369	**37.32**	162509	**44.85**
	25/32"	0.7813	162370	**38.10**	162510	**44.85**
	20.00mm	0.7874	162371	**38.10**	162511	**45.77**
	51/64"	0.7969	162373	**38.10**	162513	**44.85**
	20.50mm	0.8071	162375	**38.10**	162515	**45.77**
	13/16"	0.8125	162372	**38.10**	162512	**45.77**
	21mm	0.8268	162377	**38.10**	162517	**44.85**
	27/32"	0.8438	162374	**38.10**	162514	**44.85**
	55/64"	0.8594	162379	**37.32**	162519	**44.85**
	22mm	0.8661	162381	**37.32**	162521	**45.77**
	7/8"	0.8750	162376	**38.10**	162516	**45.77**
	23mm	0.9055	162385	**38.10**	162525	**44.85**
	29/32"	0.9063	162378	**38.10**	162518	**45.77**
	59/64"	0.9219	162380	**38.10**	162520	**44.85**
	15/16"	0.9375	162382	**38.10**	162522	**45.77**
	24mm	0.9449	162387	**38.10**	162527	**45.77**
2 0.961" to 1.380" (3/16") Thick	31/32"	0.9688	162384	**44.84**	162524	**53.69**
	63/64"	0.9843	162386	**44.84**	162526	**52.60**
	1"	1.0000	162388	**44.84**	162528	**53.69**
	1-1/64"	1.0156	162390	**44.84**	162530	**52.60**
	26mm	1.0236	162391	**44.84**	162531	**52.60**
	1-1/32"	1.0313	162392	**44.84**	162532	**53.69**
	1-3/64"	1.0469	162393	**43.94**	162533	**52.60**
	1-1/16"	1.0625	162394	**44.84**	162534	**53.69**
	27mm	1.0630	162395	**43.94**	162535	**52.60**
	1-3/32"	1.0938	162396	**44.84**	162536	**53.69**
	28mm	1.1024	162397	**44.84**	162537	**52.60**
	1-7/64"	1.1094	162399	**44.84**	162539	**52.60**
	1-1/8"	1.1250	162398	**44.84**	162538	**53.69**
	29mm	1.1417	162403	**44.84**	162541	**55.70**
	1-5/32"	1.1563	162400	**44.84**	162540	**52.60**
	30mm	1.1811	162404	**43.94**	162543	**53.69**
	1-3/16"	1.1875	162401	**44.84**	162542	**53.69**
	1-7/32"	1.2188	162402	**44.84**	162544	**53.69**
	31mm	1.2205	162405	**46.55**	162545	**52.60**
	1-1/4"	1.2500	162406	**44.84**	162546	**53.69**
	32mm	1.2598	162407	**44.84**	162547	**52.60**
	1-9/32"	1.2813	162408	**44.84**	162548	**53.69**
	33mm	1.2992	162409	**46.55**	162549	**53.69**
	1-5/16"	1.3125	162410	**44.84**	162550	**53.69**
	34mm	1.3386	162411	**44.84**	162551	**52.60**
	1-11/32"	1.3438	162412	**44.84**	162552	**53.69**
	1-3/8"	1.3750	162414	**44.84**	162554	**53.69**
	35mm	1.3780	162415	**43.94**	162555	**52.60**
3 1.353" to 1.882" (1/4") Thick	1-13/32"	1.4063	162416	**55.64**	162558	**65.64**
	36mm	1.4173	162417	**54.51**	162559	**65.64**
	1-7/16"	1.4375	162418	**55.64**	162560	**67.00**
	37mm	1.4567	162419	**55.64**	162561	**65.64**
	1-15/32"	1.4688	162420	**55.64**	162562	**67.00**
	38mm	1.4961	162421	**55.64**	162563	**67.00**
	1-1/2"	1.5000	162422	**55.64**	162564	**67.00**
	1-17/32"	1.5313	162424	**55.64**	162566	**65.64**
	39mm	1.5354	162425	**55.64**	162567	**65.64**
	1-9/16"	1.5625	162426	**55.64**	162568	**67.00**
3 1.353" to 1.882" (1/4") Thick	40mm	1.5748	162427	**54.51**	162569	**65.64**
	1-19/32"	1.5938	162428	**54.51**	162570	**67.00**
	41mm	1.6142	162429	**63.15**	162571	**65.64**
	1-5/8"	1.6250	162430	**55.64**	162572	**67.00**
	42mm	1.6535	162431	**54.51**	162573	**65.64**
	1-21/32"	1.6563	162432	**55.64**	162574	**65.64**
	1-11/16"	1.6875	162434	**55.64**	162576	**67.00**
	43mm	1.6929	162435	**54.51**	162577	**67.00**
	1-23/32"	1.7188	162436	**55.64**	162578	**67.00**
	44mm	1.7323	162437	**55.64**	162579	**65.64**
	1-3/4"	1.7500	162438	**55.64**	162580	**67.00**
	45mm	1.7717	162439	**54.51**	162581	**65.64**
	1-25/32"	1.7813	162440	**54.51**	162582	**67.00**
	46mm	1.8110	162441	**54.51**	162583	**65.64**
	1-13/16"	1.8125	162442	**55.64**	162584	**65.64**
	1-27/32"	1.8438	162444	**54.51**	162586	**65.64**
	47mm	1.8504	162445	**54.51**	162587	**65.64**
	1-7/8"	1.8750	162446	**55.64**	162588	**67.00**
4 1.850" to 2.570" (5/16") Thick	1-29/32"	1.9063	162448	**64.74**	162590	**79.27**
	1-15/16"	1.9375	162450	**66.07**	162592	**93.83**
	1-31/32"	1.9688	162452	**66.07**	162594	**79.27**
	2"	2.0000	162454	**66.07**	162596	**79.27**
	2-1/32"	2.0313	162456	**66.07**	162598	**77.66**
	2-3/64"	2.0472	162458	**64.74**	162600	**77.66**
	2-1/16"	2.0625	162460	**66.07**	162602	**77.66**
	2-3/32"	2.0938	162462	**68.55**	162604	**77.66**
	2-1/8"	2.1250	162464	**66.07**	162606	**79.27**
	2-5/32"	2.1563	162466	**66.07**	162608	**77.66**
	2-3/16"	2.1875	162468	**66.07**	162610	**77.66**
	2-7/32"	2.2188	162470	**64.74**	162612	**79.27**
	2-1/4"	2.2500	162472	**66.07**	162614	**79.27**
	2-9/32"	2.2813	162474	**64.74**	162616	**77.66**
	2-5/16"	2.3125	162476	**66.07**	162618	**77.66**
	2-11/32"	2.3438	162478	**64.74**	162620	**77.66**
	2-3/8"	2.3750	162480	**66.07**	162622	**79.27**
	2-13/32"	2.4063	162482	**64.74**	162624	**77.66**
	2-7/16"	2.4375	162484	**66.07**	162626	**79.27**
	2-15/32"	2.4688	162486	**66.07**	162628	**79.27**
	2-1/2"	2.5000	162488	**66.07**	162630	**79.27**
	2-17/32"	2.5313	162490	**66.07**	162632	**79.27**
	2-9/16"	2.5625	162492	**66.07**	162634	**79.27**
5 2.456" to 3.000" (7/16") Thick	2-1/2"	2.5000	162900	**95.93**		
	2-5/8"	2.6250	162912	**95.93**		
	2-3/4"	2.7500	162922	**95.93**		
	2-25/32"	2.7813	162926	**95.93**		
	2-13/16"	2.8125	162928	**95.93**		
	2-27/32"	2.8438	162932	**93.96**		
	2-7/8"	2.8750	162934	**95.93**		
	2-29/32"	2.9063	162936	**64.74**		
	2-15/16"	2.9375	162940	**95.93**		
	2-31/32"	2.9688	162942	**95.93**		
	3"	3.0000	162946	**95.93**		
6 3.001" to 3.507" (7/16") Thick	3-1/16"	3.0625	162950	**110.94**		
	3-1/8"	3.1250	162956	**110.94**		
	3-1/4"	3.2500	162968	**110.94**		
	3-3/8"	3.3750	162978	**110.94**		
	3-7/16"	3.4375	162984	**110.94**		
	3-1/2"	3.5000	162990	**110.94**		
7 3.455" to 4.0" (7/16") Thick	3-9/16"	3.5625	162991	**130.04**		
	3-5/8"	3.6250	163002	**130.04**		
	3-3/4"	3.7500	163012	**132.73**		
	3-7/8"	3.8750	163024	**132.73**		
	4"	4.0000	163034	**132.73**		

Super HSCO (T15) Spade Drill

For drilling in high alloy materials and exotic materials, T15 may also be used in general purpose applications where increased speeds and enhanced wear resistance is required.



Speeds & Feeds ➤ P. B47-48

Series Min. to Max	Diameter Inch Metric	Diameter Decimal (in.)	TiN Coated Code No.	Price $	TiAlN Coated Code No.	Price $
Y 0.374" to 0.436" (3/32") Thick	9.50mm	0.3740	161999	**35.33**	162179	**41.58**
	3/8"	0.3750	162000	**35.33**	162180	**42.46**
	9.80mm	0.3860	162001	**34.61**	162181	**42.46**
	25/64"	0.3906	162002	**35.33**	162182	**41.58**
	10mm	0.3937	162003	**34.61**	162183	**41.58**
	10.20mm	0.4016	162005	**34.61**	162185	**41.58**
	13/32"	0.4063	162004	**35.33**	162184	**42.46**
	10.50mm	0.4134	162007	**34.61**	162187	**42.46**
	27/64"	0.4219	162006	**35.33**	162186	**42.46**
	10.80mm	0.4252	162009	**34.61**	162189	**41.58**
	11mm	0.4331	162650	**34.61**	162720	**41.58**
Z 0.437" to 0.510" (3/32") Thick	7/16"	0.4375	162008	**35.33**	162188	**42.46**
	11.50mm	0.4528	162011	**34.61**	162191	**41.58**
	29/64"	0.4531	162010	**35.33**	162190	**42.46**
	15/32"	0.4688	162012	**35.33**	162192	**42.46**
	12mm	0.4724	162652	**35.33**	162722	**41.58**
	31/64"	0.4844	162014	**35.33**	162194	**42.46**
	12.50mm	0.4921	162654	**34.61**	162724	**41.58**
	1/2"	0.5000	162016	**35.33**	162196	**42.46**
0 0.511" to 0.695" (1/8") Thick	13mm	0.5118	162656	**38.10**	162726	**45.77**
	33/64"	0.5156	162018	**38.10**	162198	**45.77**
	17/32"	0.5313	162020	**38.10**	162200	**45.77**
	13.50mm	0.5315	162019	**38.10**	162203	**45.77**
	35/64"	0.5469	162021	**38.10**	162201	**45.77**
	14mm	0.5512	162658	**38.10**	162728	**45.77**
	9/16"	0.5625	162022	**38.10**	162204	**45.77**
	14.50mm	0.5709	162660	**38.10**	162730	**45.77**
	37/64"	0.5781	162024	**38.10**	162206	**45.77**
	15mm	0.5906	162662	**37.32**	162732	**45.77**
	19/32"	0.5938	162026	**38.10**	162208	**45.77**
	39/64"	0.6094	162027	**38.10**	162209	**45.77**
	15.50mm	0.6102	162664	**37.32**	162734	**45.77**
	5/8"	0.6250	162028	**38.10**	162210	**45.77**
	16mm	0.6299	162666	**38.10**	162736	**45.77**
	41/64"	0.6406	162029	**38.10**	162211	**45.77**
	16.50mm	0.6496	162668	**38.10**	162738	**44.85**
	21/32"	0.6563	162030	**38.10**	162212	**45.77**
	17mm	0.6693	162670	**39.56**	162740	**45.77**
	43/64"	0.6719	162031	**38.10**	162213	**45.77**
	11/16"	0.6875	162032	**38.10**	162214	**45.77**
	17.50mm	0.6890	162033	**38.10**	162215	**45.77**
1 0.690" to 0.960" (5/32") Thick	45/64"	0.7031	162036	**42.91**	162218	**50.81**
	18mm	0.7087	162672	**42.91**	162742	**50.81**
	23/32"	0.7188	162038	**42.91**	162220	**50.81**
	18.50mm	0.7283	162674	**42.04**	162744	**49.79**
	47/64"	0.7344	162040	**42.91**	162222	**50.81**
	19mm	0.7480	162676	**42.04**	162746	**50.81**
	3/4"	0.7500	162042	**42.91**	162224	**50.81**
	49/64"	0.7656	162044	**42.91**	162226	**50.81**
	19.50mm	0.7677	162045	**42.91**	162227	**49.79**
	25/32"	0.7813	162046	**42.91**	162228	**50.81**
	20mm	0.7874	162678	**42.91**	162748	**50.81**
	51/64"	0.7969	162047	**42.91**	162229	**50.81**
	20.50mm	0.8071	162680	**42.91**	162750	**49.79**
	13/16"	0.8125	162048	**42.91**	162230	**50.81**
	21mm	0.8268	162682	**42.91**	162752	**50.81**
	27/32"	0.8438	162050	**42.91**	162232	**50.81**
	55/64"	0.8594	162051	**44.53**	162233	**50.81**
	22mm	0.8661	162684	**42.91**	162754	**50.81**
	7/8"	0.8750	162052	**42.91**	162234	**50.81**
	57/64"	0.8906	162053	**42.91**	162235	**50.81**
	23mm	0.9055	162055	**42.04**	162237	**50.81**
	29/32"	0.9063	162054	**42.91**	162236	**50.81**
	59/64"	0.9219	162056	**42.91**	162238	**50.81**
	15/16"	0.9375	162058	**42.04**	162240	**50.81**
	24mm	0.9449	162686	**42.91**	162756	**50.81**
	31/32"	0.9688	162062	**50.48**	162244	**59.99**
	63/64"	0.9843	162064	**50.48**	162246	**59.99**
	1"	1.0000	162066	**50.48**	162248	**59.99**
	1-1/64"	1.0156	162068	**50.48**	162250	**59.99**
	26mm	1.0236	162688	**50.48**	162758	**59.99**
	1-1/32"	1.0313	162070	**50.48**	162252	**59.99**
	1-3/64"	1.0469	162071	**50.48**	162253	**59.99**
	1-1/16"	1.0625	162072	**50.48**	162254	**59.99**
	27mm	1.0630	162073	**50.48**	162255	**59.99**
	1-3/32"	1.0938	162074	**50.48**	162256	**59.99**
	28mm	1.1024	162690	**50.48**	162760	**59.99**
2 0.961" to 1.380" (3/16") Thick	1-7/64"	1.1094	162075	**50.48**	162257	**59.99**
	1-1/8"	1.1250	162076	**50.48**	162258	**59.99**
	29mm	1.1417	162692	**50.48**	162762	**59.99**
	1-5/32"	1.1563	162078	**50.48**	162260	**59.99**
	30mm	1.1811	162694	**50.48**	162764	**59.99**
	1-3/16"	1.1875	162080	**50.48**	162262	**59.99**
	1-7/32"	1.2188	162082	**50.48**	162264	**59.99**
	31mm	1.2205	162083	**50.48**	162265	**59.99**
	1-1/4"	1.2500	162084	**50.48**	162266	**59.99**
	32mm	1.2598	162696	**50.48**	162766	**59.99**
	1-9/32"	1.2813	162086	**50.48**	162268	**59.99**
	33mm	1.2992	162698	**50.48**	162768	**59.99**
	1-5/16"	1.3125	162088	**50.48**	162270	**59.99**
	34mm	1.3386	162700	**50.48**	162770	**59.99**
	1-11/32"	1.3438	162090	**50.48**	162272	**59.99**
	1-3/8"	1.3750	162092	**50.48**	162274	**59.99**
	35mm	1.3780	162702	**50.48**	162772	**58.78**
3 1.380" to 1.882" (1/4") Thick	1-13/32"	1.4063	162094	**64.13**	162276	**76.87**
	36mm	1.4173	162704	**64.13**	162774	**76.87**
	1-7/16"	1.4375	162096	**64.13**	162278	**76.87**
	37mm	1.4567	162097	**62.83**	162279	**76.87**
	1-15/32"	1.4688	162098	**64.13**	162280	**76.87**
	38mm	1.4961	162099	**62.83**	162281	**75.31**
	1-1/2"	1.5000	162100	**64.13**	162282	**76.87**
	1-17/32"	1.5313	162102	**64.13**	162284	**76.87**
	39mm	1.5354	162103	**62.83**	162285	**87.23**
	1-9/16"	1.5625	162104	**64.13**	162286	**76.87**
	40mm	1.5748	162706	**64.13**	162776	**76.87**
	1-19/32"	1.5938	162106	**64.13**	162288	**76.87**
	41mm	1.6142	162107	**62.83**	162289	**75.31**
	1-5/8"	1.6250	162108	**64.13**	162290	**76.87**
	42mm	1.6535	162109	**62.83**	162291	**76.87**
	1-21/32"	1.6563	162110	**64.13**	162292	**76.87**
	1-11/16"	1.6875	162112	**64.13**	162294	**76.87**
	43mm	1.6929	162113	**62.83**	162295	**87.23**
	1-23/32"	1.7188	162114	**64.13**	162296	**76.87**
	44mm	1.7323	162708	**64.13**	162778	**76.87**
	1-3/4"	1.7500	162116	**64.13**	162298	**76.87**
	45mm	1.7717	162710	**64.13**	162780	**76.87**
	1-25/32"	1.7813	162118	**64.13**	162300	**76.87**
	46mm	1.8110	162119	**64.13**	162301	**75.31**
	1-13/16"	1.8125	162120	**64.13**	162302	**76.87**
	1-27/32"	1.8438	162122	**64.13**	162304	**76.87**
	47mm	1.8504	162123	**62.83**	162305	**75.31**
	1-7/8"	1.8750	162124	**64.13**	162306	**76.87**
4 1.850" to 2.570" (5/16") Thick	1-29/32"	1.9063	162126	**81.12**	162308	**97.18**
	1-15/16"	1.9375	162128	**81.12**	162310	**97.18**
	1-31/32"	1.9688	162130	**81.12**	162312	**97.18**
	2"	2.0000	162132	**81.12**	162314	**97.18**
	2-1/32"	2.0313	162134	**79.47**	162316	**97.18**
	2-3/64"	2.0472	162135	**81.12**	162317	**97.18**
	2-1/16"	2.0625	162136	**81.12**	162318	**97.18**
	2-3/32"	2.0938	162138	**64.74**	162320	**97.18**
	2-1/8"	2.1250	162140	**81.12**	162322	**97.18**
	2-5/32"	2.1563	162142	**79.47**	162324	**97.18**
	2-3/16"	2.1875	162144	**81.12**	162326	**97.18**
	2-7/32"	2.2188	162146	**81.12**	162328	**97.18**
	2-1/4"	2.2500	162148	**81.12**	162330	**97.18**
	2-9/32"	2.2813	162150	**81.12**	162332	**97.18**
	2-5/16"	2.3125	162152	**81.12**	162334	**97.18**
	2-11/32"	2.3438	162154	**79.47**	162336	**97.18**
	2-3/8"	2.3750	162156	**81.12**	162338	**97.18**
	2-13/32"	2.4063	162158	**68.58**	162340	**97.18**
	2-7/16"	2.4375	162160	**81.12**	162342	**97.18**
	2-15/32"	2.4688	162162	**81.12**	162344	**97.18**
	2-1/2"	2.5000	162164	**81.12**	162346	**97.18**
	2-17/32"	2.5313	162166	**81.12**	162348	**97.18**
	2-9/16"	2.5625	162168	**81.12**	162350	**97.18**

Short Length Straight Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Dia.	Shank Length	Pipe Tap	Code No.	Price $
Y	3/8" – 27/64"	1-1/4"	2-1/32"	2-1/8"	4-13/32"	3/4"	2-3/8"	1/8"	162801	**229.99**
Z	7/16" – 1/2"	1-1/4"	2-1/32"	2-1/8"	4-13/32"	3/4"	2-3/8"	1/8"	162803	**229.92**
0	33/64" – 11/16"	1-3/8"	2-3/16"	2-19/64"	4-9/16"	3/4"	2-3/8"	1/8"	162805	**214.78**
0.5	39/64" – 11/16"	1-3/8"	2-3/16"	2-19/64"	4-9/16"	3/4"	2-3/8"	1/8"	162807	**229.92**
1	45/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	3/4"	3"	1/8"	162822	**222.91**
1	45/64" –15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	1"	3"	1/8"	162809	**222.91**
1.5	55/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	3/4"	3"	1/8"	162808	**258.69**
1.5	55/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	1"	3"	1/8"	162811	**250.02**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1"	3-1/2"	1/8"	162824	**240.92**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1-1/4"	3-1/2"	1/8"	162812	**258.69**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1"	3-1/2"	1/8"	162813	**291.40**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1-1/4"	3-1/2"	1/8"	162815	**291.40**
3	1-13/32" – 1-7/8"	4-3/4"	6"	6-3/16"	10"	1-1/4"	4"	1/4"	162826	**273.74**
3	1-13/32" – 1-7/8"	4-3/4"	6"	6-3/16"	10"	1-1/2"	4"	1-4"	162817	**311.18**
4	1-29/32" – 2-9/16"	5-1/8"	6-1/2"	6-3/16"	10-1/2"	1-1/2"	4"	1/4"	162828	**339.49**
4	1-29/32" – 2-9/16"	5-1/8"	6-1/2"	6-3/16"	10-1/2"	1-3/4"	4"	1/4"	162819	**358.33**
5-6	2-1/2" – 3-1/2"	6-3/4"	8-1/2"	8-3/4"	12-1/2"	2"	4"	1/2"	163050	**701.13**

Intermediate Length Straight Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Dia.	Shank Length	Pipe Tap	Code No.	Price $
1	45/64" – 15/16"	4-5/8"	5-7/8"	6-1/64"	8-7/8"	1"	3"	1/8"	162833	**254.57**
1.5	55/64" – 15/16"	4-5/8"	5-7/8"	6-1/64"	8-7/8"	1"	3"	1/8"	162834	**383.14**
2	31/32" – 1-3/8"	5-3/8"	6-1/2"	6-41/64"	10"	1-1/4"	3-1/2"	1/8"	162835	**277.64**
2.5	1-3/16" – 1-3/8"	5-3/8"	6-1/2"	6-41/64"	10"	1-1/4"	3-1/2"	1/8"	162837	**333.26**
3	1-13/32" – 1-7/8"	6-1/2"	7-3/4"	7-15/16"	11-3/4"	1-1/2"	4"	1/4"	162839	**453.58**

Standard Length Straight Shank Holder — Straight Flute

Series	Drill Insert Range	Max.Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Dia.	Shank Length	Pipe Tap	Code No.	Price $
Y	3/8" – 27/64"	2-3/8"	3-5/32"	3-1/4"	5-17/32"	3/4"	2-3/8"	1/8"	162800	**219.60**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	3-1/4"	5-17/32"	3/4"	2-3/8"	1/8"	162802	**219.60**
0	33/64" – 11/16"	2-1/2"	3-5/16"	3-27/64"	5-11/16"	3/4"	2-3/8"	1/8"	162804	**219.61**
0.5	39/64" – 11/16"	2-1/2"	3-5/16"	3-27/64"	5-11/16"	3/4"	2-3/8"	1/8"	162820	**236.29**
1	45/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	3/4"	3"	1/8"	162806	**240.93**
1	45/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	1"	3"	1/8"	162821	**240.94**
1.5	55/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	1"	3"	1/8"	162825	**279.25**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1"	3-1/2"	1/8"	162810	**279.25**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1-1/4"	3-1/2"	1/8"	162827	**258.95**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1"	3-1/2"	1/8"	162829	**308.37**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1-1/4"	3-1/2"	1/8"	162830	**308.37**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	9-11/16"	13-1/2"	1-1/4"	4"	1/4"	162814	**290.16**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	9-11/16"	13-1/2"	1-1/2"	4"	1/4"	162831	**332.17**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	10-11/16"	14-1/2"	1-1/2"	4"	1/4"	162818	**544.51**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	10-11/16"	14-1/2"	1-3/4"	4"	1/4"	162832	**406.48**
5-6	2-1/2" – 3-1/2"	10-3/4"	12-1/2"	12-3/4"	16-1/2"	2"	4"	1/2"	163054	**656.10**

Short Length Taper Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
Y	3/8" – 27/64"	1-1/4"	2-1/32"	3-15/32"	6-5/16"	#2	1/16"	162917	**243.47**
Z	7/16" – 1/2"	1-1/4"	2-1/32"	3-15/32"	6-5/16"	#2	1/16"	162901	**243.47**
0	33/64" – 11/16"	1-3/8"	2-3/16"	3-41/64"	6-15/32"	#2	1/16"	162902	**235.91**
0.5	39/64" – 11/16"	1-3/8"	2-3/16"	3-41/64"	6-15/32"	#2	1/16"	162903	**235.91**
1	45/64" – 15/16"	2-3/4"	3-7/8"	5-39/64"	9-5/32"	#3	1/8"	162904	**248.15**
1	45/64" – 15/16"	2-3/4"	3-7/8"	5-43/64"	10-5/32"	#4	1/8"	162905	**264.75**
1.5	55/64" – 15/16"	2-3/4"	3-7/8"	5-39/64"	9-5/32"	#3	1/8"	162906	**256.75**
1.5	55/64" – 15/16"	2-3/4"	3-7/8"	5-43/64"	10-5/32"	#4	1/8"	162907	**265.13**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	6-15/64"	9-25/32"	#3	1/8"	162908	**286.36**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	6-19/64"	10-25/32"	#4	1/8"	162909	**297.12**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	6-15/64"	9-25/32"	#3	1/8"	162910	**283.42**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	6-37/64"	11-1/16"	#4	1/4"	162911	**328.94**
3	1-13/32" – 1-7/8"	4-3/4"	6"	8-1/8"	13-9/16"	#4	1/4"	162918	**318.73**
3	1-13/32" – 1-7/8"	4-3/4"	6"	8-1/8"	13-13/16"	#5	1/4"	162913	**336.71**
4	1-29/32" – 2-9/16"	5-1/8"	6-1/2"	8-5/8"	14-5/16"	#5	1/4"	162914	**378.17**
5-6	2-1/2" – 3-1/2"	6-3/4"	8-1/2"	11-5/16"	16-15/16"	#5	1/2"	162915	**597.12**

Intermediate Length Taper Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
1	45/64" – 15/16"	4-3/4"	5-7/8"	7-39/64"	11-5/32"	#3	1/8"	162841	**287.35**
2	31/32" – 1-3/8"	5-3/8"	6-1/2"	8-19/64"	12-25/32"	#4	1/8"	162845	**332.98**
2.5	1-3/16" – 1-3/8"	5-3/8"	6-1/2"	8-37/64"	13-1/16"	#4	1/4"	162846	**304.26**
3	1-13/32" – 1-7/8"	6-1/2"	7-3/4"	9-7/8"	14-5/16"	#4	1/4"	162847	**360.68**

Standard Length Taper Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
Y	3/8" – 27/64"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162864	**223.46**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162866	**334.67**
0	33/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162868	**232.56**
0.5	39/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162869	**249.03**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162870	**265.50**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-43/64"	14-5/32"	#4	1/8"	162871	**274.21**
1.5	55/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162872	**295.36**
1.5	55/64" – 15/16"	6-3/4"	7-7/8"	9-43/64"	14-5/32"	#4	1/8"	162873	**421.73**
2	31-32" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162874	**293.24**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	10-19/64"	14-25/32"	#4	1/8"	162875	**301.98**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162876	**334.47**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	10-37/64"	15-1/16"	#4	1/4"	162877	**336.71**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	11-1/8"	16-1/16"	#4	1/4"	162878	**334.90**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	11-5/8"	17-5/16"	#5	1/4"	162881	**374.55**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	12-5/8"	17-1/16"	#4	1/4"	162879	**399.78**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	12-5/8"	18-5/16"	#5	1/4"	162883	**430.38**
5-6	2-1/2" – 3-1/2"	10-3/4"	12-1/2"	15-5/16"	20-15/16"	#5	1/2"	163058	**603.23**

Extended Length Taper Shank Holder — Straight Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
0	33/64" – 11/16"	4-1/2"	5-5/16"	6-49/64"	9-13/32"	#2	1/16"	162836	**265.41**
1	45/64" – 15/16"	10-3/4"	11-7/8"	13-39/64"	17-5/32"	#3	1/8"	162838	**304.81**
2	31/32" – 1-3/8"	11-3/8"	12-1/2"	14-15/64"	18-25/32"	#4	1/8"	162840	**392.27**
3	1-13/32" – 1-7/8"	13-3/4"	15"	17-1/8"	21-9/16"	#4	1/4"	162842	**450.33**
4	1-29/32" – 2-9/16"	16-5/8"	18"	20-1/8"	25-13/16"	#5	1/4"	162844	**569.27**

Standard Length Taper Shank Holder — Helical Flute

Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
Y	3/8" – 27/64"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162850	**194.25**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162852	**248.44**
0	33/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162854	**248.44**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162856	**295.62**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162860	**334.99**

Torx Screws

Series	Torx Size	Code No.	Price $
Y, Z	T-7	162880	**5.28**
Y, Z	M2 x 0.4	162891	**15.02**
0	T-8	162882	**4.42**
0.5	M2.5 x 0.45	162893	**15.02**
1-1.5	T-9	162884	**15.02**
1.5	M3 x 0.5	162895	**15.02**
2-2.5	T-15	162886	**15.02**
3-4	T-20	162888	**15.02**
5-8	T-25	162890	**4.42**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Recommended Blade Selection, Speeds & Feeds

When To Use M-4:
- Loose machines
- Manual machines
- Cross hole drilling

When To Use T15:
- On CNC machines
- When M-4 life needs to be extended
- Abrasive drilling

Material	Material Rockwell Hardness (HRC)	Rec. Blade HSS-M4 ϴHSCO-T15	TiN SFM Surface Footage	TiAlN SFM Surface Footage	3/8" to 1/2"	Feed (IPR) 33/64" to 11/16"	45/64" to 15/16"	31/32" to 1-3/8"	1-13/32" to 1-7/8"	1-29/32" to 2-9/16"	2-19/32" to 4-1/2"
Free Machining Steel 1118, 1215, 12L14, etc.	-	-	-	280	0.007	0.010	0.013	0.016	0.020	0.023	0.028
	< 12	-	-	260	0.007	0.010	0.013	0.016	0.020	0.023	0.028
	12-25	-	-	240	0.007	0.010	0.013	0.016	0.020	0.023	0.028
Low & Medium Carbon Steel 1018, 1040, 12L14, etc.	< 7	-	160	240	0.006	0.009	0.012	0.015	0.019	0.023	0.027
	7-20	-	150	225	0.005	0.0098	0.010	0.014	0.018	0.021	0.024
	20-29	-	140	210	0.005	0.0098	0.010	0.014	0.018	0.021	0.024
	29-35	ϴ	130	195	0.004	0.007	0.009	0.012	0.016	0.019	0.022
Alloy Steel 4140, 5140 8640, etc.	< 7	-	150	210	0.006	0.008	0.010	0.014	0.017	0.019	0.022
	7-20	-	140	195	0.005	0.008	0.010	0.014	0.017	0.019	0.022
	20-29	-	130	180	0.005	0.007	0.010	0.014	0.017	0.019	0.022
	29-35	ϴ	120	170	0.004	0.006	0.009	0.012	0.015	0.017	0.020
	35-40	ϴ	110	155	0.003	0.006	0.009	0.012	0.015	0.017	0.020
High Strength Alloy Steel 4340, 4330V, 300M, etc.	20-32	ϴ	80	110	0.005	0.007	0.009	0.010	0.014	0.017	0.020
	32-37	ϴ	60	85	0.004	0.007	0.009	0.010	0.014	0.017	0.020
	37-43	-	50	70	0.003	0.006	0.008	0.009	0.012	0.015	0.018
Structural Steel A36, A285 A516, etc.	-	-	140	200	0.006	0.010	0.012	0.014	0.018	0.021	0.026
	12-25	-	120	170	0.005	0.009	0.010	0.012	0.016	0.019	0.024
	37-43	ϴ	100	140	0.004	0.008	0.009	0.010	0.014	0.017	0.020
High Temp, Alloy Hastelloy B, Inconel 600, etc.	< 18	ϴ	30	40	0.003	0.006	0.007	0.008	0.010	0.012	0.015
	18-32	ϴ	25	35	0.003	0.006	0.007	0.008	0.010	0.012	0.015
Stainless Steel 303, 416, 420, 17-4 PH, etc.	< 7	-	75	105	0.006	0.008	0.009	0.011	0.014	0.016	0.020
	7-29	-	60	90	0.005	0.007	0.008	0.010	0.012	0.014	0.018
Tool Steel H-13, H021, AD4, O-2, S-3, etc	< 12	ϴ	80	110	0.004	0.006	0.008	0.010	0.012	0.015	0.017
	12-25	ϴ	60	90	0.004	0.006	0.008	0.010	0.012	0.015	0.017
Aluminum	< 6	-	600	850	0.008	0.013	0.016	0.020	0.022	0.025	0.025
	-	-	300	450	0.008	0.013	0.016	0.018	0.022	0.025	0.025
Cast Iron Gray, Ductile, Nodular	-	-	170	250	0.007	0.012	0.016	0.020	0.024	0.027	0.030
	<12	-	150	225	0.006	0.011	0.014	0.018	0.022	0.025	0.028
	12-18	-	130	195	0.006	0.009	0.012	0.016	0.018	0.021	0.024
	18-26	ϴ	110	165	0.005	0.007	0.009	0.012	0.014	0.017	0.020
	26-32	ϴ	90	135	0.004	0.006	0.007	0.009	0.012	0.014	0.016

Note: The speeds and feeds listed above are considered a general starting point for all applications. Factors such as material, material hardness, coolant pressure, hole diameter and length to diameter ratio should also be considered when making these recommendations.
Speed and feed reductions are recommended when using extended length holders.

We've taken the guesswork out of your tap selection!

See Chapter C

Throw-Away Drill Inserts — Coolant Pressure

Material	Material Hardness (BHN)	High Speed Steel (TiN, TiAlN) Coolant Pressure (PSI) Coolant Volumetric Flow Rate (GPM) 3/8" - 1/2"	33/64" - 11/16"	23/32" - 1"	1" - 1-1/4"	1/4" - 1"	2" - 3"	3" - 4"
Free Machining Steel 1118, 1215, 12L14, etc.	100 - 250	175 - 185 2.5 - 2.6	100 - 120 2.8 - 3.0	105 - 140 4.4 - 5.2	80 - 115 7 - 8	75 - 100 12 - 14	40 - 50 30 - 33	65 - 90 38 - 44
Low Carbon Steel 1010, 1020, 1025, 1522, etc.	85 - 275	165 - 170 2.4 - 2.5	75 - 90 2.4 - 2.6	75 - 95 3.7 - 4.2	60 - 80 6 - 7	55 - 75 11 - 12	30 - 40 26 - 30	50 - 65 33 - 38
Medium Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151	125 - 325	160 - 165 2.3 - 2.4	70 - 85 2.3 - 2.6	70 - 90 3.6 - 4.1	55 - 70 5 - 6	50 - 70 10 - 12	30 - 40 26 - 30	50 - 65 33 - 38
Alloy Steel 4140, 5140, 8640, etc.	125 - 375	160 - 165 2.3 - 2.5	66 - 75 2.2 - 2.4	65 - 80 3.5 - 3.9	50 - 70 5 - 6	45 - 60 10 - 11	30 - 35 26 - 28	40 - 50 30 - 33
High Strength Alloy	225 - 400	150 - 155 2.3 - 2.4	55 - 60 2.1 - 2.2	45 - 50 2.90 - 3.1	25 - 30 4 - 5	25 - 30 7 - 8	20 - 25 21 - 23	25 - 30 23 - 26
Structural Steel	100 - 350	160 - 165 2.3 - 2.4	75 - 85 2.4 - 2.6	65 - 80 3.5 - 3.9	40 - 55 5 - 6	40 - 50 9 - 10	25 - 30 23 - 26	40 - 50 33 - 33
High Temp. Alloy Hastelloy B, Inconel 600, etc.	140 - 310	150 - 155 2.3 - 2.4	60 - 65 2.2 - 2.3	50 - 55 3.1 - 3.2	30 - 35 4 - 5	25 - 30 7 - 8	25 - 30 23 - 26	- -
Stainless Steel 301, 316, 330, 17-4Ph, etc.	135 - 275	165 - 170 2.4 - 2.5	70 - 85 2.3 - 2.6	65 - 75 3.5 - 3.7	40 - 55 5 - 6	40 - 50 9 - 10	25 - 30 23 - 26	35 - 45 28 - 31
Tool Steel H-13, H-21, A-4, O-2, S-3, etc	150 - 250	150 - 155 2.3 -2.4	55 - 60 2.1 -2.2	45 - 50 2.9 - 3.1	25 - 30 4 - 5	25 - 30 7 - 8	20 - 25 21 - 23	25 - 30 23 - 26
Aluminum	30 - 180	190 - 210 2.6 - 2.7	140 - 180 3.3 - 3.7	150 - 200 5.3 - 6.1	115 - 160 8 - 9	90 - 125 14 - 16	40 - 50 30 - 33	60 - 80 36 - 42
Cast Iron	120 - 320	155 - 160 2.3 - 2.4	60 - 65 2.2 - 2.3	50 - 60 3.1 - 3.3	30 - 40 4 - 4	30 - 36 8 - 9	25 - 30 23 - 26	30 - 35 26 - 28

Throw-Away Drill Inserts Spade Drill Horsepower Consumption Rate

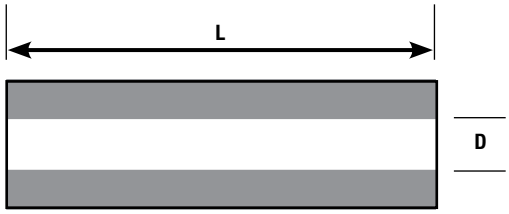
Metal Removal Rates (MRR)
Example: 1.50 dia. drill @ 6.412 IPM

Volume of Cylinder Method: D2 x 0.785 x L
D = Hole Diameter
L = Length in IPM
0.785 is Constant

Material Drilled 4140 250 BHN:
Cutting Data: 180 SFM (458 R.P.M.) x 0.014 Feed per Rev.

458rpm x 0.014 = 6.412 IPM (L)
D2 (1.5)2 x 0.785 x L (6.412) = 5 C.U. In./Min (MRR)

MRR of 5 x 1.4 Energy Value = 7HP



Metal Removal Rates (MRR)

- Cubic inches of metal removal per unit of horsepower
- Unit horsepower (HPu) is the amount of power to remove a volume of metal in a period of time
- HPu = power to cut 1 cubic inch per minute – found in tables

AVERAGE UNIT HORSEPOWER VALUES OF ENERGY PER UNIT VOLUME

Material	BHN	HPu [HP/(in3)min.)]
Carbon Steels	150 - 200	1.0
	200 - 250	1.4
	250 - 350	1.6
Leaded Steels	150 - 175	0.7
Cast Irons	125 - 190	0.5
	190 - 250	1.6
Stainless Steels	135 - 275	1.5
Aluminum Alloys	50 - 100	0.3
Magnesium Alloys	40 - 90	0.2
Copper	125 - 140	0.7
Copper Alloys	100 - 150	0.7

Chatterfree HSS Countersinks

STM PREMIUM

HSS

Size	Range	Shank Dia.	82° HSS Code No.	Price $	90° HSS Code No.	Price $
0	1/16–15/64	1/4	121003	**20.35**	121002	**20.35**
1	5/32–13/32	1/4	121005	**21.80**	121004	**21.80**
2	3/16–17/32	1/4	121010	**24.99**	121009	**24.99**
3	5/16–25/32	1/2	121015	**43.64**	121014	**43.64**
4	9/16–1-1/16	1/2	121020	**76.73**	121019	**79.50**
5	5/8–1-15/32	1/2	121025	**149.71**	121024	**175.14**
6	3/4–1-3/4	5/8	121030	**234.82**	121031	**274.03**

Single Flute Countersinks HSS — 60°, 82°, 90°, 100°

STM PREMIUM

HSS

Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60° HSS Code No.	Price $	82° HSS Code No.	Price $	90° HSS Code No.	Price $	100° HSS Code No.	Price $
3/16	3/16	3/4	1-1/2	120739	**12.68**	120753	**12.68**	120767	**12.68**	-	**-**
1/4	1/4	3/4	2	120740	**12.93**	120754	**12.93**	120768	**12.93**	120782	**12.93**
5/16	1/4	1	2	120741	**15.16**	120755	**15.16**	120769	**15.16**	120783	**11.44**
3/8	1/4	1	2	120742	**17.89**	120756	**17.89**	120770	**17.89**	120784	**17.89**
1/2	1/4	1	2	120743	**22.32**	-	**-**	120771	**22.32**	120785	**16.48**
5/8	3/8	1-1/8	2	120744	**33.89**	120758	**33.89**	120772	**33.89**	120786	**24.93**
5/8	1/2	1-1/8	2-3/4	120745	**33.89**	120759	**33.89**	120773	**33.89**	120787	**26.57**
3/4	3/8	1-5/16	2-3/4	120746	**23.94**	120760	**37.94**	120774	**37.94**	120788	**27.93**
3/4	1/2	1-5/16	2-3/4	120747	**37.94**	120761	**37.94**	120775	**37.94**	120789	**52.40**
7/8	1/2	1-5/16	2-3/4	120748	**60.47**	120762	**60.47**	120776	**60.47**	-	**-**
1	1/2	1-5/16	2-3/4	120749	**67.25**	120763	**67.25**	120777	**67.25**	120791	**67.25**
1-1/4	3/4	1-5/8	3-3/8	120750	**62.50**	120764	**109.03**	120778	**109.03**	-	**-**
1-1/2	3/4	1-5/8	3-1/2	120751	**151.40**	120765	**151.40**	120779	**151.40**	120793	**111.04**
2	3/4	1-5/8	3-3/4	-	**-**	120766	**249.84**	120780	**249.84**	120794	**147.05**
Sets											
5pc set contains:		1/4, 3/8, 1/2, 3/4, 1		120855	**166.53**	120858	**166.53**	120860	**166.53**	120862	**168.57**
9pc set contains:		3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1		120857	**292.99**	120850	**292.99**	120852	**292.99**	120863	**214.58**
12pc set contains:		3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4, 1-1/2, 2		120840	**589.39**	120859	**805.04**	120861	**589.39**	120864	**589.39**

Single Flute TiN Coated Premium Cobalt Countersinks — 60°, 82°, 90°, 100°, 120°

- Excellent for countersinking abrasive, high-strength, heat resistant, exotic and other difficult to machine materials
- TiN coated for higher surface hardness and better lubricity to enhance productivity and longer tool life

STM PREMIUM

M42 HSS COBALT

TiN

Body Dia. (in.)	Shank Dia. (in.)	60°	60° Code No.	Price $	82°	82° Code No.	Price $	90°	90° Code No.	Price $
1/8	1/8	HSP1-1/8-60T	121609	**19.15**	HSP1-1/8-82T	121618	**19.15**	HSP1-1/8-90T	121627	**19.15**
3/16	3/16	HSP1-3/16-60T	121610	**20.59**	HSP1-3/16-82T	121619	**20.59**	HSP1-3/16-90T	121628	**20.59**
1/4	1/4	HSP1-1/4-60T	121611	**20.93**	HSP1-1/4-82T	121620	**20.93**	HSP1-1/4-90T	121629	**22.72**
3/8	1/4	HSP1-3/8-60T	121612	**28.99**	HSP1-3/8-82T	121621	**26.76**	HSP1-3/8-90T	121630	**26.76**
1/2	3/8	HSP1-1/2-60T	121613	**37.62**	HSP1-1/2-82T	121622	**37.62**	HSP1-1/2-90T	121631	**37.62**
5/8	3/8	HSP1-5/8-60T	121614	**50.38**	HSP1-5/8-82T	121623	**54.73**	HSP1-5/8-90T	121632	**54.73**
3/4	1/2	HSP1-3/4-60T	121615	**76.12**	HSP1-3/4-82T	121624	**82.94**	HSP1-3/4-90T	121633	**82.94**
1	1/2	HSP1-1-60T	121616	**106.35**	HSP1-1-82	121625	**115.64**	HSP1-1-90T	121634	**106.35**
1-1/4	1/2	HSP1-1-1/4-60T	121617	**163.09**	HSP1-1-1/4-82T	121626	**177.42**	HSP1-1-1/4-90T	121635	**163.09**

Body Dia. (in.)	Shank Dia. (in.)	100°	100° Code No.	Price $	120°	120° Code No.	Price $
1/8	1/8	HSP1-1/8-100T	121636	**19.15**	HSP1-1/8-120T	121645	**19.15**
3/16	3/16	HSP1-3/16-100T	121637	**20.59**	HSP1-3/16-120T	121646	**20.59**
1/4	1/4	HSP1-1/4-100T	121638	**20.93**	HSP1-1/4-120T	121647	**20.93**
3/8	1/4	HSP1-3/8-100T	121639	**26.76**	HSP1-3/8-120T	121648	**26.76**
1/2	3/8	HSP1-1/2-100T	121640	**37.62**	HSP1-1/2-120T	121649	**37.62**
5/8	3/8	HSP1-5/8-100T	121641	**50.38**	HSP1-5/8-120T	121650	**50.38**
3/4	1/2	HSP1-3/4-100T	121642	**76.12**	HSP1-3/4-120T	121651	**76.12**
1	1/2	HSP1-1-100T	121643	**106.35**	HSP1-1-120T	121652	**106.35**
1-1/4	1/2	HSP1-1-1/4-100T	121644	**163.09**	HSP1-1-1/4-120T	121653	**163.09**

Carbide Single Flute Countersinks — 60°, 82°, 90°, 100°

- For highly abrasive and hard to machine materials
- For production applications in cast iron, alloy steel, or glass reinforced plastics
- Long running carbide eliminates the high cost of tool changes in production situations
- Rigid set-up a must – not suited for hand held applications
- Tools 3/8" and over have solid carbide heads on hardened steel shanks

Body Dia. (in.)	Shank Dia. (in.)	Single Flute 60°	60° Code No.	Price $	Single Flute 82°	82° Code No.	Price $	Single Flute 90°	90° Code No.	Price $	Single Flute 100°	100° Code No.	Price $
1/8	1/8	C1-1/8-60	121740	**19.82**	C1-1/8-82	121756	**19.82**	C1-1/8-90	121772	**19.82**	C1-1/8-100	121788	**20.93**
3/16	3/16	C1-3/16-60	121741	**24.73**	C1-3/16-82	121757	**24.73**	C1-3/16-90	121773	**24.73**	C1-3/16-100	121789	**26.09**
1/4	1/4	C1-1/4-60	121742	**30.67**	C1-1/4-82	121758	**30.67**	C1-1/4-90	121774	**35.93**	C1-1/4-100	121790	**32.24**
3/8	1/4	C1-3/8-60	121743	**58.10**	C1-3/8-82	121759	**58.10**	C1-3/8-90	121775	**58.10**	C1-3/8-100	121791	**61.22**
1/2	3/8	C1-1/2-60	121744	**83.06**	C1-1/2-82	121760	**83.06**	C1-1/2-90	121776	**83.06**	C1-1/2-100	121792	**85.96**
5/8	1/2	C1-5/8-60	121745	**107.56**	C1-5/8-82	121761	**107.56**	C1-5/8-90	121777	**107.56**	C1-5/8-100	121793	**112.27**
3/4	1/2	C1-3/4-60	121746	**148.88**	C1-3/4-82	121762	**174.51**	C1-3/4-90	121778	**148.88**	C1-3/4-100	121794	**156.71**
1	1/2	C1-1-60	121747	**246.49**	C1-1-82	121763	**246.49**	C1-1-90	121779	**246.49**	C1-1-100	121795	**257.89**

Single Flute Double End HSS and Carbide Countersinks — 60°, 82°, 90°, 100°, 120°

- Two cutting ends give you twice the tool life of a single end tool

Body Dia. (in.)	Overall Length (in.)	Material Grade	60°	60° Code No.	Price $	82°	82° Code No.	Price $	90°	90° Code No.	Price $
1/8	1-1/2	HSS	DHS1-1/8-60	121655	**21.94**	DHS1-1/8-82	121671	**21.94**	DHS1-1/8-90	121687	**21.94**
		Carbide	DC1-1/8-60	121656	**34.25**	DC1-1/8-82	121672	**34.25**	DC1-1/8-90	121688	**34.25**
3/16	2	HSS	DHS1-3/16-60	121657	**24.06**	DHS1-3/16-82	121673	**24.06**	DHS1-3/16-90	121689	**24.06**
		Carbide	DC1-3/16-60	121658	**50.59**	DC1-3/16-82	121674	**43.21**	DC1-3/16-90	121690	**43.21**
1/4	2	HSS	DHS1-1/4-60	121659	**24.96**	DHS1-1/4-82	121675	**24.96**	DHS1-1/4-90	121691	**24.96**
		Carbide	DC1-1/4-60	121660	**64.92**	DC1-1/4-82	121676	**55.40**	DC1-1/4-90	121692	**64.92**
5/16	2-1/2	HSS	DHS1-5/16-60	121661	**27.99**	DHS1-5/16-82	121677	**27.99**	DHS1-5/16-90	121693	**27.99**
		Carbide	DC1-5/16-60	121662	**87.54**	DC1-5/16-82	121678	**87.54**	DC1-5/16-90	121694	**87.54**
3/8	2-1/2	HSS	DHS1-3/8-60	121663	**31.45**	DHS1-3/8-82	121679	**31.45**	DHS1-3/8-90	121695	**31.45**
		Carbide	DC1-3/8-60	121664	**104.88**	DC1-3/8-82	121680	**104.88**	DC1-3/8-90	121696	**104.88**
1/2	3	HSS	DHS1-1/2-60	121665	**40.52**	DHS1-1/2-82	121681	**40.52**	DHS1-1/2-90	121697	**44.10**
		Carbide	DC1-1/2-60	121666	**140.71**	DC1-1/2-82	121682	**140.71**	DC1-1/2-90	121698	**140.71**
5/8	3-1/2	HSS	DHS1-5/8-60	121667	**57.31**	DHS1-5/8-82	121683	**57.31**	DHS1-5/8-90	121699	**57.31**
		Carbide	DC1-5/8-60	121668	**200.14**	DC1-5/8-82	121684	**200.14**	DC1-5/8-90	121700	**200.14**
3/4	4	HSS	DHS1-3/4-60	121669	**83.84**	DHS1-3/4-82	121685	**83.84**	DHS1-3/4-90	121701	**83.84**
		Carbide	DC1-3/4-60	121670	**283.98**	DC1-3/4-82	121686	**283.98**	DC1-3/4-90	-	**-**

Body Dia. (in.)	Overall Length (in.)	Material Grade	100°	100° Code No.	Price $	120°	120° Code No.	Price $
1/8	1-1/2	HSS	DHS1-1/8-100	121703	**21.94**	DHS1-1/8-120	121719	**21.94**
		Carbide	DC1-1/8-100	121704	**34.25**	DC1-1/8-120	121720	**34.25**
3/16	2	HSS	DHS1-3/16-100	121705	**24.06**	DHS1-3/16-120	121721	**24.06**
		Carbide	DC1-3/16-100	121706	**43.21**	DC1-3/16-120	121722	**43.21**
1/4	2	HSS	DHS1-1/4-100	121707	**24.96**	DHS1-1/4-120	121723	**24.96**
		Carbide	DC1-1/4-100	121708	**55.40**	DC1-1/4-120	121724	**55.40**
5/16	2-1/2	HSS	DHS1-5/16-100	121709	**27.99**	DHS1-5/16-120	121725	**27.99**
		Carbide	DC1-5/16-100	121710	**87.54**	DC1-5/16-120	121726	**87.54**
3/8	2-1/2	HSS	DHS1-3/8-100	121711	**31.45**	DHS1-3/8-120	121727	**31.45**
		Carbide	DC1-3/8-100	121712	**123.02**	DC1-3/8-120	121728	**104.88**
1/2	3	HSS	DHS1-1/2-100	121713	**44.10**	DHS1-1/2-120	121729	**40.52**
		Carbide	DC1-1/2-100	121714	**140.71**	DC1-1/2-120	121730	**140.71**
5/8	3-1/2	HSS	DHS1-5/8-100	121715	**57.31**	DHS1-5/8-120	121731	**57.31**
		Carbide	DC1-5/8-100	121716	**200.14**	DC1-5/8-120	121732	**200.14**
3/4	4	HSS	DHS1-3/4-100	121717	**83.84**	DHS1-3/4-120	121733	**83.84**
		Carbide	DC1-3/4-100	121718	**283.98**	DC1-3/4-120	121734	**283.98**

3-Flute Countersinks HSS — 60°, 82°, 90°, 100°

STM PREMIUM

HSS

Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60° HSS Code No.	Price $	82° HSS Code No.	Price $	90° HSS Code No.	Price $	100° HSS Code No.	Price $
1/4	3/16	3/4	1-1/2	120795	**14.92**	120804	**14.92**	120813	**14.92**	120822	**14.92**
3/8	1/4	7/8	1-3/4	120796	**20.54**	120805	**20.54**	120814	**20.54**	120823	**20.54**
1/2	3/8	1	2	120797	**25.61**	120806	**25.61**	120815	**25.61**	120824	**25.61**
5/8	3/8	1	2-1/4	120798	**39.02**	120807	**39.02**	120816	**39.02**	120825	**39.02**
3/4	1/2	1-1/4	2-5/8	120799	**43.81**	120808	**43.81**	120817	**43.81**	120826	**43.81**
1	1/2	1-1/4	2-3/4	120800	**77.27**	120809	**77.27**	120818	**77.27**	120827	**73.53**
1-1/4	3/4	1-1/4	3	120801	**125.38**	120976	**113.99**	120819	**125.38**	120828	**125.38**
1-1/2	3/4	1-1/4	3	120802	**174.28**	120811	**174.28**	120820	**174.28**	120829	**174.28**
2	3/4	1-1/4	3-1/4	120803	**286.87**	120812	**286.87**	120821	**286.87**	120830	**210.23**

3-Flute Countersinks HSS

STM PREMIUM

HSS

Flute Dia. (in.)	Shank Dia. (in.)	Overall Length (in.)	82° HSS Code No.	Price $	90° HSS Code No.	Price $
1/4	1/4	1-3/4	121038	**31.34**	121050	**32.47**
3/8	1/4	1-7/8	121040	**39.00**	121052	**39.00**
1/2	3/8	2-1/8	121042	**44.19**	121054	**44.19**
3/4	1/2	2-7/16	121044	**87.66**	121056	**87.68**
1	1/2	2-5/8	121046	**97.64**	121058	**97.64**

4-Flute Machine Countersinks HSS

STM PREMIUM

HSS

Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60° Code No.	Price $	82° Code No.	Price $	90° Code No.	Price $
1/2	1/2	2-1/4	3-7/8	120831	**64.00**	120950	**64.00**	120845	**64.00**
5/8	1/2	2-1/4	4	120832	**73.71**	120955	**73.71**	-	**-**
3/4	1/2	2-1/4	4-1/8	120833	**93.90**	120960	**93.90**	120847	**93.90**
7/8	1/2	2-1/4	4-1/4	120834	**103.51**	120965	**73.59**	120848	**103.51**
1	1/2	2-1/4	4-3/8	120835	**114.16**	120970	**114.16**	120849	**114.16**
1-1/4	1/2	2-1/4	5	120836	**174.28**	120975	**174.28**	120851	**174.28**
1-1/2	1/2	2-1/4	5-3/8	120837	**212.81**	120980	**212.81**	120853	**212.81**

3-Flute 82° Countersinks HSS

STM PREMIUM

HSS

Dia. (in.)	Shank Dia. (in.)	Code No.	Price $
1/2	1/2	120951	**17.62**
5/8	1/2	120956	**27.84**
3/4	1/2	120961	**31.18**
1	1/2	120971	**99.92**
1-1/4	3/4	120976	**113.99**
1-1/2	3/4	120981	**199.66**

GS TOOLING

GS Tooling Drill Chucks

High precision with premium tolerance for improved life.

See Pages G70-71

90° Cobalt 3-Flute Countersinks

- M35 Cobalt
- Wide flutes provide good chip evacuation
- Positive cut
- Constant profile aids regrinding of the tool
- Self-centering of the cutting mill (three bearing points) virtually eliminates vibration

121865

COBALT

Diameter	Overall Length	Shank Diameter	Code No.	Price $
Inch				
1/4"	45mm	1/4"	121899	**22.39**
5/16"	45mm	1/4"	121900	**25.93**
3/8"	50mm	1/4"	121901	**29.46**
1/2"	50mm	1/4"	121902	**36.52**
5/8"	60mm	3/8"	121903	**42.42**
3/4"	60mm	3/8"	121904	**49.38**
1"	70mm	3/8"	121905	**59.99**
7pc Set			121866	**265.66**
Metric				
6.3mm	45mm	5mm	121894	**25.93**
10.4mm	50mm	6mm	121895	**34.81**
16.5mm	60mm	10mm	121896	**48.96**
20.5mm	63mm	10mm	121897	**57.63**
25.0mm	67mm	10mm	121898	**70.16**
5pc Set			121865	**290.51**

90° Cobalt 3-Flute Countersinks - TiN Coated

- M35 Cobalt - TiN coated
- Wide flutes provide good chip evacuation
- Positive cut
- Constant profile aids regrinding of the tool
- Self-centering of the cutting mill (three bearing points) virtually eliminates vibration

121855

COBALT TiN

Diameter	Overall Length	Shank Diameter	Code No.	Price $
Inch				
1/4"	45mm	1/4"	121857	**29.46**
5/16"	45mm	1/4"	121858	**34.06**
3/8"	50mm	1/4"	121859	**37.60**
1/2"	50mm	1/4"	121862	**45.85**
5/8"	60mm	3/8"	121863	**54.20**
3/4"	60mm	3/8"	121864	**62.35**
1"	70mm	3/8"	121867	**74.13**
7pc Set			121856	**337.33**
Metric				
10.4mm	50mm	6mm	121850	**42.42**
16.5mm	60mm	10mm	121851	**61.16**
20.5mm	63mm	10mm	121852	**70.60**
25.0mm	67mm	10mm	121853	**84.19**
31.0mm	71mm	12mm	121854	**119.87**
5pc Set			121855	**364.42**

82° Cobalt 3-Flute Countersinks

- M35 Cobalt
- Wide flutes provide good chip evacuation
- Positive cut
- Constant profile aids regrinding of the tool
- Self-centering of the cutting mill (three bearing points) virtually eliminates vibration

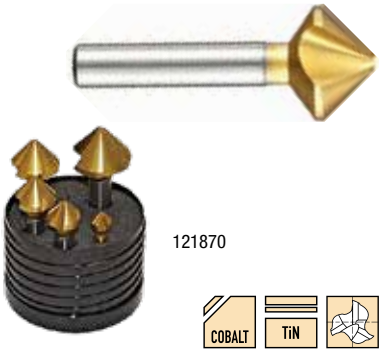
121860

COBALT

Diameter	Overall Length	Shank Diameter	Code No.	Price $
Inch				
1/4"	45mm	1/4"	121875	**22.39**
5/16"	45mm	1/4"	121876	**25.93**
3/8"	50mm	1/4"	121877	**29.46**
1/2"	50mm	1/4"	121878	**36.52**
5/8"	60mm	3/8"	121879	**42.42**
3/4"	60mm	3/8"	121880	**49.38**
1"	70mm	3/8"	121881	**59.99**
7pc Set			121861	**265.66**
Metric				
6.3mm	45mm	5mm	121868	**25.93**
10.4mm	50mm	6mm	121869	**34.81**
16.5mm	61mm	10mm	121872	**48.96**
20.5mm	64mm	10mm	121873	**57.63**
25.0mm	68mm	10mm	121874	**70.16**
5pc Set			121860	**235.13**

82° Cobalt 3-Flute Countersinks - TiN Coated

- M35 Cobalt - TiN coated
- Wide flutes provide good chip evacuation
- Positive cut
- Constant profile aids regrinding of the tool
- Self-centering of the cutting mill (three bearing points) virtually eliminates vibration



121870

COBALT TiN

Diameter	Overall Length	Shank Diameter	Code No.	Price $
Inch				
1/4"	45mm	1/4"	121887	**29.46**
5/16"	45mm	1/4"	121888	**34.06**
3/8"	50mm	1/4"	121889	**37.60**
1/2"	50mm	1/4"	121890	**45.85**
5/8"	60mm	3/8"	121891	**54.20**
3/4"	60mm	3/8"	121892	**62.35**
1"	70mm	3/8"	121893	**74.13**
7pc Set			121871	**337.33**
Metric				
10.4mm	50mm	6mm	121882	**42.42**
16.5mm	61mm	10mm	121883	**61.16**
20.5mm	64mm	10mm	121884	**70.60**
25.0mm	68mm	10mm	121885	**84.19**
31.0mm	73mm	12mm	121886	**119.87**
5pc Set			121870	**520.39**

6-Flute Countersinks HSS — 60°, 82°, 90°, 100°, 110°, 120°

- Flutes are staggered to ensure smoother, chatter-free cutting action
- Steam black oxide surface treatment enhances tool life and prevents galling
- 100% CNC manufactured to tighter than industry standard tolerances

STM PREMIUM

BLACK OXIDE | HSS

Body Dia. (in.)	Shank Dia. (in.)	60°	60° HSS Code No.	Price $	82°	82° HSS Code No.	Price $	90°	90° HSS Code No.	Price $
1/8	1/8	HS6-1/8-60	121200	**14.00**	HS6-1/8-82	121230	**14.00**	HS6-1/8-90	121260	**14.00**
3/16	3/16	HS6-3/16-60	121202	**14.44**	HS6-3/16-82	121232	**14.44**	HS6-3/16-90	121262	**14.44**
1/4	1/4	HS6-1/4-60	121204	**14.67**	HS6-1/4-82	121234	**16.01**	HS6-1/4-90	121264	**16.01**
5/16	1/4	HS6-5/16-60	121206	**16.35**	HS6-5/16-82	121236	**16.35**	HS6-5/16-90	121266	**16.35**
3/8	1/4	HS6-3/8-60	121208	**20.15**	HS6-3/8-82	121238	**20.15**	HS6-3/8-90	121268	**18.47**
1/2	3/8	HS6-1/2-60	121210	**25.30**	HS6-1/2-82	121240	**25.30**	HS6-1/2-90	121270	**23.16**
5/8	3/8	HS6-5/8-60	121212	**35.93**	HS6-5/8-82	121242	**35.93**	HS6-5/8-90	121272	**33.02**
3/4	1/2	HS6-3/4-60	121214	**50.03**	HS6-3/4-82	121244	**50.03**	HS6-3/4-90	121274	**45.90**
7/8	1/2	HS6-7/8-60	121216	**64.36**	HS6-7/8-82	121246	**70.07**	HS6-7/8-90	121276	**64.36**
1	1/2	HS6-1-60	121218	**81.27**	HS6-1-82	121248	**81.27**	HS6-1-90	121278	**81.27**
1-1/4	1/2	HS6-1-1/4-60	121220	**114.85**	HS6-1-1/4-82	121250	**114.85**	HS6-1-1/4-90	121280	**114.85**
1-1/2	3/4	HS6-1-1/2-60	121222	**163.53**	HS6-1-1/2-82	121252	**177.86**	HS6-1-1/2-90	121282	**163.53**
2	3/4	HS6-2-60	121224	**290.47**	HS6-2-82	121254	**316.22**	HS6-2-90	121284	**290.47**
2-1/2	3/4	HS6-2-1/2-60	121226	**780.86**	HS6-2-1/2-82	121256	**781.65**	HS6-2-1/2-90	121286	**781.65**
3	3/4	HS6-3-60	121228	**969.14**	HS6-3-82	121258	**969.14**	HS6-3-90	121288	**969.14**

Body Dia. (in.)	Shank Dia. (in.)	100°	100° HSS Code No.	Price $	110°	110° HSS Code No.	Price $	120°	120° HSS Code No.	Price $
1/8	1/8	HS6-1/8-100	121261	**14.00**	HS6-1/8-110	121292	**14.00**	HS6-1/8-120	121318	**14.00**
3/16	3/16	HS6-3/16-100	121263	**14.44**	HS6-3/16-110	121294	**14.44**	HS6-3/16-120	121320	**14.44**
1/4	1/4	HS6-1/4-100	121265	**14.67**	HS6-1/4-110	121296	**14.67**	HS6-1/4-120	121322	**14.67**
5/16	1/4	HS6-5/16-100	121267	**17.91**	HS6-5/16-110	121298	**16.35**	HS6-5/16-120	121324	**16.35**
3/8	1/4	HS6-3/8-100	121269	**18.47**	HS6-3/8-110	121300	**18.47**	HS6-3/8-120	121326	**20.15**
1/2	3/8	HS6-1/2-100	121271	**25.30**	HS6-1/2-110	121302	**23.16**	HS6-1/2-120	121328	**23.16**
5/8	3/8	HS6-5/8-100	121273	**33.02**	HS6-5/8-110	121304	**33.02**	HS6-5/8-120	121330	**33.02**
3/4	1/2	HS6-3/4-100	121275	**45.90**	HS6-3/4-110	121306	**45.90**	HS6-3/4-120	121332	**50.03**
7/8	1/2	HS6-7/8-100	121277	**64.36**	HS6-7/8-110	121308	**64.36**	HS6-7/8-120	121334	**64.36**
1	1/2	HS6-1-100	121279	**74.65**	HS6-1-110	121310	**74.65**	HS6-1-120	121336	**74.65**
1-1/4	1/2	HS6-1-1/4-100	121281	**105.45**	HS6-1-1/4-110	121312	**105.45**	HS6-1-1/4-120	121338	**105.45**
1-1/2	3/4	HS6-1-1/2-100	121283	**163.53**	HS6-1-1/2-110	121314	**163.53**	HS6-1-1/2-120	121340	**163.53**
2	3/4	HS6-2-100	121285	**290.47**	HS6-2-110	121316	**290.47**	HS6-2-120	121342	**290.70**

6-Flute HSS Chatterless Countersinks

STM PREMIUM

HSS

Flute Dia. (in.)	Shank Dia. (in.)	60° Code No.	Price $	82° Code No.	Price $	90° Code No.	Price $
3/16	3/16	120700	**15.72**	120713	**15.72**	120726	**15.75**
1/4	1/4	120701	**16.73**	120714	**16.73**	120727	**16.73**
5/16	1/4	120702	**19.42**	120715	**19.42**	120728	**19.42**
3/8	1/4	120703	**23.23**	120716	**23.23**	120729	**23.23**
1/2	1/4	120704	**30.22**	120717	**30.22**	120730	**30.22**
5/8	1/2	120705	**44.23**	120718	**44.23**	120731	**44.23**
3/4	-	120706	**58.72**	120719	**58.72**	120732	**58.72**
7/8	1/2	120707	**77.59**	120720	**77.59**	120733	**77.59**
1	-	120708	**93.66**	120721	**93.66**	120734	**93.66**
1-1/4	3/4	120709	**137.08**	120722	**137.08**	120735	**137.08**
1-1/2	3/4	120710	**188.12**	120723	**188.12**	120736	**188.12**
1-3/4	1	120711	**179.72**	-	**-**	120737	**245.23**
2	1	120712	**292.99**	120725	**292.99**	120738	**292.99**

6-Flute TiN Coated Premium Cobalt Countersinks — 60°, 82°, 90°, 100°, 110°, 120°

- Excellent for countersinking abrasive, high-strength, heat resistant, exotic and other difficult to machine materials
- TiN coated for higher surface hardness and better lubricity to enhance productivity and longer tool life

STM PREMIUM

M42 HSS COBALT | TiN

Body Dia. (in.)	Shank Dia. (in.)	60°	60° Code No.	Price $	82°	82° Code No.	Price $	90°	90° Code No.	Price $
1/8	1/8	HSP-1/8-60T	121350	**19.15**	HSP-1/8-82T	121372	**20.37**	HSP-1/8-90T	121394	**20.37**
3/16	3/16	HSP-3/16-60T	121352	**20.59**	HSP-3/16-82T	121374	**21.61**	HSP-3/16-90T	121396	**21.61**
1/4	1/4	HSP-1/4-60T	121354	**20.93**	HSP-1/4-82T	121376	**25.07**	HSP-1/4-90T	121398	**25.07**
5/16	1/4	HSP-5/16-60T	121356	**27.20**	HSP-5/16-82T	121378	**26.98**	HSP-5/16-90T	121400	**26.98**
3/8	1/4	HSP-3/8-60T	121358	**26.76**	HSP-3/8-82T	121380	**32.01**	HSP-3/8-90T	121402	**32.01**
1/2	3/8	HSP-1/2-60T	121360	**40.96**	HSP-1/2-82T	121382	**39.62**	HSP-1/2-90T	121404	**39.62**
5/8	3/8	HSP-5/8-60T	121362	**54.73**	HSP-5/8-82T	121384	**59.77**	HSP-5/8-90T	121406	**54.96**
3/4	1/2	HSP-3/4-60T	121364	**82.94**	HSP-3/4-82T	121386	**87.09**	HSP-3/4-90T	121408	**87.09**
7/8	1/2	HSP-7/8-60T	121366	**98.06**	HSP-7/8-82T	121388	**98.06**	HSP-7/8-90T	121410	**98.06**
1	1/2	HSP-1-60T	121368	**106.35**	HSP-1-82T	121390	**120.55**	HSP-1-90T	121412	**110.70**
1-1/4	1/2	HSP-1-1/4-60T	121370	**163.99**	HSP-1-1/4-82T	121392	**193.20**	HSP-1-1/4-90T	121414	**177.53**

Body Dia. (in.)	Shank Dia. (in.)	100°	100° Code No.	Price $	110°	110° Code No.	Price $	120°	120° Code No.	Price $
1/8	1/8	HSP-1/8-100	121416	**20.37**	HSP-1/8-110	121436	**20.37**	HSP-1/8-120	121456	**20.37**
3/16	3/16	HSP-3/16-100	121418	**21.49**	HSP-3/16-110	121438	**21.61**	HSP-3/16-120	121458	**23.51**
1/4	1/4	HSP-1/4-100	121420	**23.06**	HSP-1/4-110	121440	**23.06**	HSP-1/4-120	121460	**23.06**
5/16	1/4	HSP-5/16-100	121422	**26.98**	HSP-5/16-110	121442	**26.98**	HSP-5/16-120	121462	**26.98**
3/8	1/4	HSP-3/8-100	121424	**29.44**	HSP-3/8-110	121444	**29.44**	HSP-3/8-120	121464	**29.44**
1/2	3/8	HSP-1/2-100	121426	**39.62**	HSP-1/2-110	121446	**39.62**	HSP-1/2-120	121466	**39.62**
5/8	3/8	HSP-5/8-100	121428	**54.96**	HSP-5/8-110	121448	**54.96**	HSP-5/8-120	121468	**59.77**
3/4	1/2	HSP-3/4-100	121430	**80.03**	HSP-3/4-110	121450	**80.03**	HSP-3/4-120	121470	**80.03**
7/8	1/2	HSP-7/8-100	121432	**98.06**	HSP-7/8-110	121452	**98.06**	HSP-7/8-120	121472	**98.06**
1	1/2	HSP-1-100	121434	**110.70**	HSP-1-110	121454	**110.70**	HSP-1-120	121474	**110.70**

6-Flute Carbide Countersinks

STM PREMIUM

For use on hardened steel up to 60HRC, high temperature alloys and other tough jobs.

Cutting Dia. (in.)	Shank Dia. (in.)	Included Angle	Code No.	Price $
1/4	1/4	60°	172920	**21.13**
1/4	1/4	82°	172921	**21.13**
1/4	1/4	90°	172922	**21.13**
3/8	1/4	60°	172923	**34.81**
3/8	1/4	82°	172924	**34.81**
3/8	1/4	90°	172925	**34.81**
1/2	1/4	60°	172926	**46.23**
1/2	1/4	82°	172927	**96.83**
1/2	1/4	90°	172928	**46.23**
5/8	3/8	60°	172929	**65.22**
5/8	3/8	82°	172930	**65.22**
5/8	3/8	90°	172931	**65.22**
3/4	3/8	60°	172932	**95.39**
3/4	3/8	82°	172933	**95.39**
3/4	3/8	90°	172934	**95.39**
1	1/2	60°	172935	**131.45**
1	1/2	82°	172936	**131.45**
1	1/2	90°	172937	**131.45**

Multi-Flute Carbide Countersinks

STM PREMIUM

For use on hardened steel up to 60HRC to countersink or chamfer.

Cutting Dia. (in.)	Shank Dia. (in.)	Included Angle	Code No.	Price $
1/4	1/4	60°	172900	**19.56**
1/4	1/4	82°	172901	**19.56**
1/4	1/4	90°	172902	**19.56**
3/8	1/4	60°	172903	**22.04**
3/8	1/4	82°	172904	**22.04**
3/8	1/4	90°	172905	**22.04**
1/2	1/4	60°	172906	**31.20**
1/2	1/4	82°	172907	**31.20**
1/2	1/4	90°	172908	**31.20**
5/8	3/8	60°	172909	**42.95**
5/8	3/8	82°	172910	**42.95**
5/8	3/8	90°	172911	**42.95**
3/4	3/8	60°	172912	**57.75**
3/4	3/8	82°	172913	**57.75**
3/4	3/8	90°	172914	**57.75**
1	1/2	60°	172915	**92.00**
1	1/2	82°	172916	**92.00**
1	1/2	90°	172917	**92.00**

Carbide 6-Flute Countersinks — 60°, 82°, 90°, 100°

PREMIUM

CARBIDE

Body Dia. (in.)	Shank Dia. (in.)	60°	60° Code No.	Price $	82°	82° Code No.	Price $	90°	90° Code No.	Price $	100°	100° Code No.	Price $
1/8	1/8	C6-1/8-60	121748	**20.93**	C6-1/8-82	121764	**20.93**	C6-1/8-90	121780	**21.27**	C6-1/8-100	121796	**20.93**
3/16	3/16	C6-3/16-60	121749	**26.09**	C6-3/16-82	121765	**26.09**	C6-3/16-90	121781	**26.09**	C6-3/16-100	121797	**26.09**
1/4	1/4	C6-1/4-60	121750	**32.24**	C6-1/4-82	121766	**32.24**	C6-1/4-90	121782	**32.24**	C6-1/4-100	121798	**32.24**
3/8	1/4	C6-3/8-60	121751	**61.22**	C6-3/8-82	121767	**61.22**	C6-3/8-90	121783	**61.22**	C6-3/8-100	121799	**61.22**
1/2	3/8	C6-1/2-60	121752	**85.96**	C6-1/2-82	121768	**100.85**	C6-1/2-90	121784	**100.85**	C6-1/2-100	121800	**85.96**
5/8	1/2	C6-5/8-60	121753	**112.27**	C6-5/8-82	121769	**131.64**	C6-5/8-90	121785	**112.27**	C6-5/8-100	121801	**112.27**
3/4	1/2	C6-3/4-60	121754	**156.71**	C6-3/4-82	121770	**156.71**	C6-3/4-90	121786	**183.68**	C6-3/4-100	121802	**156.71**
1	1/2	C6-1-60	121755	**257.89**	C6-1-82	121771	**257.89**	C6-1-90	121787	**257.89**	C6-1-100	121803	**257.89**

6-Flute Double End HSS and Carbide Countersinks — 60°, 82°, 90°, 100°, 120°

- Two cutting ends give you twice the tool life of a single end tool

PREMIUM

CARBIDE HSS

Body Dia. (in.)	Overall Length (in.)	Material Grade	60°	60° Code No.	Price $	82°	82° Code No.	Price $	90°	90° Code No.	Price $
1/8	1-1/2	HSS	DHS-1/8-60	121476	**22.95**	DHS-1/8-82	121492	**22.95**	DHS-1/8-90	121508	**22.95**
		Carbide	DC-1/8-60	121477	**35.93**	DC-1/8-82	121493	**35.93**	DC-1/8-90	121509	**42.10**
3/16	2	HSS	DHS-3/16-60	121478	**25.30**	DHS-3/16-82	121494	**25.30**	DHS-3/16-90	121510	**27.53**
		Carbide	DC-3/16-60	121479	**53.17**	DC-3/16-82	121495	**45.34**	DC-3/16-90	121511	**45.34**
1/4	2	HSS	DHS-1/4-60	121480	**26.09**	DHS-1/4-82	121496	**28.43**	DHS-1/4-90	121512	**26.09**
		Carbide	DC-1/4-60	121481	**62.57**	DC-1/4-82	121497	**58.21**	DC-1/4-90	121513	**68.17**
5/16	2-1/2	HSS	DHS-5/16-60	121482	**29.33**	DHS-5/16-82	121498	**31.91**	DHS-5/16-90	121514	**31.91**
		Carbide	DC-5/16-60	121483	**91.90**	DC-5/16-82	121499	**91.90**	DC-5/16-90	121515	**91.90**
3/8	2-1/2	HSS	DHS-3/8-60	121484	**35.82**	DHS-3/8-82	121500	**35.82**	DHS-3/8-90	121516	**32.91**
		Carbide	DC-3/8-60	121485	**110.14**	DC-3/8-82	121501	**110.14**	DC-3/8-90	121517	**110.14**
1/2	3	HSS	DHS-1/2-60	121486	**42.43**	DHS-1/2-82	121502	**42.43**	DHS-1/2-90	121518	**42.43**
		Carbide	DC-1/2-60	121487	**147.65**	DC-1/2-82	121503	**147.65**	DC-1/2-90	121519	**147.65**
5/8	3-1/2	HSS	DHS-5/8-60	121488	**60.11**	DHS-5/8-82	121504	**60.11**	DHS-5/8-90	121520	**60.11**
		Carbide	DC-5/8-60	121489	**210.10**	DC-5/8-82	121505	**210.10**	DC-5/8-90	121521	**210.10**
3/4	4	HSS	DHS-3/4-60	121490	**87.98**	DHS-3/4-82	121506	**87.98**	DHS-3/4-90	121522	**87.98**
		Carbide	DC-3/4-60	121491	**298.20**	DC-3/4-82	121507	**298.20**	DC-3/4-90	121523	**298.20**

Body Dia. (in.)	Overall Length (in.)	Material Grade	100°	100° Code No.	Price $	120°	120° Code No.	Price $
1/8	1-1/2	HSS	DHS-1/8-100	121524	**22.95**	DHS-1/8-120	121540	**22.95**
		Carbide	DC-1/8-100	121525	**35.93**	DC-1/8-120	121541	**35.93**
3/16	2	HSS	DHS-3/16-100	121526	**25.30**	DHS-3/16-120	121542	**25.30**
		Carbide	DC-3/16-100	121527	**45.34**	DC-3/16-120	121543	**45.34**
1/4	2	HSS	DHS-1/4-100	121528	**26.09**	DHS-1/4-120	121544	**26.09**
		Carbide	DC-1/4-100	121529	**58.21**	DC-1/4-120	121545	**58.21**
5/16	2-1/2	HSS	DHS-5/16-100	121530	**29.33**	DHS-5/16-120	121546	**29.33**
		Carbide	DC-5/16-100	121531	**91.90**	DC-5/16-120	121547	**91.90**
3/8	2-1/2	HSS	DHS-3/8-100	121532	**32.91**	DHS-3/8-120	121548	**35.82**
		Carbide	DC-3/8-100	121533	**110.14**	DC-3/8-120	121549	**110.14**
1/2	3	HSS	DHS-1/2-100	121534	**42.43**	DHS-1/2-120	121550	**42.43**
		Carbide	DC-1/2-100	121535	**147.65**	DC-1/2-120	121551	**147.65**
5/8	3-1/2	HSS	DHS-5/8-100	121536	**60.11**	DHS-5/8-120	121552	**60.11**
		Carbide	DC-5/8-100	121537	**210.10**	DC-5/8-120	121553	**210.10**
3/4	4	HSS	DHS-3/4-100	121538	**87.98**	DHS-3/4-120	121554	**87.98**
		Carbide	DC-3/4-100	121539	**298.20**	DC-3/4-120	121555	**298.20**

HSS Chucking Reamers

This high quality tool is designed for most standard reaming needs. Available in straight or spiral flutes.

Spiral Flute

Straight Flute

STM PREMIUM

HSS–M2

Dia.	Decimal Equiv. (in.)	No. of Flutes	Flute Length (in.)	Overall Length ASA	Shank Dia. (in.)	Straight Flute Code No.	Price $	R.H. Spiral Code No.	Price $	L.H. Spiral Code No.	Price $
1/8	0.1250	4	7/8	3-1/2	0.1190	111107	**19.36**	111105	**24.24**	128680	**25.91**
0.1260	0.1260	4	7/8	3-1/2	0.1190	111402	**24.23**	128682	**27.84**	128683	**29.38**
#30	0.1285	4	7/8	3-1/2	0.1190	128684	**24.23**	128685	**27.84**	128686	**29.38**
#29	0.1360	4	1	4	0.1275	128687	**28.82**	128688	**33.27**	128689	**34.96**
#28	0.1405	4	1	4	0.1350	128690	**28.82**	128691	**33.27**	128692	**34.96**
9/64	0.1406	4	1	4	0.1350	111112	**28.82**	111110	**33.27**	–	**-**
#27	0.1440	4	1	4	0.1350	128693	**28.82**	128694	**33.27**	128695	**34.96**
#26	0.1470	4	1	4	0.1430	128696	**28.82**	128697	**33.27**	128698	**34.96**
#25	0.1495	4	1	4	0.1430	128699	**28.82**	128700	**33.27**	128702	**34.96**
#24	0.1520	4	1	4	0.1460	128701	**28.82**	128703	**33.27**	128704	**34.96**
#23	0.1540	4	1	4	0.1460	128705	**28.82**	128706	**33.27**	128707	**34.96**
5/32	0.1562	4	1	4	0.1510	111117	**28.82**	111115	**33.27**	128708	**34.96**
#22	0.1570	6	1	4	0.1510	128709	**28.82**	128710	**33.27**	128711	**34.96**
#21	0.1590	6	1-1/8	4-1/2	0.1530	128712	**30.93**	128713	**35.49**	128714	**37.45**
#20	0.1610	6	1-1/8	4-1/2	0.1530	128715	**30.93**	128716	**35.49**	128717	**37.45**
#19	0.1660	6	1-1/8	4-1/2	0.1595	128718	**30.93**	128719	**35.49**	128720	**37.45**
#18	0.1695	6	1-1/8	4-1/2	0.1595	128721	**30.93**	128722	**35.49**	128723	**37.45**
11/64	0.1719	6	1-1/8	4-1/2	0.1645	111122	**30.93**	111120	**35.49**	128724	**37.45**
#17	0.1730	6	1-1/8	4-1/2	0.1645	128725	**30.93**	128726	**35.49**	128727	**37.45**
#16	0.1770	6	1-1/8	4-1/2	0.1704	128728	**30.93**	128729	**35.49**	128730	**37.45**
#15	0.1800	6	1-1/8	4-1/2	0.1755	128731	**30.93**	128732	**35.49**	128733	**37.45**
#14	0.1820	6	1-1/8	4-1/2	0.1755	128734	**30.93**	128735	**35.49**	128736	**37.45**
#13	0.1850	6	1-1/8	4-1/2	0.1805	128737	**30.93**	128738	**35.49**	128739	**37.45**
0.1855	0.1855	6	1-1/8	4-1/2	0.1805	128740	**40.98**	128741	**47.02**	–	**-**
0.1865	0.1865	6	1-1/8	4-1/2	0.1805	111404	**30.93**	128744	**35.49**	128745	**37.45**
0.1870	0.1870	6	1-1/8	4-1/2	0.1805	128746	**40.98**	128747	**47.02**	–	**-**
3/16	0.1875	6	1-1/8	4-1/2	0.1805	111127	**27.86**	111125	**33.97**	128749	**35.49**
0.1885	0.1885	6	1-1/8	4-1/2	0.1805	111406	**30.93**	128751	**35.08**	128752	**37.45**
#12	0.1890	6	1-1/8	4-1/2	0.1805	128753	**30.93**	128754	**35.49**	128755	**37.45**
#11	0.1910	6	1-1/4	5	0.1860	128756	**35.07**	128757	**39.82**	128758	**41.90**
#10	0.1935	6	1-1/4	5	0.1860	128759	**35.07**	128760	**39.82**	128761	**41.90**
#9	0.1960	6	1-1/4	5	0.1895	128762	**35.07**	128763	**39.82**	128764	**41.90**
#8	0.1990	6	1-1/4	5	0.1895	128765	**35.07**	128766	**39.82**	128767	**41.90**
#7	0.2010	6	1-1/4	5	0.1945	128768	**35.07**	128769	**39.82**	128770	**41.90**
13/64	0.2031	6	1-1/4	5	0.1945	111132	**35.07**	111130	**39.82**	128771	**41.90**
#6	0.2040	6	1-1/4	5	0.1945	128772	**35.07**	128773	**39.82**	128774	**41.90**
#5	0.2055	6	1-1/4	5	0.2016	128775	**35.07**	128776	**39.82**	128777	**41.90**
#4	0.2090	6	1-1/4	5	0.2016	128778	**35.07**	128779	**39.82**	128780	**41.90**
#3	0.2130	6	1-1/4	5	0.2075	128781	**35.36**	128782	**39.82**	128783	**41.90**
7/32	0.2188	6	1-1/4	5	0.2075	111137	**35.07**	111135	**39.82**	128784	**41.90**
#2	0.2210	6	1-1/2	6	0.2173	128785	**35.52**	128786	**40.81**	128787	**42.90**
#1	0.2280	6	1-1/2	6	0.2173	128788	**35.52**	128789	**40.81**	128790	**42.90**
A	0.2340	6	1-1/2	6	0.2265	128791	**35.52**	128792	**40.81**	128793	**42.90**
15/64	0.2344	6	1-1/2	6	0.2265	111142	**35.52**	111140	**40.81**	128794	**42.90**
B	0.2380	6	1-1/2	6	0.2329	128795	**37.62**	128796	**43.32**	128797	**45.12**
C	0.2420	6	1-1/2	6	0.2329	128798	**37.62**	128799	**43.32**	128800	**45.12**
D	0.2460	6	1-1/2	6	0.2329	128801	**37.62**	128802	**43.18**	128803	**45.12**
0.2480	0.2480	6	1-1/2	6	0.2405	128804	**40.67**	128805	**47.02**	–	**-**
0.2490	0.2490	6	1-1/2	6	0.2405	111408	**33.84**	128808	**43.46**	128809	**39.18**
0.2495	0.2495	6	1-1/2	6	0.2405	128810	**40.98**	128811	**47.02**	–	**-**
1/4 E	0.2500	6	1-1/2	6	0.2405	111147	**31.88**	111145	**36.63**	128813	**38.43**
0.2510	0.2510	6	1-1/2	6	0.2405	111410	**33.84**	128815	**43.32**	128816	**45.28**
F	0.2570	6	1-1/2	6	0.2485	128817	**37.62**	128818	**43.32**	128819	**45.13**
G	0.2610	6	1-1/2	6	0.2485	128820	**37.62**	128821	**43.32**	128822	**45.13**
17/64	0.2656	6	1-1/2	6	0.2485	111152	**41.78**	111150	**48.05**	128823	**50.42**
H	0.2660	6	1-1/2	6	0.2485	128824	**41.78**	128825	**48.05**	128826	**50.42**
I	0.2720	6	1-1/2	6	0.2485	128827	**41.78**	128828	**48.05**	128829	**50.42**
J	0.2770	6	1-1/2	6	0.2485	128830	**41.78**	128831	**48.05**	128832	**50.42**
K	0.2810	6	1-1/2	6	0.2485	128833	**41.78**	128834	**48.05**	128835	**43.64**
9/32	0.2812	6	1-1/2	6	0.2485	111157	**39.70**	111155	**45.68**	128836	**47.91**
L	0.2900	6	1-1/2	6	0.2792	128837	**41.78**	128838	**48.05**	128839	**50.42**
M	0.2950	6	1-1/2	6	0.2792	128840	**41.78**	128841	**58.34**	128842	**43.49**
19/64	0.2969	6	1-1/2	6	0.2792	111162	**41.78**	111160	**48.05**	128843	**50.42**
N	0.3020	6	1-1/2	6	0.2792	128844	**41.78**	128845	**48.05**	128846	**50.42**
0.3105	0.3105	6	1-1/2	6	0.2792	128847	**51.33**	128848	**58.34**	–	**-**
0.3115	0.3115	6	1-1/2	6	0.2792	111412	**39.69**	128851	**58.34**	128852	**47.91**
0.3120	0.3120	6	1-1/2	6	0.2792	128853	**51.33**	128854	**58.34**	–	**-**

Dia.	Decimal Equiv. (in.)	No. of Flutes	Flute Length (in.)	Overall Length ASA	Shank Dia. (in.)	Straight Flute Code No.	Price $	R.H. Spiral Code No.	Price $	L.H. Spiral Code No.	Price $
5/16	0.3125	6	1-1/2	6	0.2792	111167	**37.75**	111165	**43.30**	128856	**45.53**
0.3135	0.3135	6	1-1/2	6	0.2792	111414	**39.69**	128858	**45.67**	128859	**41.21**
O	0.3160	6	1-1/2	6	0.2792	–	**-**	128861	**48.06**	128862	**50.41**
P	0.3230	6	1-1/2	6	0.2792	128863	**44.98**	128864	**54.10**	128865	**53.88**
21/64	0.3281	6	1-1/2	6	0.2792	111172	**44.98**	111170	**51.41**	128866	**53.88**
Q	0.3320	6	1-1/2	6	0.2792	128867	**41.41**	128868	**51.41**	128869	**53.88**
R	0.3390	6	1-1/2	6	0.2792	128870	**44.98**	128871	**51.41**	128872	**53.88**
11/32	0.3438	6	1-1/2	6	0.2792	111177	**44.98**	111175	**51.41**	128873	**53.88**
S	0.3480	6	1-3/4	7	0.3105	128874	**46.37**	128875	**51.82**	128876	**54.44**
T	0.3580	6	1-3/4	7	0.3105	128877	**46.37**	128878	**51.82**	128879	**54.44**
23/64	0.3594	6	1-3/4	7	0.3105	111182	**41.41**	111180	**51.82**	128880	**54.44**
U	0.3680	6	1-3/4	7	0.3105	128881	**46.37**	128882	**45.34**	128883	**54.44**
0.3730	0.3730	6	1-3/4	7	0.3105	128884	**86.09**	–	**-**	–	**-**
0.3740	0.3740	6	1-3/4	7	0.3105	111416	**42.74**	128888	**49.19**	128889	**51.66**
3/8	0.3750	6	1-3/4	7	0.3105	111187	**40.51**	111185	**46.65**	128893	**48.89**
0.3760	0.3760	6	1-3/4	7	0.3105	111418	**42.74**	128895	**49.19**	128896	**51.66**
V	0.3770	6	1-3/4	7	0.3105	128897	**48.87**	128898	**56.24**	128899	**59.19**
W	0.3860	6	1-3/4	7	0.3105	128900	**48.87**	128901	**56.24**	128902	**59.19**
25/64	0.3906	6	1-3/4	7	0.3105	111192	**42.17**	111190	**56.24**	–	**-**
X	0.3970	6	1-3/4	7	0.3105	128903	**48.87**	128904	**56.24**	128905	**59.19**
Y	0.4040	6	1-3/4	7	0.3105	128906	**50.82**	128907	**58.49**	128908	**61.29**
13/32	0.4062	6	1-3/4	7	0.3105	111197	**50.83**	111195	**58.49**	128909	**61.29**
Z	0.4130	6	1-3/4	7	0.3730	128910	**50.82**	128911	**58.49**	128912	**61.29**
27/64	0.4219	6	1-3/4	7	0.3730	111202	**52.78**	111200	**58.49**	128913	**61.29**
0.4355	0.4355	6	1-3/4	7	0.3730	128914	**61.70**	128915	**66.15**	–	**-**
0.4365	0.4365	6	1-3/4	7	0.3730	111420	**48.31**	128918	**60.81**	128919	**61.29**
0.4370	0.4370	6	1-3/4	7	0.3730	128917	**61.70**	128923	**66.15**	–	**-**
7/16	0.4375	6	1-3/4	7	0.3730	111207	**47.06**	111205	**55.57**	128925	**58.35**
0.4385	0.4385	6	1-3/4	7	0.3730	111422	**48.31**	128926	**58.49**	128927	**61.29**
29/64	0.4531	6	1-3/4	7	0.3730	111212	**55.41**	111210	**63.65**	128928	**66.85**
15/32	0.4688	6	1-3/4	7	0.3730	111217	**55.41**	111215	**63.65**	128929	**66.85**
31/64	0.4844	6	2	8	0.4355	111222	**55.41**	111220	**63.65**	128930	**66.85**
0.4980	0.4980	6	2	8	0.4355	–	**-**	128931	**71.74**	–	**-**
0.4990	0.4990	6	2	8	0.4355	111424	**52.51**	128934	**63.65**	128935	**56.74**
0.4995	0.4995	6	2	8	0.4355	128936	**65.36**	128937	**71.74**	–	**-**
1/2	0.5000	6	2	8	0.4355	111227	**52.23**	111225	**60.45**	128939	**63.52**
0.5010	0.5010	6	2	8	0.4355	111426	**52.51**	128940	**50.98**	128941	**56.47**
33/64	0.5156	6	2	8	0.4355	111232	**68.51**	111230	**78.82**	–	**-**
17/32	0.5312	6	2	8	0.4355	111237	**65.31**	111235	**75.19**	128942	**78.84**
35/64	0.5469	6	2	8	0.4355	111242	**66.14**	111240	**76.05**	–	**-**
9/16	0.5625	6	2	8	0.4355	111247	**63.09**	111245	**72.41**	128943	**76.02**
37/64	0.5781	6	2	8	0.4355	111252	**66.14**	111250	**76.03**	–	**-**
19/32	0.5938	6	2	8	0.4355	111257	**75.06**	111255	**72.41**	128944	**76.05**
39/64	0.6094	6	2	8	0.4355	111262	**77.14**	111260	**95.66**	–	**-**
5/8	0.6250	8	2-1/4	9	0.5620	111267	**73.65**	111265	**84.79**	128945	**89.00**
41/64	0.6406	6	2-1/4	9	0.5620	111272	**77.14**	111270	**88.71**	–	**-**
21/32	0.6562	8	2-1/4	9	0.5620	111277	**83.13**	111275	**89.40**	128946	**100.28**
11/16	0.6875	8	2-1/4	9	0.5620	111282	**83.14**	111280	**95.54**	128947	**100.28**
23/32	0.7188	8	2-1/4	9	0.5620	111287	**92.60**	111285	**106.53**	128948	**111.95**
3/4	0.7500	8	2-1/2	9-1/2	0.6245	111292	**93.15**	111290	**107.22**	128949	**112.51**
25/32	0.7812	10	2-1/2	9-1/2	0.6245	111297	**102.49**	111295	**115.74**	128950	**107.93**
13/16	0.8125	10	2-1/2	9-1/2	0.6245	111302	**102.51**	111300	**115.73**	128951	**121.42**
27/32	0.8438	10	2-1/2	9-1/2	0.6245	111307	**118.78**	111305	**136.77**	128952	**143.45**
7/8	0.8750	10	2-5/8	10	0.7495	111312	**125.31**	111310	**139.80**	128953	**146.79**
29/32	0.9062	10	2-5/8	10	0.7495	111317	**133.39**	111315	**150.68**	128954	**184.95**
15/16	0.9375	10	2-5/8	10	0.7495	111322	**144.69**	111320	**150.68**	128955	**158.33**
31/32	0.9688	10	2-5/8	10	0.7495	111327	**150.67**	111325	**168.77**	128956	**177.28**
1	1.0000	10	2-3/4	10-1/2	0.8745	111332	**130.83**	111330	**147.05**	128957	**154.39**
1-1/16	1.0625	12	2-3/4	10-1/2	0.8745	111337	**167.13**	111335	**188.83**	128958	**198.31**
1-1/8	1.1250	12	2-7/8	11	0.8745	111342	**179.79**	111340	**200.65**	128959	**210.82**
1-3/16	1.1875	12	2-7/8	11	0.9995	111347	**206.93**	111345	**233.41**	128960	**251.07**
1-1/4	1.2500	12	3	11-1/2	0.9995	111352	**220.84**	111350	**245.08**	128961	**271.29**
1-5/16	1.3125	12	3	11-1/2	0.9995	111357	**260.26**	111355	**287.28**	128962	**321.97**
1-3/8	1.3750	12	3-1/4	12	0.9995	111362	**273.49**	111360	**299.24**	128963	**314.31**
1-7/16	1.4375	12	3-1/4	12	1.2495	111367	**291.17**	111365	**351.62**	128964	**394.23**
1-1/2	1.5000	12	3-1/2	12-1/2	1.2495	111372	**326.63**	111370	**302.37**	128965	**371.83**

Diameter Tolerances:	D/P – Dowel pin reamers made to minus tolerance. All other reamers made to a plus tolerance.	
Through 1/2"	**1/2" Through 5/8"**	**5/8" Through 1"**
+0.0002 +0.005 mm	+0.0002" +0.005 mm	+0.0005" +0.012 mm
-0.0000" - 0.0 mm	-0.0000" -0.000 mm	+0.001" +0.0025 mm
This tolerance table applies unless otherwise indicated throughout the catalogue		

Decimal Chucking Reamers HSS

STM PREMIUM

This high quality tool is designed for most standard reaming needs.

- Straight Flute

HSS-M2

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
0.1230	7/8	3-1/2	111500	**18.67**
0.1245	7/8	3-1/2	111501	**18.67**
0.1255	7/8	3-1/2	111503	**18.67**
0.1265	7/8	3-1/2	111504	**18.67**
0.1270	7/8	3-1/2	111505	**18.92**
0.1280	7/8	3-1/2	111506	**18.67**
0.1290	7/8	3-1/2	111507	**18.67**
0.1295	7/8	3-1/2	111508	**18.67**
0.1300	1	4	111509	**14.64**
0.1370	1	4	111510	**22.74**
0.1375	1	4	111511	**17.35**
0.1380	1	4	111512	**22.74**
0.1400	1	4	111513	**22.74**
0.1410	1	4	111514	**23.95**
0.1415	1	4	111515	**22.74**
0.1420	1	4	111516	**22.74**
0.1520	1	4	111517	**21.21**
0.1560	1	4	111518	**22.74**
0.1580	1-1/8	4-1/2	111519	**24.52**
0.1670	1-1/8	4-1/2	111520	**24.52**
0.1720	1-1/8	4-1/2	111521	**23.60**
0.1740	1-1/8	4-1/2	111522	**24.52**
0.1750	1-1/8	4-1/2	111523	**22.92**
0.1760	1-1/8	4-1/2	111524	**24.52**
0.1770	1-1/8	4-1/2	111525	**24.52**
0.1810	1-1/8	4-1/2	111526	**23.60**
0.1820	1-1/8	4-1/2	111527	**22.92**
0.1840	1-1/8	4-1/2	111528	**25.20**
0.1845	1-1/8	4-1/2	111529	**25.20**
0.1850	1-1/8	4-1/2	111530	**25.20**
0.1855	1-1/8	4-1/2	111531	**25.20**
0.1860	1-1/8	4-1/2	111532	**25.20**
0.1870	1-1/8	4-1/2	111533	**25.20**
0.1875	1-1/8	4-1/2	111534	**25.20**
0.1880	1-1/8	4-1/2	111535	**25.20**
0.1895	1-1/8	4-1/2	111536	**27.39**
0.1900	1-1/8	4-1/2	111537	**27.39**
0.1905	1-1/8	4-1/2	111538	**27.39**
0.1910	1-1/4	5	111539	**27.39**
0.1915	1-1/4	5	111540	**27.51**
0.1920	1-1/4	5	111541	**27.39**
0.1930	1-1/4	5	111542	**27.39**
0.1940	1-1/4	5	111543	**27.39**
0.1950	1-1/4	5	111544	**27.39**
0.1960	1-1/4	5	111545	**27.39**
0.1970	1-1/4	5	111546	**27.39**
0.1980	1-1/4	5	111547	**27.39**
0.1990	1-1/4	5	111548	**27.39**
0.2000	1-1/4	5	111549	**27.39**
0.2020	1-1/4	5	111550	**27.39**
0.2024	1-1/4	5	111551	**27.39**
0.2030	1-1/4	5	111552	**27.39**
0.2050	1-1/4	5	111553	**27.39**
0.2060	1-1/4	5	111554	**27.39**
0.2070	1-1/4	5	111555	**27.39**
0.2080	1-1/4	5	111556	**27.39**
0.2090	1-1/4	5	111557	**26.48**
0.2100	1-1/4	5	111558	**26.48**
0.2110	1-1/4	5	111559	**27.39**
0.2120	1-1/4	5	111560	**14.40**
0.2140	1-1/4	5	111561	**27.39**
0.2150	1-1/4	5	111562	**27.39**
0.2155	1-1/4	5	111563	**29.04**
0.2160	1-1/4	5	111564	**27.39**
0.2170	1-1/4	5	111565	**27.39**
0.2180	1-1/4	5	111566	**27.39**
0.2190	1-1/4	5	111567	**27.39**
0.2200	1-1/4	5	111568	**27.39**
0.2211	1-1/4	5	111569	**25.71**
0.2270	1-1/2	6	111570	**27.39**
0.2300	1-1/2	6	111571	**29.43**
0.2310	1-1/2	6	111572	**29.43**
0.2320	1-1/2	6	111573	**29.43**
0.2340	1-1/2	6	111574	**29.43**
0.2350	1-1/2	6	111575	**29.43**
0.2360	1-1/2	6	111576	**29.43**
0.2370	1-1/2	6	111577	**29.43**
0.2380	1-1/2	6	111578	**29.43**
0.2390	1-1/2	6	111579	**29.43**
0.2400	1-1/2	6	111580	**29.43**
0.2410	1-1/2	6	111581	**29.43**
0.2420	1-1/2	6	111582	**29.43**
0.2430	1-1/2	6	111583	**29.43**
0.2440	1-1/2	6	111584	**29.43**
0.2450	1-1/2	6	111585	**29.43**
0.2460	1-1/2	6	111586	**29.43**
0.2470	1-1/2	6	111587	**29.43**
0.2475	1-1/2	6	111588	**29.43**
0.2480	1-1/2	6	111589	**29.43**
0.2485	1-1/2	6	111590	**29.43**
0.2495	1-1/2	6	111591	**29.83**
0.2505	1-1/2	6	111592	**29.43**
0.2515	1-1/2	6	111593	**29.43**
0.2520	1-1/2	6	111594	**29.43**
0.2530	1-1/2	6	111595	**29.43**
0.2540	1-1/2	6	111596	**29.43**
0.2550	1-1/2	6	111597	**31.13**
0.2560	1-1/2	6	111598	**29.43**
0.2570	1-1/2	6	111599	**31.13**
0.2580	1-1/2	6	111600	**29.43**
0.2590	1-1/2	6	111601	**27.56**
0.2600	1-1/2	6	111602	**29.43**
0.2650	1-1/2	6	111603	**31.35**
0.2690	1-1/2	6	111604	**31.35**
0.2710	1-1/2	6	111605	**31.42**
0.2760	1-1/2	6	111606	**31.35**
0.2770	1-1/2	6	111607	**31.35**
0.2800	1-1/2	6	111608	**31.35**
0.2820	1-1/2	6	111609	**31.80**
0.2830	1-1/2	6	111610	**31.35**
0.2840	1-1/2	6	111611	**31.35**
0.2860	1-1/2	6	111612	**31.35**
0.2870	1-1/2	6	111613	**31.35**
0.2890	1-1/2	6	111614	**30.24**
0.2900	1-1/2	6	111615	**31.35**
0.2920	1-1/2	6	111616	**31.35**
0.2930	1-1/2	6	111617	**31.35**
0.2940	1-1/2	6	111618	**31.35**
0.2960	1-1/2	6	111619	**31.35**
0.2980	1-1/2	6	111620	**20.55**
0.2990	1-1/2	6	111621	**29.36**
0.3030	1-1/2	6	111622	**31.35**
0.3050	1-1/2	6	111623	**31.35**
0.3070	1-1/2	6	111625	**31.42**
0.3090	1-1/2	6	111626	**31.35**
0.3100	1-1/2	6	111627	**31.35**
0.3105	1-1/2	6	111628	**31.35**
0.3110	1-1/2	6	111629	**31.35**
0.3120	1-1/2	6	111630	**31.35**
0.3130	1-1/2	6	111631	**31.35**
0.3140	1-1/2	6	111632	**31.35**
0.3145	1-1/2	6	111633	**31.35**
0.3150	1-1/2	6	111634	**31.35**
0.3160	1-1/2	6	111635	**33.52**
0.3165	1-1/2	6	111636	**33.52**
0.3170	1-1/2	6	111637	**33.52**
0.3180	1-1/2	6	111638	**33.52**
0.3190	1-1/2	6	111639	**33.52**
0.3200	1-1/2	6	111640	**33.52**
0.3220	1-1/2	6	111641	**33.52**
0.3240	1-1/2	6	111642	**35.38**
0.3250	1-1/2	6	111643	**35.38**
0.3270	1-1/2	6	111644	**31.33**
0.3290	1-1/2	6	111646	**60.27**
0.3300	1-1/2	6	111647	**31.33**
0.3370	1-1/2	6	111649	**31.33**
0.3440	1-1/2	6	111650	**33.52**
0.3590	1-3/4	7	111653	**37.47**
0.3690	1-3/4	7	111654	**37.47**

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
0.3730	1-3/4	7	111655	**37.47**
0.3745	1-3/4	7	111656	**37.47**
0.3755	1-3/4	7	111657	**37.47**
0.3765	1-3/4	7	111658	**37.47**
0.3770	1-3/4	7	111659	**37.47**
0.3790	1-3/4	7	111660	**37.47**
0.3800	1-3/4	7	111661	**37.47**
0.3860	1-3/4	7	111662	**37.50**
0.3880	1-3/4	7	111663	**37.47**
0.4000	1-3/4	7	111664	**37.47**
0.4070	1-3/4	7	111665	**37.47**
0.4300	1-3/4	7	111666	**37.47**
0.4355	1-3/4	7	111668	**37.47**
0.4370	1-3/4	7	111669	**37.47**
0.4390	1-3/4	7	111670	**37.47**
0.4410	1-3/4	7	111671	**41.41**
0.4420	1-3/4	7	111672	**41.54**
0.4430	1-3/4	7	111673	**41.41**
0.4440	1-3/4	7	111674	**41.41**
0.4480	1-3/4	7	111675	**38.82**
0.4490	1-3/4	7	111676	**41.41**
0.4550	1-3/4	7	111677	**41.41**
0.4560	1-3/4	7	111678	**41.41**
0.4820	1-3/4	7	111679	**50.00**
0.4900	2	8	111680	**50.00**
0.4970	2	8	111681	**50.00**
0.4980	2	8	111682	**50.00**
0.4995	2	8	111683	**50.00**
0.5015	2	8	111684	**53.96**
0.5020	2	8	111685	**53.96**
0.5030	2	8	111686	**53.96**
0.5040	2	8	111687	**53.96**
0.5050	2	8	111688	**53.96**
0.5240	2	8	111689	**53.96**
0.5250	2	8	111690	**53.96**
0.5260	2	8	111691	**53.96**
0.5300	2	8	111692	**53.96**
0.5500	2	8	111693	**53.96**
0.5580	2	8	111694	**50.57**
0.5615	2	8	111696	**53.96**
0.5690	2	8	111697	**54.10**
0.5740	2	8	-	**-**
0.5840	2	8	111699	**58.04**
0.5850	2	8	111700	**54.46**
0.5860	2	8	111701	**58.04**
0.5880	2	8	111702	**58.28**
0.6050	2	8	111703	**62.47**
0.6220	2-1/4	9	111704	**62.27**
0.6240	2-1/4	9	111705	**62.27**
0.6250	2-1/4	9	111706	**62.27**
0.6255	2-1/4	9	111707	**62.27**
0.6260	2-1/4	9	111708	**62.27**
0.6300	2-1/4	9	111709	**62.27**
0.7480	2-1/4	9	111710	**83.65**
0.7490	2-1/4	9	111711	**83.65**
0.7510	2-1/2	9-1/2	111712	**85.98**
0.7580	2-1/2	9-1/2	111713	**85.98**

Dowel Pin Reamers HSS

STM PREMIUM

- Straight flute

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
0.1240	7/8	3-1/2	111400	**24.23**
0.1260	7/8	3-1/2	111402	**24.23**
0.1865	1-1/8	4-1/2	111404	**30.93**
0.1885	1-1/8	4-1/2	111406	**30.93**
0.2490	1-1/2	6	111408	**33.84**
0.2510	1-1/2	6	111410	**33.84**
0.3115	1-1/2	6	111412	**39.69**
0.3135	1-1/2	6	111414	**39.69**
0.3740	1-3/4	7	111416	**42.74**
0.3760	1-3/4	7	111418	**42.74**
0.4365	1-3/4	7	111420	**48.31**
0.4385	1-3/4	7	111422	**48.31**
0.4990	2	8	111424	**52.51**
0.5010	2	8	111426	**52.51**

GS TOOLING

GS Tooling Collet Chucks & Collets

Unmatched precision and performance, at a price point you'll love!

See Pages G18-43

Taper Shank Chucking Reamers HSS — Fractional

STM PREMIUM

Designed and applied similar to straight shank reamers manufactured with American National Standard taper shanks.

- Right hand cut

HSS

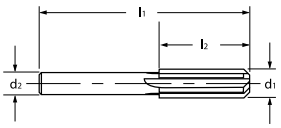
Dia.	Decimal Equiv.	Flute Length	Overall Length	Morse Taper No.	No. of Flutes	Straight Flute Code No.	Price $	R.H. Spiral Code No.	Price $
1/4	0.2500	1-1/2	6	1	6	129431	**43.13**	129464	**57.10**
9/32	0.2812	1-1/2	6	1	6	129432	**46.86**	129465	**49.26**
5/16	0.3125	1-1/2	6	1	6	129433	**44.70**	129466	**49.26**
11/32	0.3438	1-1/2	6	1	6	129434	**47.22**	129467	**52.26**
3/8	0.3750	1-3/4	7	1	6	129435	**50.46**	129468	**52.26**
13/32	0.4062	1-3/4	7	1	6	129436	**51.90**	129469	**54.66**
7/16	0.4375	1-3/4	7	1	6	129437	**51.90**	129470	**54.66**
15/32	0.4688	1-3/4	7	1	6	129438	**57.56**	129471	**59.96**
1/2	0.5000	2	8	1	6	129439	**56.47**	129472	**58.75**
17/32	0.5312	2	8	1	6	129440	**62.83**	129473	**68.85**
9/16	0.5625	2	8	1	8	129441	**71.30**	129474	**68.72**
19/32	0.5938	2	8	1	8	129442	**68.36**	129475	**74.37**
5/8	0.6250	2-1/4	9	2	8	129443	**77.14**	129476	**74.13**
21/32	0.6562	2-1/4	9	2	8	129444	**73.29**	129477	**80.50**
11/16	0.6875	2-1/4	9	2	8	129445	**84.25**	129478	**80.50**
23/32	0.7188	2-1/4	9	2	8	129446	**82.67**	129479	**90.48**
3/4	0.7500	2-1/2	9-1/2	2	8	129447	**94.00**	129480	**104.44**
25/32	0.7812	2-1/2	9-1/2	2	10	129448	**94.43**	129481	**103.68**
13/16	0.8125	2-1/2	9-1/2	2	10	129449	**94.43**	129482	**103.68**
27/32	0.8438	2-1/2	9-1/2	2	10	129450	**107.78**	129483	**118.57**
7/8	0.8750	2-5/8	10	2	10	129451	**122.94**	129484	**118.57**
29/32	0.9062	2-5/8	10	2	10	129452	**117.38**	129485	**129.51**
15/16	0.9375	2-5/8	10	3	10	129453	**117.38**	129486	**129.51**
31/32	0.9687	2-5/8	10	3	10	129454	**130.72**	129487	**145.25**
1	1.0000	2-3/4	10-1/2	3	10	129455	**129.51**	129488	**167.10**
1-1/16	1.0625	2-3/4	10-1/2	3	12	129456	**168.35**	129489	**159.67**
1-1/8	1.1250	2-7/8	11	3	12	129457	**182.44**	129490	**204.43**
1-3/16	1.1875	2-7/8	11	3	12	129458	**176.38**	129491	**192.12**
1-1/4	1.2500	3	11-1/2	4	12	129459	**221.28**	129492	**244.53**
1-5/16	1.3125	3	11-1/2	4	12	129460	**241.88**	129493	**230.92**
1-3/8	1.3750	3-1/4	12	4	12	129461	**262.22**	129494	**250.01**
1-7/16	1.4375	3-1/4	12	4	12	129462	**244.49**	129495	**272.25**
1-1/2	1.5000	3-1/2	12-1/2	4	12	129463	**302.88**	129496	**289.31**

Diameter Tolerances:	D/P – Dowel pin reamers made to minus tolerance. All other reamers made to a plus tolerance	
Through 1/2"	**1/2" Through 5/8"**	**5/8" Through 1"**
+0.0002 +0.005 mm	+0.0002" +0.005 mm	+0.0005" +0.012 mm
-0.0000" - 0.0 mm	-0.0000" -0.000 mm	+0.001" +0.0025 mm
This tolerance table applies unless otherwise indicated throughout the catalogue		

Solid Carbide Chucking Reamers

STM PREMIUM

- Solid carbide
- Straight flute
- Fractional, wire and letter sizes



MICRO GRAIN CARBIDE

(d_1) Reamer Dia.	Decimal Equiv.	(l_2) Flute Length	(l_1) Overall Length	(d_2) Shank Dia.	Code No.	Price $
56	0.0465	3/8	1-1/2	0.0410	170941	**28.37**
3/64	0.0469	3/8	1-1/2	0.0410	170942	**28.37**
55	0.0520	3/8	1-1/2	0.0520	170943	**28.37**
54	0.0550	3/8	1-1/2	0.0520	170944	**39.68**
53	0.0595	3/8	1-1/2	0.0520	170945	**28.37**
1/16	0.0625	3/8	1-1/2	0.0520	170800	**26.34**
52	0.0635	3/8	1-1/2	0.0520	170946	**28.82**
51	0.0670	1/2	1-3/4	0.0625	170947	**29.72**
50	0.0700	1/2	1-3/4	0.0625	170948	**29.72**
49	0.0730	1/2	1-3/4	0.0625	170949	**29.72**
48	0.0760	1/2	1-3/4	0.0625	170950	**29.72**
5/64	0.0781	1/2	1-3/4	0.0625	170951	**27.70**
47	0.0785	1/2	1-3/4	0.0625	170952	**29.72**
46	0.0810	1/2	2	0.0781	170953	**30.30**
45	0.0820	1/2	2	0.0781	170954	**30.30**
44	0.0860	1/2	2	0.0781	170955	**30.30**
43	0.0890	1/2	2	0.0781	170956	**30.30**
42	0.0935	1/2	2	0.0781	170957	**30.30**
3/32	0.0938	1/2	2	0.0781	170802	**28.37**
41	0.0960	5/8	2-1/4	0.0938	170958	**30.74**
40	0.0980	5/8	2-1/4	0.0938	170959	**30.74**
39	0.0995	5/8	2-1/4	0.0938	170960	**30.74**
38	0.1015	5/8	2-1/4	0.0938	170961	**30.74**
37	0.1040	5/8	2-1/4	0.0938	170962	**30.74**
36	0.1065	5/8	2-1/4	0.0938	170963	**30.74**
7/64	0.1094	5/8	2-1/4	0.0938	170964	**28.82**
35	0.1100	5/8	2-1/4	0.0938	170965	**30.74**
34	0.1110	5/8	2-1/4	0.0938	170966	**30.74**
33	0.1130	5/8	2-1/4	0.0938	170967	**30.74**
32	0.1160	5/8	2-1/4	0.1094	170968	**31.30**
31	0.1200	5/8	2-1/4	0.1094	170969	**31.30**
1/8	0.1250	5/8	2-1/4	0.1094	170804	**28.37**
30	0.1285	5/8	2-1/4	0.1094	170970	**31.30**
29	0.1360	3/4	2-1/2	0.1250	170971	**33.12**
28	0.1405	3/4	2-1/2	0.1250	170972	**33.12**
9/64	0.1406	3/4	2-1/2	0.1250	170973	**30.52**
27	0.1440	3/4	2-1/2	0.1250	170974	**33.12**
26	0.1470	3/4	2-1/2	0.1406	170975	**33.12**
25	0.1495	3/4	2-1/2	0.1406	170976	**33.12**
24	0.1520	3/4	2-1/2	0.1406	170977	**33.12**
23	0.1540	3/4	2-1/2	0.1406	170978	**33.12**
5/32	0.1562	3/4	2-1/2	0.1406	170806	**42.61**
22	0.1570	3/4	2-1/2	0.1406	170979	**33.12**
21	0.1590	3/4	2-1/2	0.1406	170980	**33.12**
20	0.1610	7/8	2-3/4	0.1562	170981	**36.28**
19	0.1660	7/8	2-3/4	0.1562	170982	**36.28**
18	0.1695	7/8	2-3/4	0.1562	170983	**36.28**
11/64	0.1719	7/8	2-3/4	0.1562	170984	**34.02**
17	0.1730	7/8	2-3/4	0.1562	170985	**36.28**
16	0.1770	7/8	2-3/4	0.1719	170986	**39.10**
15	0.1800	7/8	2-3/4	0.1719	170987	**39.10**
14	0.1820	7/8	2-3/4	0.1719	170988	**39.10**
13	0.1850	7/8	2-3/4	0.1719	170989	**39.10**
3/16	0.1875	7/8	2-3/4	0.1719	170808	**36.06**
12	0.1890	7/8	2-3/4	0.1719	170990	**39.10**
11	0.1910	7/8	2-3/4	0.1875	170991	**39.10**
10	0.1935	7/8	2-3/4	0.1875	170992	**39.10**
9	0.1960	1	3	0.1875	170993	**43.63**
8	0.1990	1	3	0.1875	170994	**43.63**
7	0.2010	1	3	0.1875	170995	**43.63**
13/64	0.2031	1	3	0.1875	170996	**41.83**
6	0.2040	1	3	0.1875	170997	**43.63**
5	0.2055	1	3	0.1875	170998	**43.63**
4	0.2090	1	3	0.1875	170999	**43.63**
3	0.2130	1	3	0.1875	171000	**43.63**
7/32	0.2188	1	3	0.1875	171001	**41.83**
2	0.2210	1	3	0.1875	171002	**45.32**
1	0.2280	1	3	0.2188	171003	**45.32**
A	0.2340	1	3	0.2188	171004	**45.32**
15/64	0.2344	1	3	0.2188	171005	**43.96**
B	0.2380	1	3	0.2188	171006	**48.61**
C	0.2420	1	3	0.2188	171007	**48.61**
D	0.2460	1	3	0.2188	171008	**48.61**
1/4	0.2500	1	3	0.2188	170810	**45.32**
E	0.2500	1-1/8	3-1/4	0.2188	171009	**52.10**
F	0.2570	1-1/8	3-1/4	0.2500	171010	**52.10**
G	0.2610	1-1/8	3-1/4	0.2500	171011	**52.10**
17/64	0.2656	1-1/8	3-1/4	0.2500	171012	**49.62**
H	0.2660	1-1/8	3-1/4	0.2500	171013	**52.10**
I	0.2720	1-1/8	3-1/4	0.2500	171014	**52.10**
J	0.2770	1-1/8	3-1/4	0.2500	171015	**52.10**
K	0.2810	1-1/8	3-1/4	0.2500	171016	**52.10**
9/32	0.2812	1-1/8	3-1/4	0.2500	171017	**48.04**
L	0.2900	1-1/8	3-1/4	0.2812	171018	**54.25**
M	0.2950	1-1/8	3-1/4	0.2812	171019	**54.25**
19/64	0.2969	1-1/8	3-1/4	0.2812	171020	**52.56**
N	0.3030	1-1/8	3-1/4	0.2812	171021	**74.60**
5/16	0.3125	1-1/8	3-1/4	0.2812	170812	**55.04**
O	0.3160	1-1/8	3-1/4	0.3125	171022	**60.47**
P	0.3230	1-1/4	3-1/2	0.3125	171023	**67.36**
21/64	0.3281	1-1/4	3-1/2	0.3125	171024	**63.74**
Q	0.3320	1-1/4	3-1/2	0.3125	171025	**67.36**
R	0.3390	1-1/4	3-1/2	0.3125	171026	**67.36**
11/32	0.3438	1-1/4	3-1/2	0.3125	171028	**63.07**
S	0.3480	1-1/4	3-1/2	0.3125	171029	**72.45**
T	0.3580	1-1/4	3-1/2	0.3125	171030	**78.55**
23/64	0.3594	1-1/4	3-1/2	0.3125	171031	**69.06**
U	0.3680	1-1/4	3-1/2	0.3594	171032	**75.73**
3/8	0.3750	1-1/4	3-1/2	0.3594	170814	**70.86**
V	0.3770	1-1/4	3-1/2	0.3594	171033	**75.73**
W	0.3860	1-1/4	3-1/2	0.3594	171034	**75.73**
25/64	0.3906	1-1/4	3-1/2	0.3750	171035	**84.77**
X	0.3970	1-1/4	3-1/2	0.3750	171036	**84.77**
Y	0.4040	1-1/4	3-1/2	0.3750	171037	**92.00**
13/32	0.4062	1-1/4	3-1/2	0.3750	171038	**126.59**
Z	0.4130	1-1/4	3-1/2	0.3750	171039	**92.00**
27/64	0.4219	1-3/8	3-3/4	0.3750	171040	**103.07**
7/16	0.4375	1-3/8	3-3/4	0.3750	171041	**103.07**
29/64	0.4531	1-3/8	3-3/4	0.4375	171042	**122.17**
15/32	0.4688	1-3/8	3-3/4	0.4375	171043	**122.17**
31/64	0.4844	1-1/2	4	0.4375	171044	**137.44**
1/2	0.5000	1-1/2	4	0.4375	170816	**193.49**

Diameter Tolerances:

d_1	d_1	d_2	No. of Flutes
0.0465-0.2500	+0.0001/+0.0004	+0.000/-0.001	4
0.2570-0.5000	+0.0001/+0.0005	+0.000/-0.001	6

Taper Pin Reamers HSS — Hand

STM PREMIUM

Used to ream holes into which standard taper pins will fit.

- Taper 1/4" per foot
- Ideally used in the attachment of gears, pulleys to shafts
- Straight and left hand spiral flutes are intended for hand reaming
- Recommended that the drilled hole be a few thousandths smaller than the small diameter of the finished reamed hole
- Straight flutes
- Straight shank
- Left hand spiral
- Right hand cut

HSS

Size No.	Small End Dia.	Large End Dia.	Flute Length	Overall Length	Shank Dia.	No. of Flutes	Straight Flute Code No.	Price $	L.H. Spiral Flute Code No.	Price $
7/0	0.0497	0.0666	13/16	1-13/16	5/64	4	129560	**71.73**	129577	**73.66**
6/0	0.0611	0.0806	15/16	1-15/16	3/32	4	129561	**66.72**	129578	**73.66**
5/0	0.0719	0.0966	1-3/16	2-3/16	7/64	4	129562	**65.02**	129579	**72.68**
4/0	0.0869	0.1142	1-5/16	2-5/16	1/8	4	129563	**65.02**	129580	**72.68**
3/0	0.1029	0.1302	1-5/16	2-5/16	9/64	4	129564	**65.02**	129581	**72.68**
2/0	0.1137	0.1462	1-9/16	2-9/16	5/32	4	129565	**58.48**	129582	**62.24**
0	0.1287	0.1638	1-11/16	2-15/16	11/64	6	129566	**49.50**	129583	**138.17**
1	0.1447	0.1798	1-11/16	2-15/16	3/16	6	129567	**47.94**	129584	**53.58**
2	0.1605	0.2008	1-15/16	3-3/16	13/64	6	129568	**47.94**	129585	**53.58**
3	0.1813	0.2294	2-5/16	3-11/16	15/64	6	129569	**55.55**	129586	**53.58**
4	0.2071	0.2604	2-9/16	4-1/16	17/64	6	129570	**57.11**	129587	**62.16**
5	0.2409	0.2994	2-13/16	4-5/16	5/16	6	129571	**57.56**	129588	**72.14**
6	0.2773	0.3540	3-11/16	5-7/16	23/64	6	129572	**74.11**	129589	**76.65**
7	0.3297	0.4220	4-7/16	6-5/16	13/32	6	129573	**103.61**	129590	**96.96**
8	0.3971	0.5050	5-3/16	7-3/16	7/16	6	129574	**114.38**	129591	**145.25**
9	0.4805	0.6066	6-1/16	8-5/16	9/16	8	129575	**158.05**	129592	**148.37**
10	0.5799	0.7216	6-13/16	9-5/16	5/8	8	129576	**159.55**	129593	**164.47**

Taper Pin Reamers HSS — Helical Flute

STM PREMIUM

Designed for machine reaming of taper pin holes, helical flutes reduce chip packing thereby reducing breakage.

- Taper 1/4" per foot
- Straight shank

HSS

Size No.	Small End Dia.	Large End Dia.	Flute Length	Overall Length	Shank Dia.	No. of Flutes	Code No.	Price $
7/0	0.0497	0.0666	13/16	1-13/16	5/64	2	129597	**72.56**
6/0	0.0611	0.0806	15/16	1-15/16	3/32	2	129598	**72.56**
5/0	0.0719	0.0966	1-3/16	2-3/16	7/64	3	129599	**66.43**
4/0	0.0869	0.1142	1-5/16	2-5/16	1/8	3	129600	**66.43**
3/0	0.1029	0.1302	1-5/16	2-5/16	9/64	3	129601	**66.43**
2/0	0.1137	0.1462	1-9/16	2-9/16	5/32	3	129602	**60.87**
0	0.1287	0.1638	1-11/16	2-15/16	11/64	3	129603	**53.58**
1	0.1447	0.1798	1-11/16	2-15/16	3/16	3	129604	**54.30**
2	0.1605	0.2008	1-15/16	3-3/16	13/64	3	129605	**63.52**
3	0.1813	0.2294	2-5/16	3-11/16	15/64	3	129606	**63.55**
4	0.2071	0.2604	2-9/16	4-1/16	17/64	3	129607	**83.00**
5	0.2409	0.2994	2-13/16	4-5/16	5/16	3	129608	**83.70**
6	0.2773	0.3540	3-11/16	5-7/16	23/64	3	129609	**91.78**
7	0.3297	0.4220	4-7/16	6-5/16	13/32	3	129610	**113.30**
8	0.3971	0.5050	5-3/16	7-3/16	7/16	3	129611	**133.00**
9	0.4805	0.6066	6-1/16	8-5/16	9/16	4	129612	**143.46**
10	0.5799	0.7216	6-13/16	9-5/16	5/8	4	129613	**182.15**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Taper Shank Jobber Reamers HSS

STM PREMIUM

Dia.	Decimal Equiv.	Flute Length	Overall Length	Morse Taper No.	No. of Flutes	Code No.	Price $
1/4	0.2500	2	5-3/16	1	6	129530	**101.51**
9/32	0.2812	2	5-3/16	1	6	129531	**104.45**
5/16	0.3125	2-1/4	5-1/2	1	6	129532	**105.14**
11/32	0.3438	2-1/4	5-1/2	1	6	129533	**112.51**
3/8	0.3750	2-1/2	5-13/16	1	6	129534	**118.49**
13/32	0.4062	2-1/2	5-13/16	1	6	129535	**122.54**
7/16	0.4375	2-3/4	6-1/8	1	6	129536	**127.00**
15/32	0.4688	2-3/4	6-1/8	1	6	129537	**131.73**
1/2	0.5000	3	6-7/16	1	6	129538	**137.59**
17/32	0.5312	3	6-7/16	1	6	129539	**145.09**
9/16	0.5625	3-1/4	6-3/4	1	8	129540	**152.91**
19/32	0.5938	3-1/4	6-3/4	1	8	129541	**156.82**
5/8	0.6250	3-1/2	7-9/16	2	8	129542	**159.46**
21/32	0.6562	3-1/2	7-9/16	2	8	129543	**167.11**
11/16	0.6875	3-7/8	8	2	8	129544	**177.98**
23/32	0.7188	3-7/8	8	2	8	129545	**181.16**
3/4	0.7500	4-3/16	8-3/8	2	8	129546	**186.05**
13/16	0.8125	4-9/16	8-13/16	2	10	129547	**208.74**
7/8	0.8750	4-7/8	9-3/16	2	10	129548	**233.25**
15/16	0.9375	5-1/8	10	3	10	129549	**256.37**
1	1.0000	5-7/16	10-3/8	3	10	129550	**242.58**
1-1/16	1.0625	5-5/8	10-5/8	3	12	129551	**318.22**
1-1/8	1.1250	5-13/16	10-7/8	3	12	129552	**350.50**
1-3/16	1.1875	6	11-1/8	3	12	129553	**381.29**
1-1/4	1.2500	6-1/8	12-9/16	4	12	129554	**401.05**
1-5/16	1.3125	6-1/4	12-11/16	4	12	129555	**532.08**
1-3/8	1.3750	6-5/16	12-13/16	4	12	129556	**600.34**
1-7/16	1.4375	6-7/16	13	4	12	129557	**702.69**
1-1/2	1.5000	6-1/2	13-1/8	4	12	129558	**800.98**

Speeds & Feeds for Solid Carbide Jobber Drills

STM PREMIUM

Work Material	Steels						Austenitic Stainless		Cast Irons				Non-Ferrous			
	Low Carbon Steels		Alloy Steels (up to 35HRC) 4140		Alloy Steels (36-45HRC) 4140		304/316		Gray Cast Iron A48 Class		Ductile Cast Iron A536/60-40-18		Plastic		Kevlar/ Graphite	
Cutting Speed	55 m/min		50 m/min		45 m/min		40 m/min		85 m/min		55 m/min		120 m/min		120 m/min	
Drill Dia. (mm)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)	Speed (/min)	Feed (mm/rev)
1.0	17,520	0.025	15,925	0.025	14,335	0.025	12,740	0.025	27,075	0.025	17,520	0.025	38,220	0.006	38,220	0.006
1.5	11,680	0.050	10,615	0.050	9,555	0.050	8,495	0.050	18,050	0.050	11,680	0.050	25,480	0.013	25,480	0.013
2.0	8,760	0.051	10,618	0.051	9,558	0.051	8,493	0.051	13,535	0.051	8,760	0.051	25,480	0.028	25,480	0.028
2.5	7,005	0.063	7,964	0.063	7,169	0.063	6,369	0.063	10,830	0.063	7,005	0.063	19,110	0.039	19,110	0.039
3.0	5,840	0.076	5,310	0.076	4,780	0.076	4,245	0.076	9,025	0.076	5,840	0.076	12,740	0.050	12,740	0.050
3.5	5,005	0.089	4,550	0.089	4,095	0.089	3,640	0.089	7,735	0.089	5,005	0.089	10,920	0.051	10,920	0.051
4.0	4,380	0.101	3,980	0.101	3,585	0.101	3,185	0.101	6,770	0.101	4,380	0.101	9,555	0.052	9,555	0.052
4.5	3,895	0.114	3,540	0.114	3,185	0.114	2,830	0.114	6,015	0.114	3,895	0.114	8,495	0.063	8,495	0.063
5.0	3,505	0.127	3,185	0.127	2,865	0.127	2,550	0.127	5,415	0.127	3,505	0.127	7,645	0.064	7,645	0.064
5.5	3,185	0.139	2,895	0.139	2,605	0.139	2,315	0.139	4,920	0.139	3,185	0.139	6,950	0.070	6,950	0.070
6.0	2,920	0.152	2,655	0.152	2,390	0.152	2,125	0.152	4,510	0.152	2,920	0.152	6,370	0.076	6,370	0.076
6.5	2,695	0.158	2,450	0.158	2,205	0.158	1,960	0.158	4,165	0.158	2,695	0.158	5,880	0.079	5,880	0.079
7.0	2,505	0.165	2,275	0.165	2,050	0.165	1,820	0.165	3,870	0.165	2,505	0.165	5,460	0.082	5,460	0.082
7.5	2,335	0.171	2,125	0.171	1,910	0.171	1,700	0.171	3,610	0.171	2,335	0.171	5,095	0.085	5,095	0.085
8.0	2,190	0.178	1,990	0.178	1,790	0.178	1,595	0.178	3,385	0.178	2,190	0.178	4,780	0.089	4,780	0.089
8.5	2,060	0.184	1,875	0.184	1,685	0.184	1,500	0.184	3,185	0.184	2,060	0.184	4,495	0.092	4,495	0.092
9.0	1,945	0.190	1,770	0.190	1,595	0.190	1,415	0.190	3,010	0.190	1,945	0.190	4,245	0.095	4,245	0.095
9.5	1,845	0.197	1,675	0.197	1,510	0.197	1,340	0.197	2,850	0.197	1,845	0.197	4,025	0.098	4,025	0.098
10.0	1,750	0.203	1,595	0.203	1,435	0.203	1,275	0.203	2,705	0.203	1,750	0.203	3,820	0.101	3,820	0.101
10.5	1,670	0.216	1,515	0.216	1,365	0.216	1,215	0.216	2,580	0.216	1,670	0.216	3,640	0.114	3,640	0.114
11.0	1,595	0.229	1,450	0.229	1,305	0.229	1,160	0.229	2,460	0.229	1,595	0.229	3,475	0.127	3,475	0.127
11.5	1,525	0.241	1,385	0.241	1,245	0.241	1,110	0.241	2,355	0.241	1,525	0.241	3,325	0.139	3,325	0.139
12.0	1,460	0.254	1,325	0.254	1,195	0.254	1,060	0.254	2,255	0.254	1,460	0.254	3,185	0.152	3,185	0.152

Threading & Tapping

Threading & Tapping

SOWA HIGH PERFORMANCE TAP SELECTION C2

YELLOW RING TAPS, HSSE-V3 UP TO 35HRC

Spiral Point Taps - Black Oxide & Bright Finish C3
Spiral Flute Taps - Black Oxide & Bright Finish C4
UN8 DIN Length ANSI Shank Taps. C5
DIN Length ANSI Shank Spiral Point & Spiral Flute Taps C5
4" & 6" O.A.L. Spiral Point & Spiral Flute Taps C5
NPT Spiral Flute Pipe Taps C6

ORANGE RING TAPS, HSSE-V3 UP TO 35HRC FOR STAINLESS STEEL

Spiral Point Taps. C6
Spiral Flute Taps. C6

SOWA HSS TAPS

Spiral Flute Taps for Aluminum C7
Roll Form Taps C7
NPT Taps C7
Hand Taps. C8

Adjustable Tap Wrench C9
'T' Ratchet Type Tap Wrench. C9
Screw Extractors C9
Die Stocks C9

TAPPING SPEED GUIDE, CONVERSION TABLE, ANSI TAP DIMENSIONS, TAP/DRILL CHARTS C11-15

High Performance Taps
Recommended Cutting Conditions

We have taken the guesswork out of your tap selection!

HSSE-V3 ANSI SHANK Yellow Ring Pg. C3

Yellow Ring HSSE-V3 Steels and Other Materials Up to 35HRC

For Tough Materials including:

- HIGH CARBON STEEL
- HIGH ALLOY
- TITANIUM
- ALUMINUM

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Tool Steels	01, A-2, D-2, H-13, P-20	Annealed	<35	15-25
Medium Carbon	1030, 1035, 1038, 1040, 1045, 1050	Normalized	<28	20-40
Alloyed High Carbon	1065, 1070, 1080, 1090, 1095, 1561,1572	Normalized	<32	20-30
High Strength	4140, 4340	Normalized	<32	20-30
Titanium	Commercially Pure	Annealed	<32	15-30
Stainless Steel		Annealed	<29	20-30
Aluminum	Cast, Wrought	–	–	30-90

HSSE-V3 ANSI SHANK Orange Ring Pg. C6

Orange Ring HSSE-V3 for Stainless Steel and Other Materials

For STAINLESS STEEL as well as:

- LOW CARBON STEELS
- MEDIUM CARBON STEELS
- ALLOYED HIGH CARBON

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series	Annealed	<28	20-35
	300 Series, 17-4 PH, 15-5, A286	Annealed	<28	20-35
	400 Series	Annealed	<29	20-35
	400 Series	Hardened	35-42	15-20
	17-4PH, 15-5, A286	Hardened	35-42	15-20
Low Carbon Steels	1010, 1018	Normalized	<20	25-50
Alloyed High Carbon	1050, 1065, 1070, 1080, 1090, 1095, 1561, 1572	Normalized	<25	20-30
Beryllium			<25	20-30

HSSE-V3 ANSI SHANK Green Series Pg. C7

Green Series HSSE-V3 for Aluminum and Other Materials

For ALUMINUM:

- PURE/LOW
- DIE CAST

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Steels	Sheet, Low/Medium Carbon, Stainless Steel	Hardened	<20	20-50
Aluminum	Pure/Low	–	–	30-60
Aluminum	Die Cast	–	–	30-60

Yellow Ring HSSE-V3 Spiral Point Taps — Black Oxide Finish

HSSE-V3% Vanadium

- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

Designed for high-speed tapping applications. Developed to withstand the high stress and high heat associated with high-speed CNC production tapping. Features a unique free-cutting design with a special tempering and geometry which contributes to extra tool life.

HSSE-V3 | BLACK OXIDE | HOLE TYPE

Inch

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	H2 Limit Price $	Black Oxide Code No.	H3 Limit Price $	Black Oxide Code No.	H4 Limit Price $
2-56	2	1-3/4	0.433	122550	**18.05**	-	-	-	-
3-48	2	1-13/16	0.512	122552	**14.44**	-	-	-	-
4-40	2	1-7/8	0.433	123296	**11.91**	-	-	-	-
4-40	2	1-7/8	0.433	-	-	122554	**11.91**	-	-
6-32	3	2	0.512	-	-	123300	**9.93**	-	-
6-40	3	2	0.512	-	-	123334	**9.93**	-	-
8-32	3	2-1/8	0.512	-	-	123302	**9.93**	-	-
10-24	3	2-3/8	0.512	-	-	123304	**9.93**	-	-
10-32	3	2-3/8	0.512	-	-	123338	**9.93**	-	-
12-24	3	2-3/8	0.512	-	-	123306	**9.93**	-	-
1/4-20	3	2-1/2	0.630	-	-	123308	**10.92**	-	-
1/4-28	3	2-1/2	0.630	-	-	123342	**10.92**	-	-
5/16-18	3	2-23/32	0.748	-	-	123310	**12.28**	-	-
5/16-24	3	2-23/32	0.748	-	-	123344	**12.28**	-	-
3/8-16	3	2-15/16	0.748	-	-	123312	**13.89**	-	-
3/8-24	3	2-15/16	0.748	-	-	123346	**13.89**	-	-
7/16-14	3	3-5/32	0.866	-	-	123314	**18.05**	-	-
7/16-20	3	3-5/32	0.866	-	-	123348	**18.05**	-	-
1/2-13	3	3-3/8	0.945	-	-	123316	**20.85**	-	-
1/2-20	3	3-3/8	0.945	-	-	123350	**20.85**	-	-
5/8-11	3	3-13/16	1.102	-	-	123318	**37.90**	-	-
5/8-18	3	3-13/16	1.102	-	-	123352	**37.90**	-	-
3/4-10	3	4-1/4	1.220	-	-	123320	**59.38**	-	-
3/4-16	3	4-1/4	1.220	-	-	123353	**59.38**	-	-
7/8-9	3	4-11/16	1.339	-	-	-	-	123321	**84.99**
7/8-14	3	4-11/16	1.339	-	-	-	-	123359	**92.84**
1-8	4	5-1/8	1.496	-	-	-	-	123323	**113.24**
1-12	4	5-1/8	1.496	-	-	-	-	123361	**123.62**
1-14	4	5-1/8	1.496	-	-	-	-	123360	**123.62**
1-1/8-7	4	5-7/16	1.732	-	-	-	-	123364	**190.57**
1-1/8-12	4	5-7/16	1.732	-	-	-	-	123365	**202.76**
1-1/4-7	4	5-3/4	1.732	-	-	-	-	123367	**250.04**
1-1/4-12	4	5-3/4	1.732	-	-	-	-	123369	**253.46**
1-3/8-6	4	6-1/16	2.000	-	-	-	-	123371	**315.01**
1-3/8-12	4	6-1/16	2.000	-	-	-	-	123373	**317.35**
1-1/2-6	4	6-3/8	2.000	-	-	-	-	123363	**362.19**
1-1/2-12	4	6-3/8	2.000	-	-	-	-	123375	**370.13**

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	Price $
M2 x 0.4	2	D3	1-3/4	0.433	123502	**13.44**
M2.5 x 0.45	2	D3	1-13/16	0.512	123504	**13.44**
M3 x 0.5	3	D3	1-15/16	0.433	123505	**15.44**
M3.5 x 0.6	3	D4	2	0.512	123506	**13.71**
M4 x 0.7	3	D4	2-1/8	0.512	123507	**13.71**
M4.5 x 0.75	3	D4	2-3/8	0.512	123508	**12.99**
M5 x 0.8	3	D4	2-3/8	0.512	123509	**13.71**
M6 x 1	3	D5	2-1/2	0.630	123510	**13.71**
M7 x 1	3	D5	2-23/32	0.630	123511	**15.44**
M8 x 1	3	D5	2-23/32	0.748	123512	**15.44**
M8 x 1.25	3	D5	2-23/32	0.748	123513	**15.44**
M10 x 1.25	3	D5	2-15/16	0.748	123516	**21.48**
M10 x 1.5	3	D6	2-15/16	0.748	123515	**21.48**
M12 x 1.25	3	D5	3-3/8	0.945	123518	**25.72**
M12 x 1.75	3	D6	3-3/8	0.945	123517	**25.72**
M14 x 1.5	3	D7	3-19/32	0.984	123519	**38.26**

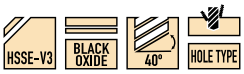
Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	Price $
M14 x 2	3	D6	3-19/32	0.984	123520	**38.26**
M16 x 1.5	3	D6	3-13/16	1.102	123522	**46.47**
M16 x 2	3	D7	3-13/16	1.102	123521	**46.47**
M18 x 1.5	4	D6	4-1/32	1.102	123523	**65.15**
M18 x 2.5	4	D7	4-1/32	1.102	123524	**65.15**
M20 x 1.5	4	D5	4-15/32	1.220	123525	**93.48**
M20 x 2.5	4	D6	4-15/32	1.220	123526	**89.15**
M22 x 1.5	4	D6	4-11/16	1.339	123527	**99.61**
M22 x 2.5	4	D6	4-11/16	1.339	123528	**98.71**
M24 x 1.5	4	D5	4-29/32	1.339	123529	**138.33**
M24 x 3	4	D7	4-29/32	1.339	123530	**131.74**
M27 x 1.5	4	D7	5-1/8	1.181	123531	**226.84**
M27 x 3	4	D7	5-1/8	1.181	123532	**213.22**
M30 x 1.5	4	D7	5-7/16	1.378	123533	**284.14**
M30 x 3.5	4	D7	5-7/16	1.378	123534	**279.72**

Yellow Ring HSSE-V3 Spiral Flute Taps — Black Oxide Finish

HSSE-V3% Vanadium

- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

Designed for high-speed tapping applications. Developed to withstand the high stress and high heat associated with high-speed CNC production tapping. Features a unique free-cutting design with a special tempering and geometry which contributes to extra tool life.



• 2.5 Pitch lead (Bottoming)

Inch

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	H2 Limit Price $	Black Oxide Code No.	H3 Limit Price $	Black Oxide Code No.	H4 Limit Price $
2-56	2	1-3/4	0.433	122500	**27.07**	-	-	-	-
3-48	2	1-13/16	0.512	122502	**21.75**	-	-	-	-
4-40	2	1-7/8	0.433	123362	**17.87**	-	-	-	-
4-40	2	1-7/8	0.433	-	-	122506	**17.87**	-	-
6-32	3	2	0.512	123366	**14.53**	-	-	-	-
8-32	3	2-1/8	0.512	123368	**14.53**	-	-	-	-
10-24	3	2-3/8	0.512	-	-	123370	**14.53**	-	-
10-32	3	2-3/8	0.512	-	-	123382	**14.53**	-	-
1/4-20	3	2-1/2	0.512	-	-	123372	**15.70**	-	-
1/4-28	3	2-1/2	0.512	-	-	123384	**15.70**	-	-
5/16-18	3	2-23/32	0.630	-	-	123374	**19.31**	-	-
5/16-24	3	2-23/32	0.630	-	-	123386	**19.31**	-	-
3/8-16	3	2-15/16	0.748	-	-	123376	**22.47**	-	-
3/8-24	3	2-15/16	0.748	-	-	123388	**22.47**	-	-
7/16-14	3	3-5/32	0.748	-	-	123378	**33.57**	-	-
7/16-20	3	3-5/32	0.748	-	-	123389	**33.57**	-	-
1/2-13	3	3-3/8	0.866	-	-	123380	**39.53**	-	-
1/2-20	3	3-3/8	0.866	-	-	123392	**39.53**	-	-
5/8-11	4	3-13/16	0.945	-	-	123452	**69.66**	-	-
5/8-18	4	3-13/16	0.945	-	-	123462	**69.66**	-	-
3/4-10	4	4-1/4	1.102	-	-	123454	**89.60**	-	-
3/4-16	4	4-1/4	1.102	-	-	123464	**89.60**	-	-
7/8-9	4	4-11/16	1.220	-	-	-	-	123466	**124.62**
7/8-14	4	4-11/16	1.220	-	-	-	-	123468	**130.48**
1-8	4	5-1/8	1.339	-	-	-	-	123469	**166.30**
1-12	4	5-1/8	1.339	-	-	-	-	123470	**174.60**
1-14	4	5-1/8	1.496	-	-	-	-	123465	**173.07**
1-1/8-7	4	5-7/16	1.496	-	-	-	-	123471	**242.27**
1-1/8-12	4	5-7/16	1.496	-	-	-	-	123472	**257.79**
1-1/4-7	4	5-3/4	1.732	-	-	-	-	123473	**318.71**
1-1/4-12	4	5-3/4	1.732	-	-	-	-	123474	**322.77**
1-3/8-6	4	6-1/16	1.732	-	-	-	-	123475	**378.08**
1-3/8-12	4	6-1/16	1.732	-	-	-	-	123476	**380.51**
1-1/2-6	4	6-3/8	2.000	-	-	-	-	123477	**434.83**
1-1/2-12	4	6-3/8	2.000	-	-	-	-	123478	**444.31**

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	Price $
M3 x 0.5	3	D3	1-15/16	0.197	123650	**22.29**
M3.5 x 0.6	3	D4	2	0.236	123651	**20.58**
M4 x 0.7	3	D4	2-1/8	0.276	123652	**20.58**
M5 x .8	3	D4	2-3/8	0.315	123654	**20.58**
M6 x 1	3	D5	2-1/2	0.394	123656	**20.58**
M7 x 1	3	D5	2-23/32	0.394	123657	**22.29**
M8 x 1	3	D5	2-23/32	0.492	123659	**22.29**
M8 x 1.25	3	D5	2-23/32	0.492	123658	**22.29**
M10 x 1.25	3	D5	2-15/16	0.591	123661	**31.41**
M10 x 1.5	3	D6	2-15/16	0.591	123660	**31.41**
M12 x 1.25	3	D5	3-3/8	0.689	123663	**37.90**
M12 x 1.75	3	D6	3-3/8	0.689	123662	**37.90**
M14 x 1.5	3	D6	3-19/32	0.787	123665	**57.12**
M14 x 2	3	D7	3-19/32	0.787	123667	**57.12**

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Black Oxide Code No.	Price $
M16 x 1.5	3	D6	3-13/16	0.787	123668	**67.13**
M16 x 2	3	D7	3-13/16	0.787	123669	**67.13**
M18 x 1.5	4	D6	4-1/32	0.984	123670	**97.09**
M18 x 2.5	4	D7	4-1/32	0.984	123671	**97.09**
M20 x 1.5	4	D5	4-15/32	0.984	123672	**133.72**
M20 x 2.5	4	D6	4-15/32	0.984	123673	**127.41**
M22 x 1.5	4	D6	4-11/16	0.984	123674	**142.84**
M22 x 2.5	4	D6	4-11/16	0.984	123675	**135.98**
M24 x 1.5	4	D5	4-29/32	1.181	123676	**196.17**
M24 x 3	4	D7	4-29/32	1.181	123677	**186.88**
M27 x 1.5	4	D7	5-1/8	1.181	123678	**265.19**
M27 x 3	4	D7	5-1/8	1.181	123679	**249.22**
M30 x 1.5	4	D7	5-7/16	1.378	123680	**312.57**
M30 x 3.5	4	D7	5-7/16	1.378	123681	**307.70**

Yellow Ring HSSE-V3 UN8 DIN Length ANSI Shank Taps

HSSE-V3% Vanadium
- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

HSSE-V3 | BLACK OXIDE | 40° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1-8	4	H7	6.299	1.417	123055	**178.76**
1-1/8-8	4	H9	7.087	1.575	123056	**286.04**
1-1/4-8	4	H9	7.087	1.575	123079	**351.28**
1-3/8-8	5	H9	7.874	1.654	123080	**394.22**
1-1/2-8	5	H9	7.874	1.654	123057	**503.05**
1-3/4-8	6	H9	7.874	1.772	123058	**816.87**
2-8	6	H10	8.858	1.969	123059	**2,638.61**

Yellow Ring HSSE-V3 DIN Length ANSI Shank Spiral Point Taps

HSSE-V3% Vanadium
- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

These taps combine ANSI shank specifications with advantage of DIN lengths for added reach.

HSSE-V3 | BLACK OXIDE | HOLE TYPE

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
10-24	3	H3	2.756	0.591	124820	**10.38**
1/4-20	3	H3	3.150	0.669	124822	**11.46**
5/16-18	3	H3	3.543	0.669	124824	**12.81**
3/8-16	3	H3	3.937	0.787	124826	**23.37**
7/16-14	3	H3	3.937	0.866	124828	**18.86**
1/2-13	3	H3	4.331	0.984	124830	**21.84**
5/8-11	3	H3	4.331	1.063	124832	**39.61**
3/4-10	3	H3	4.921	1.181	124834	**62.08**

Yellow Ring HSSE-V3 DIN Length ANSI Shank Spiral Flute Taps

HSSE-V3% Vanadium
- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

These taps combine ANSI shank specifications with advantage of DIN lengths for added reach.

HSSE-V3 | BLACK OXIDE | 40° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
10-24	3	H3	2.756	0.417	124800	**15.16**
1/4-20	3	H3	3.150	0.500	124802	**16.42**
5/16-18	3	H3	3.543	0.556	124804	**20.13**
3/8-16	3	H3	3.937	0.625	124806	**23.37**
7/16-14	3	H3	3.937	0.714	124808	**34.92**
1/2-13	3	H3	4.331	0.769	124810	**41.15**
5/8-11	4	H3	4.331	0.909	124812	**72.46**
3/4-10	4	H3	4.921	1.000	124814	**93.21**

Yellow Ring 4" & 6" O.A.L. Spiral Point HSSE-V3 Taps — Inch

HSSE-V3% Vanadium
- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

Designed for high-speed tapping applications. Developed to withstand the high stress and high heat associated with high-speed CNC production tapping. Features a unique free-cutting design with a special tempering and geometry which contributes to extra tool life. Designed for long reach applications.

HSSE-V3 | BLACK OXIDE | LONG LENGTH | HOLE TYPE

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	4"	0.433	122700	**44.57**
6-32	3	H3	4"	0.512	122702	**44.57**
8-32	3	H3	4"	0.512	122704	**44.04**
10-24	3	H3	6"	0.512	122706	**48.28**
10-32	3	H3	6"	0.512	122708	**48.28**
1/4-20	3	H3	6"	0.630	122710	**44.49**
1/4-28	3	H3	6"	0.630	122712	**44.49**
5/16-18	3	H3	6"	0.748	122714	**46.30**
5/16-24	3	H3	6"	0.748	122716	**46.30**
3/8-16	3	H3	6"	0.748	122718	**52.07**
3/8-24	3	H3	6"	0.748	122720	**52.07**
7/16-14	3	H3	6"	0.866	122722	**55.32**
7/16-20	3	H3	6"	0.866	122724	**55.32**
1/2-13	3	H3	6"	0.945	122726	**55.77**
1/2-20	3	H3	6"	0.945	122728	**55.77**
5/8-11	3	H3	6"	1.102	122730	**74.53**
3/4-10	3	H3	6"	1.220	122731	**112.16**
7/8-9	3	H4	6"	1.339	122732	**150.60**
1-8	4	H4	6"	1.496	122733	**194.18**

Yellow Ring 4" & 6" O.A.L. Spiral Flute HSSE-V3 Taps — Inch

HSSE-V3% Vanadium
- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

Designed for high-speed tapping applications. Developed to withstand the high stress and high heat associated with high-speed CNC production tapping. Features a unique free-cutting design with a special tempering and geometry which contributes to extra tool life. Designed for long reach applications.

HSSE-V3 | BLACK OXIDE | LONG LENGTH | 40° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	4"	0.433	123060	**51.79**
6-32	3	H3	4"	0.512	123061	**51.79**
8-32	3	H3	4"	0.512	123062	**51.26**
10-24	3	H3	4"	0.512	123063	**48.91**
10-32	3	H3	6"	0.512	123073	**56.04**
1/4-20	3	H3	6"	0.630	123064	**51.62**
1/4-28	3	H3	6"	0.630	123074	**51.62**
5/16-18	3	H3	6"	0.748	123065	**53.96**
5/16-24	3	H3	6"	0.748	123075	**30.78**
3/8-16	3	H3	6"	0.748	123066	**60.55**
3/8-24	3	H3	6"	0.748	123076	**37.45**
7/16-14	3	H3	6"	0.866	123067	**64.16**
7/16-20	3	H3	6"	0.866	123077	**47.83**
1/2-13	3	H3	6"	0.945	123068	**64.88**
1/2-20	3	H3	6"	0.945	123078	**59.29**
5/8-11	4	H3	6"	1.102	123069	**86.62**
3/4-10	4	H3	6"	1.220	123070	**120.91**
7/8-9	4	H4	6"	1.339	123071	**165.58**
1-8	4	H4	6"	1.496	123072	**215.57**

Alloy / High Carbon Steels | Stainless Steel | Aluminum

Yellow Ring HSSE-V3 NPT Spiral Flute Pipe Taps

HSSE-V3% Vanadium

- Superior performance in hardened tool steels such as 4140, 4340, H13, D2
- Up to 35HRC

HSSE-V3 | BLACK OXIDE | 15° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/16-27	4	2-1/8	0.688	123400	**34.65**
1/8-27	4	2-1/8	0.750	123402	**34.65**
1/4-18	4	2-7/16	1.063	123404	**38.17**
3/8-18	4	2-9/16	1.063	123406	**50.53**
1/2-14	4	3-1/8	1.375	123410	**80.30**
3/4-14	5	3-1/4	1.375	123412	**112.16**
1-11-1/2	5	3-3/4	1.750	123414	**170.64**
1-1/4-11-1/2	5	4	1.750	123416	**520.74**
1-1/2-11-1/2	5	4-1/4	1.750	123418	**669.35**
2-11-1/2	5	4-1/2	1.750	123420	**1,115.46**

Orange Ring HSSE-V3 Spiral Flute Taps — Inch

HSSE-V3% Vanadium

- Superior performance in stainless steels
- Up to 35HRC

HSSE-V3 | BLACK OXIDE | 45° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
2-56	2	H2	1-3/4	0.433	124928	**35.29**
3-48	2	H2	1-13/16	0.512	124929	**30.95**
4-40	2	H2	1-7/8	0.250	124965	**25.62**
6-32	3	H2	2	0.313	124966	**20.93**
8-32	3	H2	2-1/8	0.313	124967	**20.85**
10-24	3	H3	2-3/8	0.417	124968	**21.38**
10-32	3	H3	2-3/8	0.417	124979	**21.38**
1/4-20	3	H3	2-1/2	0.500	124969	**23.46**
1/4-28	3	H3	2-1/2	0.500	124980	**23.46**
5/16-18	3	H3	2-23/32	0.556	124970	**26.08**
5/16-24	3	H3	2-23/32	0.556	124981	**26.08**
3/8-16	3	H3	2-15/16	0.625	124971	**29.06**
3/8-24	3	H3	2-15/16	0.625	124982	**29.06**
7/16-14	3	H3	3-5/32	0.714	124972	**37.45**
7/16-20	3	H3	3-5/32	0.714	124964	**37.45**
1/2-13	3	H3	3-3/8	0.769	124973	**44.04**
1/2-20	3	H3	3-3/8	0.769	124983	**44.04**
9/16-12	4	H3	3-19/32	0.880	124974	**71.10**
5/8-11	4	H3	3-13/16	0.909	124975	**83.82**
5/8-18	4	H3	3-13/16	0.909	124984	**83.82**
3/4-10	4	H3	4-1/4	1.000	124976	**107.10**
3/4-16	4	H3	4-1/4	1.000	124985	**107.10**
7/8-9	4	H4	4-11/16	1.111	124977	**144.02**
7/8-14	4	H4	4-11/16	1.111	124986	**144.02**
1-8	4	H4	5-1/8	1.250	124978	**184.98**
1-12	4	H4	5-1/8	1.250	124987	**184.98**

Orange Ring HSSE-V3 Spiral Flute Taps — Metric

HSSE-V3% Vanadium

- Superior performance in stainless steels
- Up to 35HRC

HSSE-V3 | BLACK OXIDE | 45° | HOLE TYPE

• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x 0.5	3	D3	1-15/16	0.197	124988	**25.17**
M4 x 0.7	3	D4	2-1/8	0.276	124989	**24.19**
M5 x 0.8	3	D4	2-3/8	0.315	124990	**24.64**
M6 x 1	3	D5	2-1/2	0.394	124991	**27.17**
M8 x 1.25	3	D5	2-23/32	0.492	124992	**30.23**
M10 x 1.25	3	D5	2-15/16	0.591	124993	**43.04**
M10 x 1.5	3	D6	2-15/16	0.591	124994	**43.04**
M12 x 1.75	3	D6	3-3/8	0.689	124995	**51.26**
M14 x 2	3	D7	3-19/32	0.787	124996	**71.28**
M16 x 2	3	D7	3-13/16	0.787	124997	**48.10**
M18 x 2.5	4	D7	4-1/32	0.984	124998	**104.40**
M20 x 2.5	4	D6	4-15/32	0.984	124999	**107.10**
M22 x 2.5	4	D6	4-11/16	0.984	124943	**125.78**
M24 x 3	4	D7	4-29/32	1.181	124944	**170.00**

Orange Ring HSSE-V3 Spiral Point Taps — Metric

HSSE-V3% Vanadium

- Superior performance in stainless steels
- Up to 35HRC

HSSE-V3 | BLACK OXIDE | HOLE TYPE

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x 0.5	3	D3	1-15/16	0.433	124955	**20.48**
M4 x 0.7	3	D4	2-1/8	0.512	124956	**16.97**
M5 x 0.8	3	D4	2-3/8	0.512	124957	**17.42**
M6 x 1	3	D5	2-1/2	0.630	124958	**19.13**
M8 x 1.25	3	D5	2-23/32	0.748	124959	**20.93**
M10 x 1.25	3	D5	2-15/16	0.748	124960	**30.23**
M10 x 1.5	3	D6	2-15/16	0.748	124961	**30.23**
M12 x 1.75	3	D6	3-3/8	0.945	124962	**34.92**
M14 x 2	3	D6	3-19/32	0.984	124897	**38.00**
M16 x 2	3	D7	3-13/16	1.102	124899	**73.36**
M18 x 2.5	3	D7	4-1/32	1.102	124901	**80.94**
M20 x 2.5	3	D6	4-1/4	1.220	124903	**97.00**
M22 x 2.5	3	D6	4-11/16	1.339	124905	**112.97**
M24 x 3	3	D7	4-29/32	1.339	124907	**151.59**

Orange Ring HSSE-V3 Spiral Point Taps — Inch

HSSE-V3% Vanadium

- Superior performance in stainless steels
- Up to 35HRC

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
2-56	2	H2	1-3/4	0.433	124926	**27.97**
3-48	2	H2	1-13/16	0.512	124927	**23.74**
4-40	2	H2	1-7/8	0.433	124930	**17.69**
6-32	3	H3	2	0.512	124931	**14.89**
8-32	3	H3	2-1/8	0.512	124932	**14.89**
10-24	3	H3	2-3/8	0.512	124933	**15.16**
10-32	3	H3	2-3/8	0.512	124945	**15.16**
1/4-20	3	H3	2-1/2	0.630	124934	**16.52**
1/4-28	3	H3	2-1/2	0.630	124946	**16.52**
5/16-18	3	H3	2-23/32	0.748	124935	**17.95**
5/16-24	3	H3	2-23/32	0.748	124947	**17.95**
3/8-16	3	H3	2-15/16	0.748	124936	**20.21**
3/8-24	3	H3	2-15/16	0.748	124948	**20.21**

HSSE-V3 | BLACK OXIDE | HOLE TYPE

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
7/16-14	3	H3	3-5/32	0.866	124937	**26.08**
7/16-20	3	H3	3-5/32	0.866	124949	**26.08**
1/2-13	3	H3	3-3/8	0.945	124938	**30.50**
1/2-20	3	H3	3-3/8	0.945	124950	**30.50**
5/8-11	3	H3	3-13/16	1.102	124939	**55.85**
5/8-18	3	H3	3-13/16	1.102	124951	**55.85**
3/4-10	3	H3	4-1/4	1.220	124940	**88.43**
3/4-16	3	H3	4-1/4	1.220	124952	**88.43**
7/8-9	3	H4	4-11/16	1.339	124941	**115.22**
7/8-14	3	H4	4-11/16	1.339	124953	**115.22**
1-8	3	H4	5-1/8	1.496	124942	**153.04**
1-12	3	H4	5-1/8	1.496	124954	**153.04**

HSSE — V3 Spiral Flute Taps For Aluminum

Aluminum
High performance taps with special geometries and bright finish for Aluminum.

HSSE-V3 | BRIGHT | 45° | HOLE TYPE

- **2.5 Pitch lead (Bottoming)**

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
Inch						
4-40	2	H2	1-7/8	0.250	124400	**17.79**
6-32	2	H3	2	0.313	124405	**14.22**
8-32	2	H3	2-1/8	0.313	124415	**14.22**
10-24	2	H3	2-3/8	0.417	124420	**14.22**
10-32	2	H3	2-3/8	0.417	124425	**14.22**
1/4-20	2	H3	2-1/2	0.500	124430	**15.40**
1/4-28	2	H3	2-1/2	0.500	124440	**15.40**
5/16-18	2	H3	2-23/32	0.556	124445	**18.81**
5/16-24	2	H3	2-23/32	0.556	124455	**18.81**
3/8-16	2	H3	2-15/16	0.625	124465	**21.96**
3/8-24	2	H3	2-15/16	0.625	124475	**21.96**
Metric						
M3 x 0.5	2	D3	1-15/16	0.197	124600	**21.20**
M4 x 0.7	2	D4	2-1/8	0.276	124605	**19.50**
M5 x 0.8	2	D5	2-3/8	0.315	124610	**19.50**
M6 x 1.0	2	D5	2-1/2	0.394	124615	**19.50**
M8 x 1.25	2	D5	2-23/32	0.492	124620	**21.20**
M10 x 1.25	2	D5	2-15/16	0.591	124625	**29.79**
M10 x 1.5	2	D6	2-15/16	0.591	124630	**29.79**

HSS NPT Taps

Ground thread High Speed Steel pipe taps.

HSS | BRIGHT

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/16-27	4	2-1/8	0.688	123430	**25.03**
1/8-27	4	2-1/8	0.750	123432	**25.03**
1/4-18	4	2-7/16	1.063	123434	**27.67**
3/8-18	4	2-9/16	1.063	123436	**36.60**
1/2-14	4	3-1/8	1.375	123438	**58.14**
3/4-14	5	3-1/4	1.375	123440	**81.21**
1-11-1/2	5	3-3/4	1.750	123442	**123.69**
1-1/4-11-1/2	5	4	1.750	123444	**287.33**
1-1/2-11-1/2	7	4-1/4	1.750	123446	**316.44**
2-11-1/2	7	4-1/2	1.750	123448	**463.24**

HSS 6" OAL NPT Taps

Long series high speed steel pipe taps for longer reach applications.

HSS | BRIGHT

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/16-27	4	6"	0.688	122430	**35.75**
1/4-18	4	6"	1.063	122434	**89.30**
3/8-18	4	6"	1.063	122436	**105.47**
1/2-14	4	6"	1.375	122438	**152.38**

HSS Roll Form Taps

Extended life results from tap geometry that allows optimum cutting performance and close control over tapped hole size. Superior wear resistance, heat treated for toughness.

- Used for thread forming in copper, brass, aluminum, die castings, leaded steels, low carbon steels and stainless steels

PREMIUM HSS | BRIGHT

Tap	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
Inch					
4-40	H5	1-7/8	0.560	124650	**18.38**
6-32	H5	2	0.480	124655	**11.80**
8-32	H5	2-1/8	0.500	124660	**17.90**
10-24	H6	2-3/8	0.640	124665	**12.26**
10-32	H6	2-3/8	0.640	124670	**12.26**
1/4-20	H6	2-1/2	0.830	124675	**12.94**
1/4-28	H6	2-1/2	0.830	124680	**18.32**
5/16-18	H7	2-23/32	0.930	124685	**10.72**
5/16-24	H7	2-23/32	0.930	124690	**10.72**
3/8-16	H7	2-15/16	0.980	124695	**20.41**
3/8-24	H7	2-15/16	0.980	124700	**14.64**
1/2-13	H8	2-23/32	0.930	124705	**52.49**
1/2-20	H8	2-15/16	0.980	124710	**52.49**
Metric					
M3 x 0.5	D5	1-15/16	0.620	124750	**10.98**
M4 x 0.7	D6	2-1/8	0.500	124755	**12.19**
M5 x 0.8	D7	2-3/8	0.640	124760	**12.49**
M6 x 1.0	D8	2-1/2	0.830	124765	**13.18**
M8 x 1.25	D9	2-23/32	0.930	124770	**23.98**
M10 x 1.5	D10	2-15/16	0.980	124775	**19.71**

HSS NPT Interrupted Thread Taps

These taps are designed to produce less cutting pressure in a variety of applications.

HSS | BRIGHT

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/8-27	4	2-1/8	0.750	123700	**38.90**
1/4-18	4	2-7/16	1.063	123702	**43.24**
3/8-18	4	2-9/16	1.063	123704	**54.48**
1/2-14	4	3-1/8	1.375	123706	**87.00**
3/4-14	5	3-1/4	1.375	123708	**123.69**
1-11-1/2	5	3-3/4	1.750	123710	**189.32**

Alloy / High Carbon Steels | Stainless Steel | Aluminum

Hand Taps — Inch

High Speed Steel for hand tapping of through or blind holes in ferrous and non-ferrous alloys.

HSS BRIGHT

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Taper Code No.	Price $	Plug Code No.	Price $	Bottom Code No.	Price $
6-32	3	H3	2	0.688	123032	**5.36**	123034	**5.36**	123036	**5.36**
8-32	4	H3	2-1/8	0.750	123038	**5.53**	123040	**5.53**	123042	**5.53**
10-24	4	H3	2-3/8	0.875	123044	**5.71**	123046	**5.71**	123048	**5.71**
10-32	4	H3	2-3/8	0.875	123104	**5.71**	123106	**5.71**	123108	**5.71**
12-24	4	H3	2-3/8	0.938	123050	**6.04**	123052	**6.04**	123054	**6.04**
1/4-20	4	H3	2-1/2	1.000	123116	**6.13**	123118	**6.13**	123120	**6.13**
1/4-28	4	H3	2-1/2	1.000	123200	**6.13**	123202	**6.13**	123204	**6.13**
5/16-18	4	H3	2-23/32	1.125	123122	**7.49**	123124	**7.49**	123126	**7.49**
5/16-24	4	H3	2-23/32	1.125	123206	**7.49**	123208	**7.49**	123210	**7.49**
3/8-16	4	H3	2-15/16	1.250	123128	**8.51**	123130	**8.51**	123132	**8.51**
3/8-24	4	H3	2-15/16	1.250	123212	**8.51**	123214	**8.51**	123216	**8.51**
7/16-14	4	H3	3-5/32	1.438	123134	**14.55**	123136	**14.55**	123138	**14.55**
7/16-20	4	H3	3-5/32	1.438	123218	**14.55**	123220	**14.55**	123222	**14.55**
1/2-13	4	H3	3-3/8	1.656	123140	**15.32**	123142	**15.32**	123144	**15.32**
1/2-20	4	H3	3-3/8	1.656	123224	**17.20**	123226	**17.20**	123228	**17.20**
9/16-12	4	H3	3-19/32	1.656	123146	**25.54**	123148	**25.54**	123150	**25.54**
9/16-18	4	H3	3-19/32	1.656	123230	**25.54**	123232	**25.54**	123234	**25.54**
5/8-11	4	H3	3-13/16	1.813	123152	**30.65**	123154	**30.65**	123156	**30.65**
5/8-18	4	H3	3-13/16	1.813	123236	**30.65**	123238	**30.65**	123240	**30.65**
3/4-10	4	H3	4-1/4	2.000	123158	**42.91**	123160	**42.91**	123162	**42.91**
3/4-16	4	H3	4-1/4	2.000	123242	**42.91**	123244	**42.91**	123246	**42.91**
7/8-9	4	H4	4-11/16	2.219	123164	**59.84**	123166	**59.84**	123168	**59.84**
7/8-14	4	H4	4-11/16	2.219	123248	**59.84**	123250	**59.84**	123252	**59.84**
1-8	4	H4	5-1/8	2.500	123170	**79.67**	123172	**79.67**	123174	**79.67**
1-12	4	H4	5-1/8	2.500	123254	**82.23**	123256	**82.23**	123258	**82.23**
1-14	4	H4	5-1/8	2.500	123260	**82.23**	123262	**82.23**	123264	**82.23**
1-1/8-7	4	H4	5-7/16	2.562	123176	**128.97**	123178	**128.97**	123180	**128.97**
1-1/8-12	4	H4	5-7/16	2.562	123266	**137.22**	123268	**137.22**	123270	**137.22**
1-1/4-7	4	H4	5-3/4	2.562	123272	**169.23**	123274	**169.23**	123276	**169.23**
1-1/4-12	6	H4	5-3/4	2.562	123536	**171.87**	123538	**171.87**	123540	**171.87**
1-3/8-6	4	H4	6-1/16	3.000	123278	**213.16**	123280	**213.16**	123282	**213.16**
1-3/8-12	6	H4	6-1/16	3.000	123542	**214.52**	123544	**214.52**	123546	**214.52**
1-1/2-6	4	H4	6-3/8	3.000	123284	**245.16**	123286	**245.16**	123288	**245.16**
1-1/2-12	6	H4	6-3/8	3.000	123548	**250.44**	123550	**250.44**	123552	**250.44**

Hand Taps — Metric

High Speed Steel for hand tapping of through or blind holes in ferrous and non-ferrous alloys.

HSS BRIGHT

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Taper Code No.	Price $	Plug Code No.	Price $	Bottom Code No.	Price $
M3 x 0.5	3	D3	1-15/16	5/8	123479	**9.11**	123480	**9.11**	123481	**9.11**
M4 x 0.7	3	D4	2-1/8	3/4	123496	**7.49**	123482	**7.49**	123483	**7.49**
M5 x 0.8	3	D4	2-3/8	7/8	123497	**7.49**	123484	**7.49**	123485	**7.49**
M6 x 1.0	4	D5	2-1/2	1	123498	**7.92**	123486	**7.92**	123487	**7.92**
M8 x 1.25	4	D5	2-23/32	1-1/8	123499	**8.68**	123488	**8.68**	123489	**8.68**
M10 x 1.25	4	D5	2-15/16	1-1/4	123500	**16.35**	123490	**16.35**	123491	**16.35**
M10 x 1.5	4	D6	2-15/16	1-1/4	123501	**16.35**	123492	**16.35**	123493	**16.35**
M12 x 1.75	4	D6	3-3/8	1-21/32	123503	**19.24**	123494	**19.15**	123495	**19.15**
M14 x 2.0	4	D7	3-19/32	1-21/32	123081	**28.60**	123082	**28.60**	123083	**28.60**
M16 x 2.0	4	D7	3-13/16	1-13/16	123084	**34.98**	123085	**34.98**	123086	**34.98**
M18 x 2.5	4	D7	4-1/32	1-13/16	123087	**46.99**	123088	**46.99**	123089	**46.99**
M20 x 2.5	4	D6	4-15/32	2	123090	**64.02**	123091	**64.02**	123092	**64.02**
M22 x 2.5	4	D6	4-11/16	2-7/32	123093	**70.06**	123094	**70.06**	123095	**70.06**
M24 x 3.0	4	D7	4-29/32	2-7/32	123096	**82.57**	123098	**82.57**	123097	**82.57**

Alloy / High Carbon Steels | Stainless Steel | Aluminum

Screw Extractors

Spiral Flute/Straight Flute

- For removing broken screws, studs, pipe fittings, etc., without damaging the threads

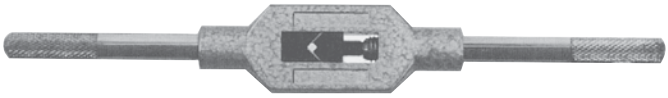
Tap	Drill Size	Screws & Bolts Sizes	Pipe Size	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
1	5/64	3/16 - 1/4	-	110950	**3.57**	110962	**4.31**
2	7/64	1/4 - 5/16	-	110951	**3.79**	110963	**4.68**
3	5/32	5/16 - 7/16	-	110952	**4.71**	110964	**5.27**
4	7/32	7/16 - 9/16	1/8	110953	**5.12**	110965	**5.78**
5	17/64	9/16 - 3/4	1/4	110954	**6.11**	110966	**6.92**
6	13/32	3/4 - 1	3/8	110955	**14.44**	-	**-**
7	17/32	1 - 1-3/8	1/2	110956	**23.20**	-	**-**
8	13/16	1-3/8 - 1-3/4	3/4	110957	**36.46**	-	**-**
9	1-1/16	1-3/4 - 2-1/8	1	110958	**53.81**	-	**-**
10	1-9/32	2-1/8 - 2-1/2	1-1/4	110959	**74.69**	-	**-**
11	1-17/32	2-1/2 - 3	1-1/2	110960	**114.25**	-	**-**
12	1-15/16	3 - 3-1/2	2	110961	**182.31**	-	**-**

Screw Extractor Sets

- For removing broken screws, studs, pipe fittings, etc., without damaging the threads

Description	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
5pc set incl. #1, 2, 3, 4, 5	110967	**23.31**	110969	**26.92**
4pc set incl. #6, 7, 8, 9	110968	**127.87**	-	**-**
9pc set incl. #1 through 9	110970	**151.19**	-	**-**

Adjustable Tap Wrench



Tool No.	For DIN Tap Size	For ANSI Tap	Square	Sq. Max	Length (mm)	Code No.	Price $
130/0	M1-8 1/16-1/4	M6 1/4	2.0-5.0	0.197	130	113717	**21.11**
130/1.5	M1-12 1/16-1/2 NPT-1/8	M10 3/8	2.1-8.0	0.315	176	113794	**22.60**
130/2	M4-12 5/32-1/2 NPT-1/8	M14 9/16	3.0-9.0	0.354	280	113725	**32.86**
130/3	M5-20 7/32-3/4 NPT-1/8-1/2	M18 3/4	4.9-12	0.472	380	113730	**50.77**
130/4	M11-27 7/16-1" NPT-1/4-3/4	M25 1"	5.5-16	0.630	505	113735	**82.67**
130/5L	M13-32 1/2-1-1/4 NPT-1/4-1	M30 1-1/4	7-20	0.787	700	113740	**132.26**

Adjustable Tap Wrench – 'T' Ratchet Type

Tool No.	For DIN Tap Size	For ANSI Tap	Length (mm)	Square	Sq. Max	Code No.	Price $
100/1	M3-10 1/8 - 3/8	M6 1/4	85	2.4-5.5	0.217	113700	**47.40**
100/2	M5-12 7/32 - 1/2	M12 1/2	100	4.5-8.0	0.315	113705	**58.38**
100/10	M3-10 1/8 - 3/8	M6 1/4	250	2.4-5.5	0.217	113710	**76.08**
100/20	M5-12 7/32 - 1/2	M12 1/2	300	4.5-8.0	0.315	113715	**88.09**

Die Stocks

Tool No.	(mm)	(in.)	Length (mm)	Code No.	Price $
13/16	20.6 x 6.35	13/16 x 1/4	200	113750	**15.24**
1	25.4 x 9.5	1 x 3/8	224	113755	**15.86**
1 1/2	38.1 x 12.7	1-1/2 x 1/2	315	113760	**26.80**
2	50.8 x 15.9	2 x 5/8	560	113765	**59.01**

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GS TOOLING

GS Tooling Taper Tension/ Compression Tap Holders

Quickly change your tools in seconds.

See Pages G63-67

Tapping Speed Guide

Tapping Speed Guide
Proper tapping speeds are very important in obtaining efficient tapping results. There are many factors which affect proper tapping speeds, some of which are listed below.

Material Factors:
- Thermo-conductivity of the material and wall thickness as it affects heat dispersion
- Variations in carbon content of steel
- Hard spots in material
- Depth of hole to be tapped
- Percentage of full thread to be tapped

Tap Factors:
- Major diameters, pitch and lead
- Style of tap
- Width of lands
- Amount of hook or rake
- Length of chamfer
- Bottoming taps normally require slower speeds than plug chamfered taps

Materials			Speed Feet/Minute
HSSE-V3			
Stainless Steel	200 Series,	Annealed	20-35
	300 Series, 17-4, 15-5	Annealed	20-35
	AM286	Annealed	15-25
	400 Series	Annealed	20-35
Tool Steels	01, A-2, D-2, H-13, P-20	Annealed	15-25
Medium Carbon	1030, 1035, 1038, 1040, 1045, 1050	Normalized	20-40
Alloyed High Carbon	1065, 1070, 1080, 1090,1095, 1561, 1572	Normalized	20-30
High Strength	4140, 4340	Normalized	20-30
Titanium	Commercially Pure	Annealed	15-30
Aluminum	Cast, Wrought	–	30-90
ALUMINUM			
Aluminum		25-60	
Die Cast Aluminum		30-80	
ROLL FORM			
Steels	Sheet, Low/Medium Carbon/Stainless Steels	Hardened	20-50
Aluminum/Copper	Pure/Low Alloyed		30-60
Aluminum Cast, Copper Alloys	Die Cast, Zinc Die Cast, Brass, Bronze		30-80

Conversion Table, Surface Feet Per Minute to Revolutions Per Minute

Proper tapping speeds are determined best by experiment. In the table below, speeds shown should be used as a guide only, and the suggested surface feet per minute adjusted upward or downward until the best results are obtained.

Surface Feet Per Minute	20	25	30	40	50	60	70	80	90	100	110	120	130	140	150
Tap Size	**RPM**														
0	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	7639	8276	8913	9549
1	1047	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	5279	6808	7326	7849
2	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	3401	5787
4	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
5	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6	553	691	829	1106	1382	1658	1934	2211	2487	2764	3040	3316	3592	3869	4145
8	466	583	699	932	1165	1387	1631	1864	2097	2330	2563	2796	3029	3262	3495
10	402	502	603	804	1005	1208	1406	1607	1808	2009	2210	2411	2612	2813	3014
12	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8	204	255	306	407	509	611	713	845	917	1019	1120	1222	1324	1426	1528
7/16	175	219	262	349	437	524	611	698	786	872	960	1048	1135	1222	1310
1/2	153	191	229	306	382	458	535	611	688	764	840	917	993	1070	1146
9/16	137	172	206	275	344	412	481	550	619	687	756	825	893	963	1031
5/8	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
3/4	102	128	153	203	255	306	357	407	458	509	560	611	662	713	764
7/8	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1	76	96	115	153	191	230	268	306	344	382	420	458	497	535	573

Mechanical Factors:
- Type of tapping machine and holder; speeds for small diameter taps are often governed by the limitations of the machine
- Condition of tapping machine and spindle
- Type of fixture; vertical or horizontal tapping (faster speeds for vertical tapping)
- Method of feeding the tap
- Cutting fluid used and method of application
- The optimum speed for tapping is the highest speed that conditions permit, consistent with economic tool life

ANSI Tap Dimensions

Mach. Screw Size No.	Nominal Fractional Diameter (in.)	Nominal Metric Diameter (mm)	Tap Dimensions — Inches				
			Overall Length	Thread Length	Square Length	Shank Diameter	Size of Square
0	1/16	M1.6	1-5/8	5/16	3/16	0.141	0.110
1		M1.8	1-11/16	3/8	3/16	0.141	0.110
2		M2, M2.2	1-3/4	7/16	3/16	0.141	0.110
3	3/32	M2.5	1-13/16	1/2	3/16	0.141	0.110
4			1-7/8	9/16	3/16	0.141	0.110
5	1/8	M3, M3.15	1-15/16	5/8	3/16	0.141	0.110
6		M3.5	2	11/16	3/16	0.141	0.110
8	5/32	M4	2-1/8	3/4	1/4	0.168	0.131
10	3/16	M4.5, M5	2-3/8	7/8	1/4	0.194	0.152
12	7/32		2-3/8	15/16	9/32	0.220	0.165
14	1/4	M6, M6.3	2-1/2	1	5/16	0.255	0.191
	5/16	M7, M8	2-23/32	1-1/8	3/8	0.318	0.238
	3/8	M10	2-15/16	1-1/4	7/16	0.381	0.286
	7/16		3-5/32	1-7/16	13/32	0.323	0.242
	1/2	M12, 12.5	3-3/8	1-21/32	7/16	0.367	0.275
	9/16	M14	3-19/32	1-21/32	1/2	0.429	0.322
	5/8	M16	3-13/16	1-13/16	9/16	0.480	0.360
	11/16	M18	4-1/32	1-13/16	5/8	0.542	0.406
	3/4		4-1/4	2	11/16	0.590	0.442
	13/16	M20	4-15/32	2	11/16	0.652	0.489
	7/8	M22	4-11/16	2-7/32	3/4	0.697	0.523
	15/16	M24	4-29/32	2-7/32	3/4	0.760	0.570
	1	M25	5-1/8	2-1/2	13/16	0.800	0.600
	1-1/16	M27	5-1/8	2-1/2	7/8	0.895	0.672
	1-1/8		5-7/16	2-9/16	7/8	0.896	0.672
	1-3/16	M30	5-7/16	2-9/16	1	1.021	0.766
	1-1/4		5-3/4	2-9/16	1	1.021	0.766
	1-5/16	M33	5-3/4	2-9/16	1-1/16	1.108	0.831
	1-3/8		6-1/16	3	1-1/16	1.108	0.831
	1-7/16	M36	6-1/16	3	1-1/8	1.233	0.925
	1-1/2		6-3/8	3	1-1/8	1.233	0.925
	1-5/8	M39	6-11/16	3-3/16	1-1/8	1.305	0.979
	1-3/4	M42	7	3-3/16	1-1/4	1.430	1.072
	1-7/8		7-5/16	3-9/16	1-1/4	1.519	1.139
	2	M48	7-5/8	3-9/16	1-3/8	1.644	1.233

Nominal Size Inches	NPT Dimensions — Inches				
	Overall Length	Thread Length	Square Length	Shank Diameter	Size of Square
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

Tap/Drill Chart — Inch

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.

Tap Drill Sizes

Drills generally cut holes larger than their diameters. In the table to the right, the probable percentages of full thread were determined by the average amount oversize the various drills are expected to cut.

SUGGESTED PIPE TAP DRILL SIZES

Tap Size	Pipe Tap Drill Size	
	Taper	Straight
1/16	D	–
1/8	R	S
1/4	7/16	29/64
3/8	37/64	19/32
1/2	23/32	47/64
3/4	59/64	15/16
1	1-5/32	1-3/16
1-1/4	1-1/2	1-33/64
1-1/2	1-47/64	1-3/4
2	2-7/32	2-7/32
2-1/2	2-5/8	–
3	3-1/4	–

* 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 0.444 drill size

TAP/DRILL SELECTION

Tap	Tap Drill	Decimal Equiv. of Tap Drill	Theo. Oversize Mean (%)	Probable Oversize Mean	Probable Hole Size	% of Threads
0-80	56	0.0465	83	0.0015	0.0480	74
	3/64	0.0469	81	0.0015	0.0484	71
1-64	54	0.0550	89	0.0015	0.0565	81
	53	0.0595	67	0.0015	0.0610	59
1-72	53	0.0595	75	0.0015	0.0610	67
	1/16	0.0625	58	0.0015	0.0640	50
5-56	51	0.0670	82	0.0017	0.0687	74
	50	0.0700	69	0.0017	0.0717	62
	49	0.0730	56	0.0017	0.0747	49
2-64	50	0.0700	79	0.0017	0.0717	70
	49	0.0730	64	0.0017	0.0747	56
3-48	48	0.0760	85	0.0019	0.0779	78
	5/64	0.0781	77	0.0019	0.0800	70
	47	0.0785	76	0.0019	0.0801	69
	46	0.0810	67	0.0019	0.0829	60
	45	0.0820	61	0.0019	0.0839	56
3-56	46	0.0810	78	0.0019	0.0829	69
	45	0.0820	73	0.0019	0.0839	65
	44	0.0860	56	0.0020	0.0880	47
4-40	44	0.0860	80	0.0020	0.0880	74
	43	0.0890	71	0.0020	0.0910	65
	42	0.0935	57	0.0020	0.0955	51
	3/32	0.0938	56	0.0020	0.0958	50
4-48	42	0.0935	68	0.0020	0.0955	61
	3/32	0.0938	68	0.0020	0.0958	60
	41	0.0960	59	0.0020	0.0980	52
5-40	40	0.0980	83	0.0023	0.1003	76
	39	0.0995	79	0.0023	0.1018	71
	38	0.1015	72	0.0023	0.1038	65
	37	0.1040	65	0.0023	0.1063	58
5-44	38	0.1015	79	0.0023	0.1038	72
	37	0.1040	71	0.0023	0.1063	63
	36	0.1065	63	0.0023	0.1088	55
6-32	37	0.1040	84	0.0023	0.1063	78
	36	0.1065	78	0.0023	0.1088	72
	7/64	0.1094	70	0.0026	0.1120	64
	35	0.1100	69	0.0026	0.1126	63
	34	0.1110	67	0.0026	0.1136	60
	33	0.1130	62	0.0026	0.1156	55
6-40	34	0.1110	83	0.0026	0.1136	75
	33	0.1130	77	0.0026	0.1156	69
	32	0.1160	68	0.0026	0.1186	60
8-32	29	0.1360	69	0.0029	0.1389	62
	28	0.1405	58	0.0029	0.1434	51
8-36	29	0.1360	78	0.0029	0.1389	70
	28	0.1405	68	0.0029	0.1434	57
	9/64	0.1406	68	0.0029	0.1435	57
10-24	27	0.1440	85	0.0032	0.1472	79
	26	0.1470	79	0.0032	0.1502	74
	25	0.1495	75	0.0032	0.1527	69
	24	0.1520	70	0.0032	0.1552	64
	23	0.1540	67	0.0032	0.1572	61
	5/32	0.1563	62	0.0032	0.1595	56
	22	0.1570	61	0.0032	0.1602	55
10-32	5/32	0.1563	83	0.0032	0.1595	75
	22	0.1570	81	0.0032	0.1602	73
	21	0.1590	76	0.0032	0.1672	64
	20	0.1610	71	0.0032	0.1642	64
	19	0.1660	59	0.0032	0.1692	51
12-24	11/64	0.1719	82	0.0035	0.1754	75
	17	0.1730	79	0.0035	0.1765	73
	16	0.1770	72	0.0035	0.1805	66
	15	0.1800	67	0.0035	0.1835	60
	14	0.1820	63	0.0035	0.1855	56
12-28	16	0.1770	84	0.0035	0.1805	77
	15	0.1800	78	0.0035	0.1835	70
	14	0.1820	73	0.0038	0.1835	66
	13	0.1850	67	0.0035	0.1885	59
	3/16	0.1875	61	0.0035	0.1970	54

Tap/Drill Chart — Inch — Cont'd

Formula: Percentage of Full Thread

Threads Per Inch x $\frac{\text{Major Dia. of Tap - Drill Dia.}}{0.01299}$ = Percentage of Full Thread

Example: Determine percentage of full thread for 2" – 12N Tap, using 1.9219" Drill.

2.0000-1.9219 = 0.0781 ÷ 0.01299 = 6.012
Threads Per Inch = x 12
Theoretical Percentage of Full Threads = 72.144

Formula: Tap Drill Size

Major Dia. of Tap - $\frac{\text{0.1299 x Percent of Full Thread}}{\text{Number of threads Per inch}}$ = Drill Size

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"
Theoretical Drill Size = 1.9242"
Nearest Standard Drill Size 1 59/64 = 1.9219"

	*Deep Hole Tapping	Average Commercial	Thin Sheet Stock or Stamping
FREE CUTTING MATERIAL			
Aluminum Brass Bronze Cast Iron Copper Mild Steel Tool Steel	60%-70%	65%-70%	75%-85%
FREE CUTTING MATERIAL			
Cast Steel Drop Forging Monel Metal Nickel Steel Stainless Steel	55%-65%	65%-70%	

* Sizes given permit direct tapping without reaming the hole, but only give a full thread for the first two or three threads

TAP/DRILL SELECTION

Tap	Tap Drill	Decimal Equiv. of Tap Drill	Theo. Oversize Mean (%)	Probable Oversize Mean	Probable Hole Size	% of Threads
1/4-20	9	0.1960	83	0.0038	0.1998	77
	8	0.1990	79	0.0039	0.2028	73
	7	0.2010	75	0.0038	0.2048	70
	13/64	0.2031	72	0.0038	0.2068	66
	6	0.2040	71	0.0038	0.2078	65
	5	0.2055	69	0.0038	0.2093	63
	4	0.2090	63	0.0038	0.2128	57
1/4-28	3	0.2130	80	0.0038	0.2168	72
	7/32	0.2188	67	0.0038	0.2226	59
	2	0.2210	63	0.0038	0.2248	55
5/16-18	F	0.2570	77	0.0038	0.2608	72
	G	0.2610	71	0.0041	0.2651	66
	17/64	0.2656	65	0.0041	0.2697	59
	H	0.2660	64	0.0041	0.2701	59
5/16-24	H	0.2660	86	0.0041	0.2701	78
	I	0.2720	75	0.0041	0.2761	67
	J	0.2770	66	0.0041	0.2811	58
3/8-16	5/16	0.3125	77	0.0044	0.3169	72
	O	0.3160	73	0.0044	0.3204	68
	P	0.3230	64	0.0044	0.3274	59
3/8-24	21/64	0.3281	87	0.0044	0.3325	79
	Q	0.3320	79	0.0044	0.3364	71
	R	0.3390	67	0.0044	0.3434	58
7/16-14	T	0.3580	86	0.0046	0.3626	81
	23/64	0.3594	84	0.0046	0.3640	79
	U	0.3680	75	0.0046	0.3726	70
	3/8	0.3750	67	0.0046	0.3796	62
	V	0.3770	65	0.0046	0.3816	61
7/16-20	W	0.3860	79	0.0046	0.3906	72
	25/64	0.3906	72	0.0046	0.3952	65
	X	0.3970	62	0.0046	0.4016	55
1/2-13	27/64	0.4219	78	0.0047	0.4266	73
	7/16	0.4375	63	0.0047	0.4422	58
1/2-20	29/64	0.4531	72	0.0047	0.4578	65
9/16-12	15/32	0.4688	87	0.0048	0.4736	82
	31/64	0.4844	72	0.0048	0.4892	68
9/16-18	1/2	0.5000	87	0.0048	0.5048	80
	33/64	0.5156	65	0.0048	0.5204	58
5/8-11	17/32	0.5313	79	0.0049	0.5362	75
	35/64	0.5469	66	0.0049	0.5618	62
5/8-18	9/16	0.5628	87	0.0049	0.5674	80
	37/64	0.5781	65	0.0049	0.5831	58
3/4-10	41/64	0.6406	84	0.0050	0.6456	80
	21/32	0.6563	72	0.0050	0.6613	68
3/4-16	11/16	0.6875	77	0.0050	0.6925	71
7/8-9	49/64	0.7656	76	0.0052	0.7708	72
	25/32	0.7812	65	0.0052	0.7864	61
7/8-14	51/64	0.7969	84	0.0052	0.8021	79
	13/16	0.8125	67	0.0052	0.8177	62
1-8	55/64	0.8594	87	0.0059	0.8653	83
	7/8	0.8750	77	0.0059	0.8809	73
	57/64	0.8906	67	0.0059	0.8965	64
	29/32	0.9063	58	0.0059	0.9122	54
1-12	29/32	0.9063	87	0.0059	0.9122	81
	59/64	0.9219	72	0.0060	0.9279	67
	15/16	0.9375	58	0.0060	0.9435	52
1-14	59/64	0.9219	84	0.0060	0.9279	78
	15/16	0.9375	67	0.0060	0.9435	61
1-1/8-7	31/21	0.9688	84	0.0062	0.9750	81
	63/64	0.9844	76	0.0067	0.9911	72
	1	1.0000	67	0.0070	1.0070	64
	1-1/64	1.0156	59	0.0070	1.0226	55
1-1/8-12	1-1/32	1.0313	87	0.0071	1.0384	80
	1-3/64	1.0469	72	0.0072	1.0541	66
1-1/4-7	1-3/32	1.0938	84	Reaming Recommended		
	1-7/64	1.1094	76			
	1-1/8	1.1250	67			
1-1/4-12	1-5/32	1.1563	87			
	1-11/64	1.1719	72			
1-3/8-6	1-3/16	1.1875	87			
	1-13/64	1.2031	79			
	1-7/32	1.2188	72			
	1-15/64	1.2344	65			
1-3/8-12	1-9/32	1.2813	87			
	1-19/64	1.2969	72			
1-1/2-6	1-5/16	1.3125	87			
	1-21/64	1.3281	79			
	1-11/32	1.3438	72			
	1-23/64	1.3594	65			
1-1/2-12	1-13/32	1.4063	87			
	1-27/64	1.4219	72			

Tap/Drill Chart — Metric

METRIC TAP DRILL SIZES

(Drill sizes based on approximate 72%-77% Full Thread)

Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill	Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill
I.S.O. METRIC COARSE				I.S.O. METRIC FINE			
1.6	0.35mm	1.25mm	3/64	3	0.35mm	2.65mm	37
1.7	0.35mm	1.35mm	55	4	0.35mm	3.65mm	27
1.8	0.35mm	1.45mm	54	4	0.50mm	3.50mm	29
2	0.40mm	1.60mm	1/16	4.5	0.45mm	4.06mm	21
2.2	0.45mm	1.75mm	50	5	0.50mm	4.50mm	16
2.3	0.40mm	1.90mm	49	5	0.70mm	4.30mm	18
2.5	0.45mm	2.05mm	46	5	0.75mm	4.25mm	18
2.6	0.45mm	2.15mm	44	5.5	0.50mm	5.00mm	9
3	0.5mm	2.50mm	40	6	0.50mm	5.50mm	7/32
3.5	0.60mm	2.90mm	33	6	0.75mm	5.25mm	5
4	0.70mm	3.30mm	30	7	0.75mm	6.25mm	D
4.5	0.75mm	3.70mm	27	8	0.50mm	7.50mm	M
5	0.80mm	4.20mm	19	8	1.00mm	7.00mm	J
5.5	0.90mm	4.60mm	15	9	0.50mm	8.50mm	Q
6	1.00mm	5.00mm	9	9	1.00mm	8.00mm	O
7	1.00mm	6.00mm	15/64	10	0.50mm	9.50mm	3/8
8	1.25mm	6.80mm	H	10	0.75mm	9.25mm	U
9	1.25mm	7.80mm	5/16	10	1.00mm	9.00mm	T
10	1.50mm	8.50mm	Q	10	1.25mm	8.75mm	11/32
11	1.50mm	9.50mm	3/8	11	1.00mm	10.00mm	X
12	1.75mm	10.20mm	Y	12	1.00mm	11.00mm	7/16
14	2.00mm	12.00mm	15/32	12	1.25mm	10.75mm	27/64
16	2.00mm	14.00mm	35/64	12	1.50mm	10.50mm	Z
18	2.50mm	15.50mm	39/64	13	1.50mm	11.50mm	29/64
20	2.50mm	17.50mm	11/16	13	1.75mm	11.25mm	7/16
22	2.50mm	19.50mm	49/64	14	1.25mm	12.75mm	1/2
24	3.00mm	21.00mm	53/64	14	1.50mm	12.50mm	31/64
27	3.00mm	24.00mm	61/64	15	1.50mm	13.50mm	17/32
30	3.50mm	26.50mm	1-3/64	16	1.00mm	15.00mm	19/32
33	3.50mm	29.50mm	1-5/32	16	1.25mm	14.75mm	37/64
36	4.00mm	32.00mm	1-1/4	16	1.50mm	14.50mm	9/16
39	4.00mm	35.00mm	1-3/8	18	1.00mm	17.00mm	43/64
				18	1.25mm	16.75mm	21/32
				18	1.50mm	16.50mm	41/64
				18	2.00mm	16.00mm	5/8
				20	1.00mm	19.00mm	3/4
				20	1.50mm	18.50mm	47/64
				20	2.00mm	18.00mm	45/64
				22	1.0mm	21.00mm	53/64
				22	1.50mm	20.50mm	13/16
				22	2.00mm	20.00mm	25/32
				24	1.00mm	23.00mm	29/32
				24	1.50mm	22.50mm	7/8
				24	2.00mm	22.00mm	55/64
				24	2.50mm	21.50mm	27/32

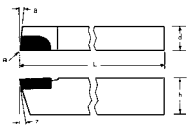
Cutting Tools

Cutting Tools

Brazed Tool Bits D2-3
HSS & Cobalt Tool Bits D3
Cut-Off Blades D3
Precision Boring Heads D4
Corner Rounding End Mills D4
T-Slot Cutters, HSS, Cobalt M42 & M42 Roughers D4
Woodruff Keyseat Cutters D4
Concave & Convex, Shank Type Cutters D4
Dovetail Angular Cutters - 45° & 60° D4-5
Double Angle, Shank Type Cutters D5
Plain & Staggered Tooth Milling Cutters D5-7
Slitting Saws D8
Angle Cutters D9
Concave & Convex Cutters D9
Shell End Mills D9
Heavy Duty Plain Milling Cutters D10
Involute Gear Cutters D10
Screw Slotting Saws D10-11
Carbide Saw Blades D11
Knurling Tools D11

Turning Style "A" Brazed Tools

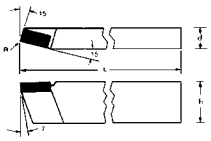
Grade C2 – Cast Iron
Grade C5 – Steel



Tool Right Hand	Tool Left Hand	Shank (d)	Shank (h)	Shank (L)	Nose Radius	R.H. C2 Code No.	Price $	L.H. C2 Code No.	Price $	R.H. C5 Code No.	Price $	L.H. C5 Code No.	Price $
AR4	AL4	1/4	1/4	2	1/64	141500	**6.26**	141600	**2.48**	141700	**2.48**	141800	**2.48**
AR5	AL5	5/16	5/16	2-1/4	1/64	141502	**6.54**	141602	**6.54**	141702	**2.59**	141802	**2.59**
AR6	AL6	3/8	3/8	2-1/2	1/64	141504	**2.59**	141604	**2.59**	141704	**2.59**	141804	**2.59**
AR7	AL7	7/16	7/16	3	1/32	141506	**7.23**	-	-	141706	**7.49**	141806	**7.49**
AR8	AL8	1/2	1/2	3-1/2	1/32	141508	**3.83**	141608	**3.83**	141708	**3.83**	141808	**3.83**
AR10	AL10	5/8	5/8	4	1/32	141510	**6.21**	141610	**6.21**	141710	**6.21**	141810	**6.21**
AR12	AL12	3/4	3/4	4-1/2	1/32	141512	**33.37**	141612	**33.37**	141712	**39.13**	141812	**39.13**

Turning Style "B" Brazed Tools

Grade C2 – Cast Iron
Grade C5 – Steel

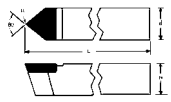


Tool Right Hand	Tool Left Hand	Shank (d)	Shank (h)	Shank (L)	Nose Radius	R.H. C2 Code No.	Price $	L.H. C2 Code No.	Price $	R.H. C5 Code No.	Price $	L.H. C5 Code No.	Price $
BR4	BL4	1/4	1/4	2	1/64	141528	**6.26**	141628	**14.42**	141728	**6.26**	141828	**6.26**
BR5	BL5	5/16	5/16	2-1/4	1/64	141530	**11.60**	141630	**6.54**	141730	**6.54**	-	-
BR6	BL6	3/8	3/8	2-1/2	1/64	141532	**6.94**	141632	**6.94**	141732	**6.94**	141832	**6.94**
BR7	BL7	7/16	7/16	3	1/32	141534	**10.77**	141634	**7.23**	141734	**7.49**	-	-
BR8	BL8	1/2	1/2	3-1/2	1/32	141536	**10.08**	141636	**12.82**	141736	**10.08**	141836	**10.08**
BR10	BL10	5/8	5/8	4	1/32	141538	**15.95**	141638	**15.95**	141738	**15.95**	141838	**15.95**
BR12	BL12	3/4	3/4	4-1/2	1/32	141540	**34.33**	141640	**42.24**	141740	**39.13**	141840	**39.13**

Turning/Facing Style "C" Brazed Tools

Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
C4	1/4	1/4	2	141542	**6.26**	141642	**2.48**
C5	5/16	5/16	2-1/4	141544	**11.31**	141644	**6.54**
C6	3/8	3/8	2-1/2	141546	**6.94**	141646	**2.69**
C7	7/16	7/16	3	141548	**12.12**	141648	**7.49**
C8	1/2	1/2	3-1/2	141550	**10.08**	141650	**4.24**
C10	5/8	5/8	4	141552	**15.95**	141652	**15.95**
C12	3/4	3/4	4-1/2	-	-	141654	**39.13**
C16	1	1	6	141556	**47.40**	141656	**45.22**

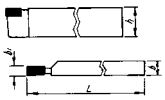
Chamfering Style "D" Brazed Tools



Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
D4	1/4	1/4	2	141558	**6.26**	141658	**6.26**
D5	5/16	5/16	2-1/4	141560	**6.54**	141660	**6.54**
D6	3/8	3/8	2-1/2	141562	**6.94**	141662	**2.69**
D7	7/16	7/16	3	141564	**7.23**	141664	**7.49**
D8	1/2	1/2	3-1/2	141566	**10.08**	141666	**3.73**
D10	5/8	5/8	4	141568	**15.95**	141668	**15.95**
D12	3/4	3/4	4-1/2	141570	**34.33**	141670	**39.13**

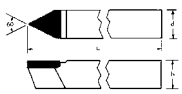
Carbide Tipped Brazed Cut-Off Tools

Grade C2 – Cast Iron
Grade C5 – Steel



Tool Right Hand	Tool Left Hand	Top Width	b	Shank (h)	L	R.H. C2 Code No.	Price $	L.H. C2 Code No.	Price $	R.H. C5 Code No.	Price $	L.H. C5 Code No.	Price $
CTR-11	CTL-11	1/8	1/2	1	5	141585	**28.14**	141685	**27.53**	141785	**27.53**	141885	**27.53**
CTR-22	CTL-22	3/16	1/2	1	5	141586	**27.80**	141686	**27.80**	141786	**27.80**	141886	**27.80**
CTR-33	CTL-33	1/4	1/2	1	5	141587	**28.62**	141687	**29.33**	141787	**28.62**	-	-
CTR-44	CTL-44	5/16	1/2	1	5	141588	**30.52**	141688	**30.52**	141788	**29.33**	141888	**30.52**
CTR-55	CTL-55	3/8	5/8	1-1/4	5	141589	**38.15**	141689	**38.15**	141789	**38.15**	141889	**38.15**

Threading Style "E" Brazed Tools



Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
E4	1/4	1/4	2	-	-	141672	**2.48**
E5	5/16	5/16	2-1/4	141574	**6.36**	141674	**6.54**
E6	3/8	3/8	2-1/2	141576	**6.94**	141676	**2.69**
E8	1/2	1/2	3-1/2	141578	**10.08**	141678	**4.14**
E10	5/8	5/8	4	141580	**15.95**	141680	**15.95**
E12	3/4	3/4	4-1/2	141582	**34.33**	141682	**39.13**

Square Ground Tool Bits — 5% Cobalt

STM PREMIUM

Cobalt HSS ground tool bits exhibit superior performance when cutting forgings, castings and cuts of a heavy nature.

COBALT

Square Size	Overall Length (in.)	5% Cobalt Code No.	Price $
1/8	2-1/2	102000	**3.74**
1/4	2-1/2	102006	**5.57**
1/4	3	102008	**5.62**
1/4	6	102010	**11.02**
5/16	2-1/2	102012	**6.55**
5/16	3	102014	**8.47**
5/16	6	102016	**15.08**
3/8	3	102018	**10.61**
3/8	4	102020	**14.04**
3/8	6	102022	**20.59**
7/16	3-1/2	102024	**15.91**
1/2	4	102026	**22.78**
1/2	6	102028	**33.80**
5/8	4-1/2	102030	**42.13**
5/8	5	102032	**42.64**
5/8	6	102034	**50.96**
3/4	6	102038	**71.66**
7/8	6	102040	**95.78**
1	7	102044	**142.06**

Rectangular Ground Tool Bits

STM PREMIUM

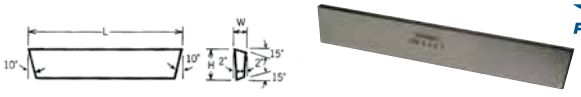
Cobalt HSS ground tool bits exhibit superior performance when cutting forgings, castings and cuts of a heavy nature.

COBALT HSS

Width (in.)	Height (in.)	Length (in.)	HSS Code No.	Price $	5% Cobalt Code No.	Price $
1/4	3/8	2-1/2	-	-	102050	**6.76**
1/4	3/8	3	160305	**9.86**	102052	**8.01**
1/4	1/2	4	160310	**16.03**	102054	**13.31**
1/4	1/2	6	-	-	102056	**19.76**
1/4	3/4	5	160315	**24.63**	102058	**24.02**
1/4	1	6	160320	**37.97**	102060	**37.54**
5/16	1/2	4	-	-	102062	**15.50**
5/16	3/4	5	-	-	102064	**27.87**
5/16	1	6	-	-	102066	**43.37**
3/8	1/2	4	160325	**20.40**	102068	**18.10**
3/8	1/2	6	-	-	102070	**26.73**
3/8	5/8	4	160330	**25.38**	102072	**22.26**
3/8	5/8	5	-	-	102074	**27.46**
3/8	3/4	4	-	-	102076	**26.31**
3/8	3/4	5	160335	**35.91**	102078	**32.55**
3/8	3/4	6	-	-	102080	**38.90**
3/8	1	6	-	-	102082	**50.96**
1/2	3/4	5	-	-	102088	**41.81**
1/2	3/4	6	-	-	102090	**49.92**
1/2	1	7	160345	**79.54**	102092	**75.82**
1/2	1-1/4	7	160350	**98.51**	102094	**94.02**
1/2	1-1/2	7	-	-	102096	**111.80**
5/8	7/8	6	160360	**90.74**	102100	**70.93**
5/8	1	7	160365	**76.98**	102102	**93.08**
5/8	1-1/4	7	160370	**95.10**	-	-
3/4	1	6	160375	**103.12**	102104	**95.26**
3/4	1-1/4	6	160380	**110.77**	102106	**118.04**

Cut-Off Blades — 5% Cobalt

STM PREMIUM



COBALT

Width (in.)	Height (in.)	Length (in.)	5% Cobalt Code No.	Price $
1/8	3/4	5	104378	**20.07**
1/8	3/4	6	104380	**23.71**
1/8	7/8	6	104382	**26.94**
3/16	1	6-1/2	104384	**44.93**
3/16	1	7	104386	**48.36**
1/4	1-1/4	6-1/2	104390	**70.10**

Cut-Off Blades "P" Type (T-Shape) — Cobalt

STM PREMIUM

COBALT

Width (in.)	Height (in.)	Length (in.)	5% Cobalt Code No.	Price $
1/16	1/2	4-1/2	104890	**17.99**
3/32	1/2	4-1/2	104892	**17.99**
3/32	11/16	5	104894	**25.38**
1/8	11/16	5	104896	**50.40**
1/8	3/4	5	104898	**28.39**
5/32	11/16	5	104900	**30.78**
1/8	7/8	6	104902	**36.09**
5/32	7/8	6	104904	**41.81**
3/16	7/8	6	104906	**48.88**
1/4	7/8	6	104908	**61.67**

HSS Round Tool Bits

STM PREMIUM

HSS

Dia.	Length	Code No.	Price $
1/8	2	102110	**0.83**
3/16	2-1/2	102112	**1.14**
1/4	3	102114	**2.81**
5/8	6	102122	**25.17**
3/4	6	102124	**34.63**

HSS Round Tool Bits

STM PREMIUM

HSS

Dia.	Length	Code No.	Price $
1/8	2-3/4	160205	**3.46**
3/16	3-1/2	160210	**4.58**
1/4	4	160215	**5.62**
1/4	8	160255	**11.77**
5/16	4-1/2	160220	**10.27**
5/16	8	160260	**14.88**
3/8	5	160225	**15.13**
7/16	5-1/2	160230	**20.02**
1/2	6	160235	**25.15**
9/16	6	160240	**32.31**
5/8	6	160245	**35.46**
3/4	6	160250	**48.49**

Square Tool Bits

STM PREMIUM

COBALT HSS

Square Size	Overall Length (in.)	HSS Code No.	Price $	5% Cobalt Code No.	Price $
1/8	2-1/2	159002	**4.58**	160103	**7.44**
3/16	2-1/2	159004	**8.77**	160105	**10.53**
1/4	2-1/2	159006	**9.36**	160110	**11.78**
5/16	2-1/2	159008	**9.94**	160115	**13.73**
5/16	3	159010	**11.02**	160117	**14.56**
3/8	3	159012	**14.21**	160120	**16.13**
7/16	4	159014	**14.36**	160125	**27.69**
1/4	4	159016	**12.43**	160127	**15.51**
1/2	4	159018	**22.37**	160130	**28.37**
5/8	5	159020	**32.10**	160135	**52.62**
3/4	5	159022	**47.96**	160140	**76.88**
1/4	6	159024	**18.59**	-	-
5/16	6	159026	**19.29**	-	-
3/8	6	159028	**25.81**	-	-
1/2	6	159030	**33.04**	-	-
7/8	6	159032	**79.30**	160145	**88.32**
1	7	159034	**119.30**	160155	**178.46**
1-1/4	7	159036	**184.73**	160160	**315.55**

Woodruff Keyseat Cutters

1/2" Shank Diameter
- Straight teeth
- Staggered teeth

Model No.	Mill Dia.	Face Width	Overall Length	Straight Teeth Code No.	Price $	Staggered Teeth Code No.	Price $
202	1/4	1/16	2-1/16	125005	**56.35**	125007	**57.62**
202-1/2	5/16	1/16	2-1/16	125010	**56.35**	125012	**54.09**
203	3/8	1/16	2-1/16	125020	**56.35**	125022	**54.09**
204	1/2	1/16	2-1/16	125105	**53.33**	125107	**61.45**
302-1/2	5/16	3/32	2-3/32	125015	**56.35**	125017	**81.08**
303	3/8	3/32	2-3/32	125023	**56.35**	125024	**57.61**
304	1/2	3/32	2-3/32	125110	**51.13**	125112	**73.67**
305	5/8	3/32	2-3/32	125115	**47.51**	125117	**73.67**
403	3/8	1/8	2-1/8	125025	**56.35**	-	**-**
404	1/2	1/8	2-1/8	125120	**51.13**	125122	**61.45**
405	5/8	1/8	2-1/8	125125	**56.07**	125127	**73.67**
406	3/4	1/8	2-1/8	125130	**60.35**	125132	**67.18**
505	5/8	5/32	2-5/32	125135	**56.49**	125137	**50.55**
506	3/4	5/32	2-5/32	125145	**59.42**	125147	**53.96**
507	7/8	5/32	2-5/32	125155	**66.48**	125157	**65.39**
605	5/8	3/16	2-3/16	125140	**54.29**	125142	**43.67**
606	3/4	3/16	2-3/16	125160	**67.13**	125162	**67.18**
607	7/8	3/16	2-3/16	125165	**66.48**	125167	**69.67**
608	1	3/16	2-3/16	125175	**82.76**	125177	**91.63**
609	1-1/8	3/16	2-3/16	125190	**87.17**	125192	**86.06**
610	1-1/4	3/16	2-3/16	125215	**93.31**	125217	**109.94**
707	7/8	7/32	2-7/32	125170	**80.03**	125172	**37.51**
708	1	7/32	2-7/32	125180	**89.25**	125182	**73.29**
709	1-1/8	7/32	2-7/32	125205	**97.43**	125207	**86.04**
710	1-1/4	7/32	2-7/32	125220	**108.96**	125222	**88.02**
806	3/4	1/4	2-1/4	125150	**67.13**	125152	**67.18**
807	7/8	1/4	2-1/4	125195	**67.88**	125197	**98.02**
808	1	1/4	2-1/4	125200	**84.26**	125202	**91.63**
809	1-1/8	1/4	2-1/4	125210	**84.85**	125212	**121.11**
810	1-1/4	1/4	2-1/4	125225	**96.73**	125227	**131.94**
811	1-3/8	1/4	2-1/4	125230	**117.73**	125232	**97.96**
812	1-1/2	1/4	2-1/4	125235	**132.29**	125237	**142.53**
1008	1	5/16	2-5/16	125240	**81.43**	125242	**109.94**
1009	1-1/8	5/16	2-5/16	125245	**103.12**	125247	**121.11**
1010	1-1/4	5/16	2-5/16	125250	**98.41**	125252	**134.62**
1011	1-3/8	5/16	2-5/16	125255	**126.21**	125257	**104.50**
1012	1-1/2	5/16	2-5/16	125260	**132.29**	125262	**121.26**
1208	1	3/8	2-3/8	125185	**87.99**	125187	**109.94**
1210	1-1/4	3/8	2-3/8	125265	**105.18**	125267	**122.48**
1211	1-3/8	3/8	2-3/8	125270	**126.21**	125272	**104.50**
1212	1-1/2	3/8	2-3/8	125275	**135.72**	125277	**149.27**
8 Piece Set: No. 204, 304, 305, 406, 605, 606, 608, 806				125276	**355.41**	125258	**433.67**
9 Piece Set: No. 204, 404, 406, 806, 606, 608, 808, 610, 1210				-	**-**	125259	**581.61**
41 Piece Set: includes all sizes				125279	**2,456.51**	-	**-**

Precision Boring Heads

- Ideal for mill or jig bore operation
- These heads readily adapt to many different machines due to interchangeable shanks

Head Dia.	Hole Size	Offset	Code No.	Price $
2	1/2	1/2	356001	**132.58**
3	3/4	3/4	356002	**176.76**
4	1	1	356003	**278.29**

Corner Rounding End Mills

Radius	Shank Dia.	Largest Dia.	HSS Code No.	Price $	Cobalt Code No.	Price $
1/16	3/8	7/16	136750	**14.75**	122200	**89.25**
3/32	3/8	1/2	136751	**15.49**	122205	**94.01**
1/8	1/2	5/8	136752	**21.85**	122210	**118.35**
5/32	1/2	3/4	136753	**92.12**	122215	**147.00**
3/16	1/2	7/8	136754	**34.44**	122220	**147.52**
3/16	3/4	7/8	136755	**34.44**	122225	**211.03**
1/4	1/2	1	136756	**44.67**	122230	**167.71**
1/4	3/4	1	136757	**40.26**	122235	**192.38**
5/16	1/2	1-1/8	136758	**143.79**	122240	**233.08**
5/16	3/4	1-1/8	-	**-**	122245	**238.63**
5/16	7/8	1-1/8	-	**-**	122250	**184.48**
3/8	1/2	1-1/4	136760	**68.67**	122255	**270.38**
3/8	3/4	1-1/4	-	**-**	122260	**247.33**
3/8	7/8	1-1/4	136761	**32.83**	122265	**287.75**
7/16	3/4	1-3/8	136762	**49.84**	122270	**282.70**
7/16	1	1-3/8	136748	**216.64**	-	**-**
1/2	3/4	1-3/8	-	**-**	122275	**332.95**
1/2	1	1-1/2	136763	**111.62**	122280	**359.78**
5/8	3/4	1-15/16	136765	**163.83**	122285	**522.99**
3/4	3/4	1-7/8	136767	**115.39**	122290	**639.00**

Dovetail Angular Cutters — 45°

- R.H. cut–weldon shank
- 45° angle cutters

HSS COBALT

Dia.	Width	Shank	Length	HSS Code No.	Price $	Cobalt Code No.	Price $
3/8	1/8	3/8	2-1/8	125303	**114.86**	122100	**126.35**
1/2	5/32	3/8	2-1/8	125305	**112.69**	122105	**123.94**
3/4	1/4	3/8	2-1/8	125310	**121.57**	122110	**133.76**
1-3/8	7/16	5/8	2-7/8	125315	**161.78**	122115	**228.18**
1-7/8	9/16	7/8	3-1/4	125320	**276.88**	122120	**480.61**
2-1/4	5/8	1	3-3/4	125325	**336.16**	122125	**612.49**

T-Slot Cutters, HSS, Cobalt M42 and M42 Roughers

M42 HSS COBALT HSS

Bolt Size	Cutter Dia.	Cutter Width	Neck Dia.	Shank Dia.	HSS Code No.	Price $	Cobalt Code No.	Price $	Cobalt Rougher Code No.	Price $
1/4	9/16	15/64	17/64	1/2	120905	**71.62**	122005	**83.84**	-	**-**
5/16	21/32	17/64	21/64	1/2	120910	**77.63**	122010	**142.83**	-	**-**
3/8	25/32	21/64	13/32	3/4	120915	**95.43**	122015	**129.27**	-	**-**
1/2	31/32	25/64	17/32	3/4	120920	**107.64**	-	**-**	-	**-**
5/8	1-1/4	31/64	21/32	1	-	**-**	-	**-**	122065	**301.82**
3/4	1-15/32	5/8	25/32	1	-	**-**	122030	**226.77**	122070	**265.04**
1	1-27/32	53/64	1-1/32	1-1/4	120935	**264.96**	122035	**955.51**	122075	**636.42**
1-1/4	2-7/32	1-3/32	1-9/32	1-1/4	120940	**459.23**	122040	**783.78**	122080	**611.48**
1-1/2	2-21/32	1-11/32	1-17/32	1-1/4	120945	**596.71**	122045	**722.51**	122085	**730.71**

Dovetail Angular Cutters — 60°

- R.H. cut–weldon shank
- 60° angle cutters

HSS COBALT

Dia.	Width	Shank	Length	HSS Code No.	Price $	Cobalt Code No.	Price $
3/8	3/16	3/8	2-1/8	125328	**114.86**	122130	**126.35**
1/2	1/4	3/8	2-1/8	125330	**112.69**	122135	**123.94**
3/4	5/16	3/8	2-1/8	125335	**121.57**	122140	**133.76**
1-3/8	9/16	5/8	2-7/8	125340	**161.78**	122145	**228.18**
1-7/8	13/16	7/8	3-1/4	125345	**276.88**	122150	**399.83**
2-1/4	1-1/16	1	3-3/4	125350	**336.16**	122155	**612.49**

Concave, Shank Type Cutters, HSS

HSS

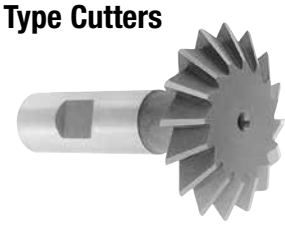
Radius	Shank Dia.	Overall Length	Cutter Dia.	No. Flutes	Code No.	Price $
1/32	1/2	3	3/4	6	126070	**151.47**
1/16	1/2	3	3/4	6	126071	**136.34**
3/32	1/2	3	3/4	6	126072	**121.57**
1/8	3/4	3-1/2	1	6	126073	**166.21**
5/32	3/4	3-1/2	1	6	126074	**185.43**
3/16	3/4	3-1/2	1	6	126075	**174.49**
1/4	3/4	4	1-1/4	4	126076	**221.27**
5/16	3/4	4	1-1/4	4	126077	**275.80**
3/8	3/4	4-3/16	1-1/2	4	126078	**310.94**

Convex, Shank Type Cutters, HSS

HSS

Radius	Shank Dia.	Overall Length	Cutter Dia.	No. Flutes	Code No.	Price $
1/32	1/2	3	3/4	6	126079	**117.97**
1/16	1/2	3	3/4	6	126080	**100.36**
3/32	1/2	3	7/8	6	126081	**106.58**
1/8	3/4	3-1/2	1-1/4	6	126082	**158.74**
5/32	3/4	3-1/2	1-5/16	6	126083	**175.02**
3/16	3/4	3-1/2	1-3/8	6	126084	**183.57**
1/4	3/4	4	1-1/2	6	126085	**213.41**
5/16	3/4	4	1-5/8	6	126086	**290.40**
3/8	3/4	4-3/16	1-3/4	6	126087	**312.90**

Double Angle, Shank Type Cutters



- Right hand cut

HSS

Incl. Angle	Cutter Dia.	Shank Dia.	Overall Length	Cutter Thickness	Code No.	Price $
60°	3/4	3/8	2-3/8	3/16	126088	**89.32**
60°	1	1/2	2-27/32	5/16	126089	**136.90**
60°	1-3/8	5/8	3-7/32	7/16	126090	**180.15**
60°	1-1/2	5/8	3-3/8	1/2	126091	**222.21**
60°	1-7/8	3/4	3-25/32	5/8	126092	**242.02**
60°	2-1/4	7/8	4-5/32	3/4	126093	**276.32**
60°	2-1/4	3/4	3-1/8	1/2	126094	**207.09**
90°	3/4	3/8	2-7/16	1/4	126095	**89.32**
90°	1	1/2	2-29/32	3/8	126096	**136.90**
90°	1-3/8	5/8	3-9/32	1/2	126097	**180.15**
90°	1-1/2	5/8	3-7/16	9/16	126098	**222.21**
90°	1-7/8	3/4	3-25/32	5/8	126099	**258.30**
90°	2-1/4	7/8	4-5/32	3/4	126100	**246.99**

Plain & Staggered Tooth Milling Cutters — HSS

HSS

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg.Tooth Code No.	Price $
2	3/16	1/2	14	125405	**87.44**	-	-	-
2	1/4	1/2	14	125410	**91.67**	-	-	-
2	3/8	1/2	14	125415	**99.11**	-	-	-
2	3/16	5/8	14	125420	**87.19**	-	-	-
2	1/4	5/8	14	125425	**89.85**	-	-	-
2	3/8	5/8	14	125430	**99.66**	-	-	-
2	1/4	7/8	14	125435	**92.22**	-	-	-
2	5/16	7/8	14	125440	**96.45**	-	-	-
2	3/8	7/8	14	125445	**100.64**	-	-	-
2	7/16	7/8	14	125450	**105.18**	-	-	-
2-1/2	3/16	7/8	16	125455	**102.81**	16	130605	**100.12**
2-1/2	1/4	7/8	16	125460	**107.00**	16	130610	**107.52**
2-1/2	5/16	7/8	16	125465	**114.69**	16	130615	**112.83**
2-1/2	3/8	7/8	16	125470	**119.96**	16	130620	**116.50**
2-1/2	7/16	7/8	16	125475	**107.64**	16	130625	**90.87**
2-1/2	1/2	7/8	16	125480	**131.03**	16	130630	**128.94**
2-1/2	3/16	1	16	125485	**101.97**	-	-	-
2-1/2	1/4	1	16	125490	**107.52**	16	130635	**106.76**
2-1/2	5/16	1	16	125495	**113.08**	-	-	-
2-1/2	3/8	1	16	125500	**118.67**	-	-	-
2-1/2	7/16	1	16	125505	**124.47**	16	130640	**121.81**
2-1/2	1/2	1	16	125510	**129.67**	16	130645	**107.70**
2-1/2	5/8	1	16	125515	**141.90**	-	-	-
3	3/16	1	18	125520	**106.48**	16	130650	**112.31**
3	7/32	1	18	125525	**98.51**	16	130655	**116.78**
3	1/4	1	18	125530	**113.85**	16	130660	**172.50**
3	9/32	1	18	125535	**114.69**	16	130665	**123.94**
3	5/16	1	18	125540	**118.67**	16	130670	**123.94**
3	11/32	1	18	125545	**121.81**	-	-	-
3	3/8	1	18	125550	**126.04**	16	130675	**131.31**
3	13/32	1	18	125555	**111.44**	-	-	-
3	7/16	1	18	125560	**114.17**	16	130680	**138.16**
3	1/2	1	18	125565	**136.34**	16	130685	**143.75**
3	9/16	1	18	125570	**127.13**	16	-	-
3	5/8	1	18	125575	**153.78**	16	130695	**161.95**
3	11/16	1	18	125580	**137.46**	16	130700	**146.05**
3	3/4	1	18	125585	**169.64**	-	-	-
3	13/16	1	18	125590	**152.18**	16	130710	**169.08**
3	7/8	1	18	125595	**185.74**	-	-	-
3	15/16	1	18	-	-	16	130720	**214.18**
3	1	1	18	125605	**226.68**	16	130725	**250.47**
3	3/16	1-1/4	-	-	-	16	130730	**112.31**
3	1/4	1-1/4	18	125610	**68.03**	16	130735	**119.96**
3	5/16	1-1/4	18	125615	**118.67**	16	130740	**105.99**
3	3/8	1-1/4	18	125620	**125.48**	16	130745	**129.46**
3	7/16	1-1/4	18	125625	**110.48**	16	130750	**118.27**
3	1/2	1-1/4	18	125630	**138.16**	16	130755	**143.75**
3	9/16	1-1/4	-	-	-	16	130760	**132.01**
3	5/8	1-1/4	18	125635	**132.01**	16	130765	**138.84**
3	11/16	1-1/4	-	-	-	16	130770	**146.46**
3	3/4	1-1/4	18	125640	**146.14**	16	130775	**179.66**
3	13/16	1-1/4	-	-	-	16	130780	**169.08**
3	7/8	1-1/4	18	-	-	16	130785	**173.54**
3	15/16	1-1/4	-	-	-	16	130790	**174.26**
3	1	1-1/4	18	125650	**194.01**	16	130795	**209.34**
3-1/2	3/16	1	20	125655	**136.34**	-	-	-
3-1/2	1/4	1	20	125660	**140.61**	18	130800	**170.96**
3-1/2	5/16	1	20	125665	**151.16**	-	-	-
3-1/2	3/8	1	20	125670	**156.68**	18	130805	**190.77**
3-1/2	7/16	1	20	125675	**153.55**	-	-	-
3-1/2	1/2	1	20	125680	**179.45**	18	130810	**218.79**
3-1/2	5/8	1	20	125685	**207.96**	18	130815	**203.42**
3-1/2	7/16	1-1/4	20	125690	**139.51**	-	-	-
3-1/2	1/2	1-1/4	20	125695	**153.55**	-	-	-
4	3/16	1	-	125700	**155.07**	18	130825	**169.08**
4	7/32	1	22	125705	**158.77**	18	130830	**169.08**
4	1/4	1	22	125710	**166.25**	18	130835	**170.96**
4	9/32	1	22	125715	**165.09**	18	130840	**179.91**
4	5/16	1	22	125720	**172.50**	18	130845	**179.91**
4	11/32	1	22	125725	**176.48**	18	130850	**190.77**
4	3/8	1	22	125730	**181.79**	18	130855	**190.77**
4	7/16	1	22	125735	**199.22**	18	130860	**201.60**
4	13/32	1	22	125740	**194.23**		-	-

Plain & Staggered Tooth Milling Cutters — Cont'd

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg.Tooth Code No.	Price $
4	1/2	1	22	125745	**212.15**	18	130865	**218.79**
4	9/16	1	22	125750	**219.59**	18	130870	**237.55**
4	5/8	1	22	125755	**242.30**	18	130875	**248.90**
4	11/16	1	22	125760	**220.18**	18	130880	**174.26**
4	3/4	1	22	125765	**270.80**	18	130885	**277.41**
4	13/16	1	22	125770	**244.02**	18	130890	**261.13**
4	7/8	1	22	125775	**287.89**	18	130895	**263.09**
4	15/16	1	22	125780	**184.20**	18	130900	**277.81**
4	1	1	22	125785	**331.59**	18	130905	**339.52**
4	3/16	1-1/4	-	-	**-**	18	130910	**169.08**
4	7/32	1-1/4	22	125790	**135.70**	18	130915	**169.08**
4	1/4	1-1/4	22	125795	**169.64**	18	130920	**170.96**
4	9/32	1-1/4	22	125800	**142.51**	18	130925	**179.91**
4	5/16	1-1/4	22	125805	**172.82**	18	130930	**179.91**
4	11/32	1-1/4	22	125810	**150.83**	18	130935	**163.22**
4	3/8	1-1/4	22	125815	**184.94**	18	130940	**190.77**
4	7/16	1-1/4	22	125820	**199.22**	18	130945	**201.60**
4	13/32	1-1/4	22	125825	**139.51**	-	-	**-**
4	1/2	1-1/4	22	125830	**212.43**	18	130950	**218.79**
4	9/16	1-1/4	22	125835	**199.20**	18	130955	**237.55**
4	5/8	1-1/4	22	125840	**243.73**	18	130960	**249.67**
4	11/16	1-1/4	22	125845	**220.44**	18	-	**-**
4	3/4	1-1/4	22	125850	**270.80**	18	130970	**277.41**
4	13/16	1-1/4	22	125855	**181.63**	18	130975	**215.26**
4	7/8	1-1/4	22	125860	**271.82**	18	130980	**295.99**
4	15/16	1-1/4	22	125865	**184.20**	18	130985	**233.52**
4	1	1-1/4	22	125870	**330.26**	18	130990	**343.50**
4	1-1/8	1-1/4	22	125875	**309.54**	18	130995	**311.73**
4	1-3/16	1-1/4	-	-	**-**	18	135105	**327.67**
4	1-1/4	1-1/4	22	125880	**392.37**	18	135110	**441.96**
4	1-1/2	1-1/4	22	125885	**386.12**	18	135115	**475.36**
4-1/2	1/2	1	-	-	**-**	20	135120	**250.82**
4-1/2	3/8	1-1/4	24	125890	**207.22**	-	-	**-**
4-1/2	1/2	1-1/4	24	125895	**207.22**	20	135125	**250.82**
5	1/4	1	24	125900	**233.56**	22	135130	**263.96**
5	9/32	1	24	125905	**233.56**	-	-	**-**
5	5/16	1	24	125910	**233.56**	22	135135	**277.41**
5	11/32	1	24	125915	**207.22**	-	-	**-**
5	3/8	1	24	125920	**242.30**	22	135140	**293.30**
5	13/32	1	24	125925	**233.80**	-	-	**-**
5	7/16	1	24	125930	**238.44**	22	135145	**250.82**
5	1/2	1	24	125935	**298.54**	22	135150	**293.30**
5	9/16	1	-	-	**-**	22	135155	**291.43**
5	5/8	1	24	125945	**347.41**	22	135160	**359.32**
5	11/16	1	24	125950	**320.86**	22	135165	**336.53**
5	3/4	1	24	125955	**392.37**	22	135170	**410.89**
5	13/16	1	24	125960	**211.18**	22	135175	**371.54**
5	7/8	1	24	125965	**280.39**	22	135180	**391.98**
5	15/16	1	24	125970	**280.39**	-	-	**-**
5	1	1	24	125975	**413.50**	-	-	**-**
5	1/4	1-1/4	24	125980	**233.56**	22	135185	**263.96**
5	5/16	1-1/4	24	125985	**233.56**	22	135190	**250.44**
5	11/32	1-1/4	24	125990	**199.74**	-	-	**-**
5	3/8	1-1/4	24	125995	**242.30**	22	135195	**293.30**
5	13/32	1-1/4	24	130105	**231.61**	-	-	**-**
5	7/16	1-1/4	24	130110	**230.39**	22	135200	**293.30**
5	1/2	1-1/4	24	130115	**297.25**	22	135205	**303.82**
5	9/16	1-1/4	24	130120	**295.54**	22	135210	**290.34**
5	5/8	1-1/4	24	130125	**347.41**	22	135215	**360.62**
5	11/16	1-1/4	-	-	**-**	22	135220	**332.16**
5	3/4	1-1/4	24	130135	**394.99**	22	135225	**402.92**
5	13/16	1-1/4	24	130140	**242.92**	-	-	**-**
5	7/8	1-1/4	24	130145	**371.54**	22	135235	**381.76**
5	15/16	1-1/4	24	130150	**243.73**	22	135240	**413.50**
5	1	1-1/4	24	130155	**440.33**	22	135245	**494.06**
5	1-1/4	1-1/4	24	130160	**500.29**	-	-	**-**
6	1/4	1	26	130165	**311.75**	24	135250	**356.67**
6	5/16	1	26	130170	**311.75**	24	135255	**356.67**
6	3/8	1	26	130175	**344.83**	24	135260	**358.00**
6	7/16	1	26	130180	**333.51**	24	135265	**376.51**
6	1/2	1	26	130185	**406.87**	24	135270	**412.18**
6	9/16	1	26	130190	**397.61**	24	135275	**391.98**
6	5/8	1	26	130195	**287.06**	24	135280	**413.50**
6	11/16	1	26	130200	**425.78**	24	135285	**439.39**
6	3/4	1	26	130205	**452.74**	24	135290	**464.05**
6	13/16	1	26	130210	**476.73**	24	135295	**509.28**
6	7/8	1	26	130215	**381.21**	24	135300	**515.95**

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg.Tooth Code No.	Price $
6	15/16	1	26	130220	**535.31**	-	-	**-**
6	1	1	26	130225	**564.46**	24	135305	**585.99**
6	1-1/4	1	26	130230	**433.38**	-	-	**-**
6	1/4	1-1/4	26	130235	**311.75**	24	135310	**356.67**
6	9/32	1-1/4	26	130240	**280.11**	24	135315	**320.44**
6	5/16	1-1/4	26	130245	**266.51**	24	135320	**356.67**
6	11/32	1-1/4	26	130250	**284.85**	-	-	**-**
6	3/8	1-1/4	26	130255	**344.83**	24	135325	**358.00**
6	13/32	1-1/4	26	130260	**309.54**	-	-	**-**
6	7/16	1-1/4	26	130265	**318.55**	24	135330	**376.51**
6	1/2	1-1/4	26	130270	**406.87**	24	135335	**414.80**
6	9/16	1-1/4	26	130275	**380.67**	24	135340	**428.49**
6	5/8	1-1/4	26	130280	**402.19**	24	135345	**484.80**
6	11/16	1-1/4	-	-	**-**	24	135350	**388.43**
6	3/4	1-1/4	26	130290	**452.74**	24	135355	**542.97**
6	13/16	1-1/4	26	130295	**476.73**	24	135360	**509.28**
6	7/8	1-1/4	26	130300	**381.21**	24	135365	**541.26**
6	15/16	1-1/4	26	130305	**331.62**	24	135370	**547.71**
6	1	1-1/4	26	130310	**561.19**	24	135375	**605.32**
6	1-1/8	1-1/4	26	130315	**601.80**	24	135380	**626.73**
6	1-3/16	1-1/4	-	-	**-**	24	135385	**655.06**
6	1-1/4	1-1/4	26	130320	**667.32**	24	135390	**800.53**
6	1-1/2	1-1/4	-	-	**-**	24	135395	**782.46**
6	1	1-1/2	-	-	**-**	24	135400	**432.72**
7	1/4	1-1/4	28	130325	**451.79**	26	135405	**614.30**
7	5/16	1-1/4	28	130330	**464.05**	26	135410	**579.51**
7	3/8	1-1/4	28	130335	**561.52**	26	135415	**571.29**
7	7/16	1-1/4	28	130340	**494.71**	26	135420	**601.80**
7	1/2	1-1/4	28	130345	**344.26**	26	135425	**621.15**
7	9/16	1-1/4	28	130350	**565.84**	26	135430	**643.76**
7	5/8	1-1/4	28	130355	**597.29**	26	135435	**667.32**
7	11/16	1-1/4	28	130360	**629.04**	26	135440	**736.27**
7	3/4	1-1/4	28	130365	**668.43**	26	135445	**736.27**
7	13/16	1-1/4	28	130370	**695.67**	26	135450	**827.55**
7	7/8	1-1/4	28	130375	**740.76**	26	135455	**827.55**
7	15/16	1-1/4	28	130380	**780.14**	26	135460	**904.38**
7	1	1-1/4	28	130385	**826.60**	26	135465	**904.38**
7	3/8	1-1/2	-	-	**-**	26	135470	**519.24**
7	7/16	1-1/2	-	-	**-**	26	135475	**621.15**
7	1/2	1-1/2	-	-	**-**	26	135480	**373.32**
7	5/8	1-1/2	-	-	**-**	26	135485	**606.56**
7	3/4	1-1/2	-	-	**-**	26	135490	**736.27**
7	7/8	1-1/2	-	-	**-**	26	135495	**823.19**
7	1	1-1/2	-	-	**-**	26	135500	**809.30**
8	1/4	1	32	130390	**770.18**	28	135505	**685.46**
8	5/16	1	32	130395	**811.15**	-	-	**-**
8	3/8	1	32	130400	**798.86**	28	135510	**693.35**
8	7/16	1	32	130405	**696.47**	-	-	**-**
8	1/2	1	32	130410	**805.91**	-	-	**-**
8	1/4	1-1/4	32	130415	**774.16**	28	135520	**726.61**
8	5/16	1-1/4	32	130420	**630.82**	28	135525	**763.54**
8	3/8	1-1/4	32	130425	**760.81**	28	-	**-**
8	7/16	1-1/4	32	130430	**766.79**	28	135535	**727.15**
8	1/2	1-1/4	32	130435	**766.79**	28	135540	**850.73**
8	9/16	1-1/4	32	130440	**705.48**	28	135545	**842.27**
8	5/8	1-1/4	32	130445	**936.60**	28	135550	**842.27**
8	11/16	1-1/4	32	130450	**828.78**	28	135555	**833.41**
8	3/4	1-1/4	32	130455	**939.71**	28	135560	**916.79**
8	13/16	1-1/4	32	130460	**700.42**	28	135565	**804.39**
8	7/8	1-1/4	32	130465	**816.79**	28	135570	**1,017.21**
8	15/16	1-1/4	32	130470	**986.83**	28	135575	**1,091.74**
8	1	1-1/4	32	130475	**1,076.54**	28	135580	**1,091.74**
8	1/4	1-1/2	-	-	**-**	28	135585	**491.43**
8	5/16	1-1/2	-	-	**-**	28	135590	**652.63**
8	3/8	1-1/2	-	-	**-**	28	135595	**688.87**
8	7/16	1-1/2	-	-	**-**	28	135600	**727.15**
8	1/2	1-1/2	-	-	**-**	28	135605	**727.15**
8	5/8	1-1/2	-	-	**-**	28	135615	**842.27**
8	11/16	1-1/2	-	-	**-**	28	135620	**916.79**
8	3/4	1-1/2	-	-	**-**	28	135625	**916.79**
8	13/16	1-1/2	-	-	**-**	28	135630	**1,017.21**
8	7/8	1-1/2	-	-	**-**	28	135635	**924.83**
8	15/16	1-1/2	-	-	**-**	28	135640	**1,091.74**
8	1	1-1/2	-	-	**-**	28	135645	**992.55**
8	1-1/8	1-1/2	-	-	**-**	28	135650	**1,164.07**
8	1-1/4	1-1/2	-	-	**-**	28	135655	**1,116.80**
8	1-1/2	1-1/2	-	-	**-**	28	135660	**1,398.81**

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg. Tooth Code No.	Price $
9	1/4	1-1/4	34	130485	**863.79**	-	-	**-**
9	3/8	1-1/4	34	130490	**985.72**	30	135665	**982.64**
9	1/2	1-1/4	34	130495	**1,232.10**	30	135670	**1,091.74**
9	5/8	1-1/4	34	130500	**1,050.31**	30	135675	**1,164.07**
9	3/4	1-1/4	34	130505	**1,224.99**	30	135680	**1,268.98**
9	1	1-1/4	34	130510	**1,243.25**	30	135685	**1,731.81**
9	1/4	1-1/2	-	-	**-**	30	135690	**863.79**
9	3/8	1-1/2	-	-	**-**	30	135695	**883.55**
9	1/2	1-1/2	-	-	**-**	30	135700	**992.55**
9	5/8	1-1/2	-	-	**-**	30	135705	**1,164.07**
9	3/4	1-1/2	-	-	**-**	30	135710	**1,268.98**
9	1	1-1/2	-	-	**-**	30	135715	**1,241.06**
10	3/8	1-1/4	-	-	**-**	32	135720	**1,360.42**
10	5/8	1-1/4	36	130515	**1,284.25**	-	-	**-**
10	3/4	1-1/4	36	130520	**1,719.42**	-	-	**-**
10	13/16	1-1/4	-	-	**-**	32	135725	**1,797.35**
10	1/4	1-1/2	36	130525	**1,148.28**	32	135730	**1,175.38**
10	5/16	1-1/2	36	130530	**1,262.17**	32	135735	**1,286.02**
10	3/8	1-1/2	36	130535	**1,337.94**	32	135740	**1,358.22**
10	7/16	1-1/2	36	130540	**1,472.26**	32	135745	**1,177.83**
10	1/2	1-1/2	36	130545	**1,527.58**	32	135750	**1,543.39**
10	9/16	1-1/2	36	130550	**1,422.39**	32	135755	**1,578.25**
10	5/8	1-1/2	36	130555	**1,624.73**	32	135760	**1,483.29**
10	11/16	1-1/2	36	130560	**1,327.70**	32	135765	**1,689.03**
10	3/4	1-1/2	-	-	**-**	32	135770	**1,722.82**
10	13/16	1-1/2	36	130570	**1,793.94**	32	135775	**1,797.35**
10	7/8	1-1/2	36	130575	**1,868.34**	32	135780	**1,879.63**
10	15/16	1-1/2	36	130580	**1,948.58**	32	135785	**1,782.09**
10	1	1-1/2	36	130585	**1,821.61**	32	135790	**2,053.48**
10	1-1/8	1-1/2	-	-	**-**	32	135800	**1,967.38**
10	1-1/4	1-1/2	36	130590	**2,193.67**	32	135805	**2,431.84**
10	1-1/2	1-1/2	36	130595	**2,252.68**	32	135810	**2,768.23**

Plain Tooth Slitting Saws

STM

HSS

- Plain tooth with side chip clearance

Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
2	22	1/16	5/8	135870	**103.47**
2	22	5/64	5/8	135871	**90.23**
2	22	3/32	5/8	135872	**90.23**
2	22	1/8	5/8	135874	**91.35**
2	22	5/32	5/8	135877	**94.63**
2-1/2	28	1/16	7/8	135878	**109.76**
2-1/2	28	1/16	1	135879	**104.77**
2-1/2	28	5/64	7/8	135880	**82.43**
2-1/2	28	3/32	7/8	135900	**106.06**
2-1/2	28	3/32	1	135901	**105.95**
2-1/2	28	7/64	7/8	135902	**72.46**
2-1/2	28	1/8	7/8	135905	**108.19**
2-1/2	28	1/8	1	135903	**108.08**
2-1/2	28	9/64	7/8	135904	**74.12**
2-1/2	28	11/64	7/8	135907	**74.12**
3	32	1/16	1	135911	**120.62**
3	32	5/64	1	135906	**120.62**
3	32	3/32	1	135910	**120.00**
3	32	7/64	1	135912	**121.74**
3	32	7/64	1-1/4	135914	**79.30**
3	32	1/8	1	135915	**122.13**
3	32	9/64	1	135917	**125.34**
3	32	9/64	1-1/4	135916	**108.72**
3	32	5/32	1	135920	**128.00**
3	32	11/64	1	135921	**112.70**
3	32	11/64	1-1/4	135922	**94.96**
3	32	3/16	1	135925	**136.55**
3	32	3/16	1-1/4	135926	**116.21**
3	32	7/32	1	135927	**140.26**
3	32	7/32	1-1/4	135928	**79.30**
3	32	1/4	1	135929	**145.60**
3	32	1/4	1-1/4	135931	**124.25**

Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
4	36	1/16	1	135933	**188.01**
4	36	1/16	1-1/4	135934	**184.80**
4	36	5/64	1	135936	**167.37**
4	36	3/32	1	135930	**171.35**
4	36	3/32	1-1/4	135938	**169.39**
4	36	7/64	1	135932	**169.88**
4	36	7/64	1-1/4	135939	**81.07**
4	36	1/8	1	135935	**169.88**
4	36	1/8	1-1/4	135941	**169.88**
4	36	9/64	1	135937	**174.21**
4	36	9/64	1-1/4	135942	**155.05**
4	36	5/32	1	135940	**181.16**
4	36	5/32	1-1/4	135943	**174.74**
4	36	11/64	1	135944	**160.72**
4	36	11/64	1-1/4	135946	**127.39**
4	36	3/16	1	135945	**191.64**
4	36	3/16	1-1/4	135947	**190.07**
4	36	7/32	1	135948	**166.81**
4	36	7/32	1-1/4	135949	**166.75**
4	36	1/4	1	135951	**204.95**
4	36	1/4	1-1/4	135953	**205.90**
5	40	1/16	1	135954	**225.15**
5	40	1/16	1-1/4	135956	**212.54**
5	40	3/32	1	135950	**225.15**
5	40	3/32	1-1/4	135952	**197.29**
5	40	7/64	1	135957	**230.80**
5	40	7/16	1-1/4	135958	**110.23**
5	40	1/8	1	135955	**230.46**
5	40	1/8	1-1/4	135960	**238.73**
5	40	9/64	1	135959	**224.37**
5	40	9/64	1-1/4	135961	**209.82**
5	40	5/32	1	135970	**252.39**
5	40	5/32	1-1/4	135965	**255.75**
5	40	11/64	1	135962	**218.27**
5	40	11/64	1-1/4	135963	**153.41**
5	40	3/16	1	135975	**262.73**
5	40	3/16	1-1/4	135977	**262.98**
5	40	7/32	1	135964	**272.03**
5	40	7/32	1-1/4	135966	**269.48**
5	40	1/4	1	135967	**282.58**
5	40	1/4	1-1/4	135968	**242.43**
6	42	1/16	1	135969	**316.36**
6	42	1/16	1-1/4	135971	**285.71**
6	42	3/32	1	135972	**295.36**
6	42	3/32	1-1/4	135973	**294.98**
6	42	7/64	1	135974	**256.01**
6	42	7/64	1-1/4	135976	**230.39**
6	42	1/8	1	135980	**305.35**
6	42	1/8	1-1/4	135985	**305.46**
6	42	9/64	1	135986	**264.59**
6	42	9/64	1-1/4	135987	**259.68**
6	42	5/32	1	135988	**328.58**
6	42	5/32	1-1/4	135989	**275.09**
6	42	11/64	1	135991	**259.68**
6	42	11/64	1-1/4	135992	**259.68**
6	42	3/16	1	135990	**336.55**
6	42	3/16	1-1/4	135995	**336.55**
6	42	1/4	1	135993	**350.56**
6	42	1/4	1-1/4	135994	**192.77**
8	48	1/8	1	135857	**322.14**
8	48	1/8	1-1/4	135996	**640.54**
8	48	3/16	1-1/4	135997	**640.54**
8	48	1/4	1-1/4	135998	**562.82**
10	50	3/16	1-1/4	135863	**884.50**
10	50	3/16	1-1/2	135864	**884.50**
10	50	1/4	1-1/2	135866	**662.43**

Staggered Tooth Slitting Saws

- Staggered tooth with side chip clearance

HSS

Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
3	32	1/16	1	138900	**181.62**
3	32	1/16	1-1/4	138901	**151.17**
3	32	5/64	1	138902	**166.25**
3	32	5/64	1-1/4	138903	**132.80**
3	32	3/32	1	138904	**166.25**
3	32	3/32	1-1/4	138905	**149.38**
3	32	7/64	1	138906	**169.01**
3	32	1/8	1	140102	**169.01**
3	32	9/64	1	138909	**171.84**
3	32	9/64	1-1/4	138910	**137.28**
3	32	5/32	1	140103	**175.05**
3	32	5/32	1-1/4	138911	**139.93**
3	32	11/64	1	138912	**109.57**
3	32	3/16	1	140105	**160.13**
3	32	3/16	1-1/4	138914	**138.85**
3	32	7/32	1	138915	**142.22**
3	32	1/4	1	140106	**171.10**
4	34	1/16	1	138917	**234.09**
4	34	1/16	1-1/4	138918	**210.58**
4	34	5/64	1	138919	**215.15**
4	34	5/64	1-1/4	138920	**172.15**
4	34	3/32	1	138921	**219.42**
4	34	3/32	1-1/4	139922	**155.07**
4	34	7/64	1	139923	**224.80**
4	34	7/64	1-1/4	139924	**108.56**
4	34	1/8	1	139925	**223.22**
4	34	1/8	1-1/4	139926	**221.65**
4	34	9/64	1	140107	**228.71**
4	34	9/64	1-1/4	139927	**183.05**
4	34	5/32	1	140108	**233.63**
4	34	5/32	1-1/4	139928	**231.33**
4	34	11/64	1-1/4	139930	**123.75**
4	34	3/16	1	140110	**238.14**
4	34	3/16	1-1/4	139931	**217.29**
4	34	7/32	1	139932	**200.88**
4	34	1/4	1	140111	**209.32**
4	34	1/4	1-1/4	140112	**233.21**
5	38	3/32	1	139934	**286.87**
5	38	1/8	1	139935	**295.22**
5	38	1/8	1-1/4	140113	**294.98**
5	38	9/64	1	139937	**152.33**
5	38	9/64	1-1/4	139938	**152.33**
5	38	5/32	1	139939	**304.09**
5	38	5/32	1-1/4	139940	**179.07**
5	38	11/64	1	140114	**161.76**
5	38	11/64	1-1/4	139941	**165.73**
5	38	3/16	1	140115	**315.62**
5	38	3/16	1-1/4	140117	**314.78**
5	38	1/4	1	140120	**322.57**
5	38	1/4	1-1/4	139942	**313.88**
6	42	1/8	1	139943	**373.93**
6	42	1/8	1-1/4	140121	**358.73**
6	42	9/64	1	139944	**178.91**
6	42	5/32	1	139946	**382.52**
6	42	5/32	1-1/4	140122	**347.01**
6	42	11/64	1	139947	**315.58**
6	42	3/16	1	140125	**400.06**
6	42	3/16	1-1/4	140130	**402.78**
6	42	1/4	1	140135	**414.87**
6	42	1/4	1-1/4	140140	**411.37**
7	46	1/8	1	139949	**487.11**
7	46	3/16	1-1/4	139952	**582.62**
8	50	3/16	1	139953	**584.41**
8	50	3/16	1-1/4	140145	**699.89**
8	50	1/4	1-1/4	140150	**724.10**
10	60	3/16	1-1/4	139954	**1,137.67**
10	60	1/4	1-1/4	140155	**1,191.12**

Plain Metal Slitting Saws

HSS

Dia.	No. of Teeth	Face Width	Hole Size	Code No.	Price $
1-3/4	28	1/32	1/2	139150	**40.73**
2	28	3/32	1/2	139152	**40.73**
2	28	1/16	1/2	136001	**36.02**
2	28	1/8	1/2	139164	**40.73**
2-1/2	28	3/64	3/8	136003	**40.73**
2-1/2	28	1/32	3/8	139153	**40.73**
2-1/2	28	1/32	7/8	136004	**40.73**
2-1/2	28	3/64	7/8	136005	**40.73**
2-1/2	28	1/16	7/8	136006	**40.73**
2-1/2	28	3/32	7/8	139154	**40.73**
2-1/2	28	1/8	7/8	136007	**40.73**
2-1/2	28	1/16	1	136008	**40.73**
3	30	1/64	1	136009	**75.91**
3	30	1/32	1	136010	**44.54**
3	30	3/64	1	136011	**44.54**
3	30	1/16	1	136012	**47.30**
3	30	5/64	1	136013	**47.30**
3	30	3/32	1	136014	**47.30**
3	30	7/64	1	136015	**48.70**
3	30	1/8	1	136016	**48.70**
3	30	9/64	1	136017	**50.65**
3	30	5/32	1	136018	**50.65**
3	30	3/16	1	136019	**54.78**
3-1/2	30	1/32	1	136020	**63.26**
3-1/2	30	3/64	1	136021	**65.47**
3-1/2	30	1/16	1	136022	**65.47**
3-1/2	30	3/32	1	136023	**69.06**
3-1/2	30	1/8	1	136024	**72.91**
3-1/2	36	1/8	1	139155	**72.91**
3-1/2	30	9/64	1	139156	**68.28**
3-1/2	30	3/16	1	136027	**79.79**
4	36	1/64	1	136028	**103.40**
4	36	1/32	1	136029	**63.26**
4	36	3/64	1	136030	**65.47**
4	36	1/16	1	136031	**65.47**
4	36	5/64	1	136032	**69.06**
4	36	3/32	1	136033	**69.06**
4	36	7/64	1	136034	**72.91**
4	36	1/8	1	136035	**72.91**
4	36	9/64	1	136036	**75.67**
4	36	5/32	1	136037	**75.67**
4	36	3/16	1	136038	**79.79**
4-1/2	36	1/32	1	136039	**103.40**
4-1/2	36	3/64	1	136040	**87.47**
4-1/2	36	1/16	1	136041	**87.47**
4-1/2	36	3/32	1	136042	**95.51**
4-1/2	36	1/8	1	136043	**99.56**
5	40	3/64	1	136044	**87.47**
5	40	1/16	1	136045	**87.47**
5	40	5/64	1	136046	**92.71**
5	40	3/32	1	136047	**95.51**
5	40	7/64	1	136048	**90.20**
5	40	1/8	1	136049	**99.56**
5	40	9/64	1	136050	**105.64**
5	40	5/32	1	136051	**105.64**
5	40	3/16	1	136052	**111.93**
5	40	1/16	1-1/4	136053	**87.47**
5	40	3/32	1-1/4	136054	**95.51**
5	40	1/8	1-1/4	136055	**99.56**
5	40	5/32	1-1/4	136056	**100.61**
5	42	3/16	1-1/4	136057	**111.93**
6	42	3/64	1	136058	**130.13**
6	42	1/16	1	136059	**114.44**
6	42	5/64	1	136060	**121.57**
6	42	3/32	1	136061	**132.33**
6	42	7/64	1	136062	**140.47**
6	42	1/8	1	136063	**136.73**
6	42	9/64	1	136064	**138.86**
6	42	5/32	1	136065	**159.30**
6	42	3/16	1	136066	**163.42**
6	42	1/16	1-1/4	136067	**114.44**
6	42	3/32	1-1/4	136068	**120.91**
6	42	1/8	1-1/4	136069	**136.73**
6	42	5/32	1-1/4	136070	**143.47**
6	42	3/16	1-1/4	136071	**186.43**
8	48	3/32	1	139159	**257.49**
8	48	1/8	1	136072	**287.47**
8	48	3/16	1	136073	**323.24**
8	48	3/32	1-1/4	136074	**257.49**
8	48	1/8	1-1/4	136075	**287.47**
8	48	3/16	1-1/4	136076	**323.24**
10	56	3/32	1-1/4	139162	**404.74**
10	56	1/8	1-1/4	136077	**424.96**
10	56	3/16	1-1/4	136078	**513.07**
10	62	1/4	1-1/4	139163	**513.07**

Single Angle Cutters

- Right hand and left hand
- 45° and 60° angles

Dia.	Face Width	No. of Teeth	Hole Size	Angle	Right Code No.	Price $	Left Code No.	Price $
2-1/2	1/2	18	7/8	45°	136550	**200.94**	136583	**246.39**
2-1/2	1/2	18	7/8	60°	136551	**158.26**	136584	**228.29**
2-3/4	1/2	18	1	45°	136552	**187.73**	136585	**202.03**
2-3/4	1/2	18	1	60°	136553	**188.92**	136586	**183.54**
3	1/2	22	1	45°	136554	**205.37**	136587	**206.22**
3	1/2	22	1	60°	136555	**227.38**	136588	**222.11**
3	1/2	22	1-1/4	45°	136556	**245.97**	136589	**205.45**
3	1/2	22	1-1/4	60°	136557	**197.74**	136590	**101.23**
3	5/8	22	1	45°	136558	**326.28**	136591	**214.23**
3	5/8	22	1	60°	136559	**292.79**	136592	**167.45**
3	5/8	22	1-1/4	45°	136560	**280.65**	136593	**184.06**
3	5/8	22	1-1/4	60°	136561	**270.33**	136594	**184.06**
3	3/4	22	1	45°	136562	**346.47**	136595	**286.72**
3	3/4	22	1	60°	136563	**311.28**	136596	**311.99**
3	3/4	22	1-1/4	60°	136564	**328.55**	136597	**327.15**
4	1/2	26	1	45°	136565	**445.71**	136598	**356.95**
4	1/2	26	1	60°	136566	**445.71**	136599	**237.20**
4	1/2	26	1-1/4	45°	136567	**261.05**	136600	**356.95**
4	1/2	26	1-1/4	60°	136568	**358.81**	136601	**261.05**
4	3/4	26	1	45°	136569	**528.19**	136602	**416.16**
4	3/4	26	1	60°	136570	**528.19**	136603	**449.45**
4	3/4	26	1-1/4	45°	136571	**474.55**	136604	**500.28**
4	3/4	26	1-1/4	60°	136572	**439.39**	136605	**416.16**
4	1	26	1-1/4	45°	136573	**522.95**	136606	**458.62**
4	1	26	1-1/4	60°	136574	**522.95**	136607	**458.62**
5	3/4	28	1-1/4	45°	136575	**375.63**	136608	**520.57**
5	3/4	28	1-1/4	60°	136576	**532.79**	136609	**504.60**
5	1	28	1-1/4	45°	136577	**766.23**	136610	**684.66**
5	1	28	1-1/4	60°	136578	**637.44**	136611	**603.76**
6	3/4	30	1-1/4	45°	136579	**812.58**	136612	**589.39**
6	3/4	30	1-1/4	60°	136580	**589.39**	136613	**671.44**
6	1	30	1-1/4	45°	136581	**792.86**	136614	**792.86**
6	1	30	1-1/4	60°	136582	**792.86**	136615	**739.54**

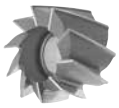
Convex Cutters

Circle Dia.	Cutter Dia.	Hole Size	No. of Teeth	Code No.	Price $
1/16	2-1/4	1	14	136700	**173.79**
3/32	2-1/4	1	14	136702	**170.93**
1/8	2	7/8	14	136703	**167.58**
1/8	2-1/4	1	14	136704	**172.36**
5/32	2-1/4	1	14	136705	**176.41**
3/16	2	7/8	14	136706	**73.76**
3/16	2-1/4	1	14	136707	**152.48**
7/32	2-1/4	1	14	136708	**146.55**
1/4	2	7/8	14	136709	**158.25**
1/4	2-1/4	1	14	136710	**179.28**
1/4	2-1/2	1	14	136711	**155.07**
9/32	2-1/2	1	14	136712	**184.76**
11/32	2-3/4	1	12	136714	**213.58**
3/8	2-1/4	7/8	12	136715	**379.34**
3/8	2-3/4	1	12	136716	**192.80**
3/32	2-3/4	1	12	136717	**223.36**
7/16	3	1	12	136718	**353.07**
1/2	2-1/4	7/8	12	136719	**154.32**
1/2	3	1	12	136720	**215.92**
9/16	2-3/4	1	12	136721	**311.72**
9/16	3	1	12	136722	**267.35**
5/8	2-3/4	1	12	136723	**304.09**
5/8	3	1	12	136724	**315.59**
5/8	3-1/2	1-1/4	12	136725	**331.48**
11/16	3	1	12	136726	**338.68**
3/4	3	1	12	136727	**243.38**
3/4	3-3/4	1-1/4	12	136728	**374.69**
7/8	3-1/4	1	12	136730	**412.18**
7/8	4	1-1/4	12	136731	**485.36**
15/16	3-1/2	1	12	136732	**313.09**
1	3-1/4	1	12	136733	**440.96**
1	4-1/4	1-1/4	12	136734	**559.14**
1-1/8	4	1-1/4	12	136735	**633.18**
1-1/4	4	1-1/4	12	136736	**704.75**
1-3/8	4-1/4	1-1/4	12	136737	**757.28**
1-1/2	4-1/4	1-1/4	12	136738	**796.32**
1-5/8	5-1/2	1-1/4	12	136739	**1,145.92**
1-3/4	5-1/2	1-1/4	12	136740	**840.64**
1-7/8	6	1-1/2	12	136741	**916.52**
2	6	1-1/2	12	136742	**1,107.63**

Concave Cutters

Circle Dia.	Cutter Dia.	Hole Size	No. of Teeth	Code No.	Price $
1/16	2-1/4	1	14	136655	**127.58**
3/32	2-1/4	1	14	136656	**89.92**
1/8	2-1/4	1	14	136657	**132.01**
5/32	2-1/4	1	14	136658	**228.92**
3/16	2-1/4	1	14	136659	**201.50**
7/32	2-1/4	1	14	136660	**233.60**
1/4	2-1/2	1	12	136661	**183.33**
9/32	2-1/2	1	12	136662	**256.13**
5/16	2-3/4	1	12	136663	**195.80**
11/32	2-3/4	1	12	136664	**198.74**
3/8	2-3/4	1	12	136665	**214.74**
13/32	2-3/4	1	12	136666	**157.93**
7/16	3	1	12	136667	**288.23**
1/2	2-1/4	7/8	12	136668	**354.78**
1/2	3	1	12	136669	**256.55**
9/16	3	1	12	136671	**293.93**
5/8	2-3/4	1	12	136672	**478.45**
5/8	3	1	12	136673	**268.56**
5/8	3-1/2	1-1/4	12	136674	**413.61**
11/16	3	1	12	136675	**248.25**
3/4	3	1	12	136676	**433.77**
3/4	3-3/4	1-1/4	12	136677	**405.23**
13/16	3-1/4	1-1/4	12	136679	**309.30**
7/8	3-1/4	1	12	136680	**517.61**
7/8	4	1-1/4	12	136681	**303.15**
15/16	3-1/2	1	10	136682	**369.08**
1	3-1/4	1	10	136683	**583.67**
1	4-1/4	1-1/4	10	136684	**687.42**
1-1/16	4	1-1/4	10	136685	**703.21**
1-1/8	4	1-1/4	10	136686	**585.72**
1-3/16	3-1/4	1	10	136687	**585.72**
1-1/4	4	1-1/4	10	136688	**1,115.46**
1-3/8	4-1/4	1-1/4	10	136689	**697.44**
1-1/2	4-1/4	1-1/4	10	136690	**892.00**
1-5/8	5-1/2	1-1/4	10	136691	**853.98**
1-3/4	5-1/2	1-1/4	10	136692	**1,894.28**
1-7/8	6	1-1/2	10	136693	**1,102.08**
2	6	1-1/2	10	136694	**1,475.48**

Shell End Mills



- Right hand

Mill Dia.	Hole Size	Length of Cut	No. of Teeth	Right Code No.	Price $
1-1/4	1/2	1	8	140160	**112.97**
1-1/2	1/2	1-1/8	8	140162	**123.56**
1-3/4	3/4	1-1/4	8	140164	**139.63**
2	3/4	1-3/8	10	140166	**177.92**
2-1/4	1	1-1/2	10	140168	**202.30**
2-1/2	1	1-5/8	10	140170	**272.62**
2-3/4	1	1-5/8	10	140172	**303.75**
3	1-1/4	1-3/4	10	140174	**358.24**
3-1/2	1-1/4	1-7/8	12	140176	**462.59**
4	1-1/2	2-1/4	14	140178	**724.97**
4-1/2	1-1/2	2-1/4	14	140180	**488.98**
5	1-1/2	2-1/4	16	140182	**1,257.77**
5-1/2	2	2-1/4	16	140184	**1,301.68**
6	2	2-1/4	16	140186	**1,448.70**

Heavy Duty Plain Milling Cutters

- Right hand

HSS

Mill Dia.	Hole Size	Length of Cut	No. of Teeth	Right Code No.	Price $
3	1-1/4	1-1/4	8	140215	**198.67**
4	1-1/2	2	10	140245	**372.77**
4	1-1/2	3	10	140250	**549.89**
4-1/2	2	6	10	140265	**1,567.77**

Involute Gear Cutters

Used to mill spur gears having a 14-1/2° pressure angle. For each diametral pitch priced, 8 cutters are required to produce a full set of gears from 12 teeth to a rack. Eight cutters are made for each diametral pitch. When ordering state diametral pitch and the number of cutters from the table in accordance with the number of teeth to be cut. Specify arbor hole where choice exists. These cutters may be sharpened repeatedly without changing their original form.

HSS

Cutter No.	Range of Teeth Cut
1	135 to Rack
2	55 to 134
3	35 to 54
4	26 to 34
5	21 to 25
6	17 to 20
7	14 to 16
8	12 to 13

Double Angle Cutters

- 45°, 60°, and 90° angles

HSS

Dia.	Face Width	Hole Size	No. of Teeth	Angle	Code No.	Price $
2-3/4	1/2	1	18	45°	136620	**215.57**
2-3/4	1/2	1	18	60°	136621	**212.12**
2-3/4	1/2	1	18	90°	136622	**212.43**
3	5/8	1	22	45°	136623	**341.23**
3	5/8	1	22	60°	136624	**305.84**
3	5/8	1	22	90°	136625	**302.77**
3	3/4	1	22	60°	136626	**374.17**
3	3/4	1	22	90°	136627	**374.17**
4	1/2	1-1/4	26	45°	136628	**432.47**
4	1/2	1-1/4	26	60°	136629	**377.08**
4	1/2	1-1/4	26	90°	136630	**432.47**
4	3/4	1	26	45°	136631	**512.51**
4	3/4	1	26	60°	136632	**427.05**
4	3/4	1	26	90°	136633	**512.52**
4	3/4	1-1/4	26	45°	136634	**474.55**
4	3/4	1-1/4	26	60°	136635	**512.51**
4	3/4	1-1/4	26	90°	136636	**474.55**
4	1	1-1/4	26	60°	136637	**564.78**
4	1	1-1/4	26	90°	136638	**564.78**
5	3/4	1-1/4	28	45°	136639	**387.35**
5	3/4	1-1/4	28	60°	136640	**643.33**
5	3/4	1-1/4	28	90°	136641	**553.27**
5	1	1-1/4	28	45°	136642	**705.44**
5	1	1-1/4	28	60°	136643	**697.69**
5	1	1-1/4	28	90°	136644	**661.98**
6	3/4	1-1/4	30	45°	136645	**609.84**
6	3/4	1-1/4	30	60°	136646	**749.74**
6	3/4	1-1/4	30	90°	136647	**894.40**
6	1	1-1/4	30	45°	136648	**901.28**
6	1	1-1/4	30	60°	136649	**973.38**
6	1	1-1/4	30	90°	136650	**901.28**
6	1-1/2	1-1/4	30	45°	136651	**1,154.76**
6	1-1/2	1-1/4	30	60°	136652	**1,202.93**
6	1-1/2	1-1/4	30	90°	136653	**1,113.82**

Screw Slotting Saws

High Speed Steel

Standard screw slotting saws are available in 1-3/4" diameter with 90 teeth, 2-1/4" diameter with 60 teeth and 2-3/4" diameter with 72 teeth. Also available in a 2-3/4" diameter and 1" hole with 56 teeth.

HSS

With 90 Teeth

Dia.	Face Width	Hole Size	90 Teeth Code No.	Price $
1-3/4	0.010	1/2	137078	**25.05**
1-3/4	0.012	1/2	137079	**21.45**
1-3/4	0.020	1/2	137080	**16.66**
1-3/4	0.008	5/8	137081	**26.69**
1-3/4	0.010	5/8	137082	**25.05**
1-3/4	0.012	5/8	137083	**22.53**
1-3/4	0.014	5/8	137084	**18.31**
1-3/4	0.016	5/8	137085	**17.89**
1-3/4	0.018	5/8	137086	**15.95**
1-3/4	0.020	5/8	137087	**16.66**
1-3/4	0.023	5/8	137088	**15.86**
1-3/4	0.025	5/8	137089	**16.66**
1-3/4	0.028	5/8	137090	**16.66**
1-3/4	0.032	5/8	137091	**16.66**
1-3/4	0.036	5/8	137092	**17.36**
1-3/4	0.040	5/8	137093	**17.36**
1-3/4	0.045	5/8	137094	**17.36**
1-3/4	0.051	5/8	137095	**17.36**
1-3/4	0.057	5/8	137096	**18.31**
1-3/4	0.064	5/8	137097	**19.49**
1-3/4	0.072	5/8	137098	**19.49**

With 60 Teeth

Dia.	Face Width	Hole Size	60 Teeth Code No.	Price $
2-1/4	0.008	5/8	137099	**49.57**
2-1/4	0.010	5/8	137100	**36.85**
2-1/4	0.012	5/8	137101	**28.47**
2-1/4	0.014	5/8	137102	**24.32**
2-1/4	0.016	5/8	137103	**26.58**
2-1/4	0.018	5/8	137104	**20.15**
2-1/4	0.020	5/8	137105	**22.01**
2-1/4	0.023	5/8	137106	**22.01**
2-1/4	0.025	5/8	137107	**22.01**
2-1/4	0.028	5/8	137108	**20.82**
2-1/4	0.032	5/8	137109	**20.82**
2-1/4	0.035	5/8	137110	**19.07**
2-1/4	0.036	5/8	137111	**20.82**
2-1/4	0.040	5/8	137112	**22.01**
2-1/4	0.045	5/8	137113	**23.13**
2-1/4	0.051	5/8	137114	**23.13**
2-1/4	0.057	5/8	137115	**23.13**
2-1/4	0.064	5/8	137116	**23.13**
2-1/4	0.072	5/8	137117	**23.13**
2-1/4	0.081	5/8	137118	**24.73**
2-1/4	0.091	5/8	137119	**26.69**
2-1/4	0.102	5/8	137120	**28.92**

With 72 Teeth

Dia.	Face Width	Hole Size	72 Teeth Code No.	Price $
2-3/4	0.010	3/4	137001	**42.44**
2-3/4	0.012	3/4	137002	**27.93**
2-3/4	0.016	3/4	137004	**35.49**
2-3/4	0.020	3/4	137006	**23.13**
2-3/4	0.023	3/4	137007	**19.79**
2-3/4	0.025	3/4	137008	**23.13**
2-3/4	0.028	3/4	137009	**23.13**
2-3/4	0.032	3/4	137010	**23.13**
2-3/4	0.036	3/4	137011	**23.13**
2-3/4	0.040	3/4	137012	**23.13**
2-3/4	0.045	3/4	137013	**25.20**
2-3/4	0.051	3/4	137014	**26.44**
2-3/4	0.057	3/4	137015	**27.77**
2-3/4	0.064	3/4	137016	**27.77**
2-3/4	0.072	3/4	137017	**27.77**
2-3/4	0.081	3/4	137018	**32.17**
2-3/4	0.091	3/4	137019	**33.29**
2-3/4	0.102	3/4	137020	**33.10**
2-3/4	0.114	3/4	137021	**34.20**
2-3/4	0.128	3/4	137022	**36.96**
2-3/4	0.162	3/4	137023	**44.00**
2-3/4	0.182	3/4	137024	**51.90**

With 72 Teeth and 56 Teeth

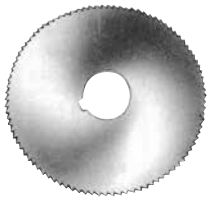
Dia.	Face Width	Hole Size	72 Teeth Code No.	Price $	56 Teeth Code No.	Price $
2-3/4	0.010	1	137025	**44.54**	-	**-**
2-3/4	0.012	1	137026	**40.73**	137052	**36.92**
2-3/4	0.013	1	137027	**38.78**	-	**-**
2-3/4	0.014	1	137028	**38.25**	137055	**34.74**
2-3/4	0.016	1	137029	**35.49**	137056	**35.49**
2-3/4	0.018	1	137030	**33.57**	137057	**30.52**
2-3/4	0.020	1	137031	**23.13**	137058	**23.13**
2-3/4	0.023	1	137032	**23.13**	137059	**21.11**
2-3/4	0.025	1	137033	**23.13**	137060	**22.01**
2-3/4	0.028	1	137034	**23.13**	137061	**23.13**
2-3/4	0.032	1	137035	**23.13**	137062	**23.13**
2-3/4	0.036	1	137036	**23.13**	137063	**23.13**
2-3/4	0.040	1	137037	**23.13**	137064	**23.13**
2-3/4	0.045	1	137038	**27.77**	137065	**25.44**
2-3/4	0.051	1	137039	**27.77**	137066	**25.20**
2-3/4	0.057	1	137040	**27.77**	137067	**27.77**
2-3/4	0.064	1	137041	**27.77**	137068	**27.77**
2-3/4	0.072	1	137042	**27.77**	137069	**27.77**
2-3/4	0.081	1	137043	**32.17**	137070	**32.17**
2-3/4	0.091	1	137044	**34.93**	-	**-**
2-3/4	0.102	1	137045	**36.58**	137072	**33.10**
2-3/4	0.114	1	137046	**37.69**	137073	**37.69**
2-3/4	0.128	1	137047	**38.78**	137074	**35.53**
2-3/4	0.144	1	137048	**44.54**	137075	**40.46**
2-3/4	0.162	1	137049	**48.70**	137076	**44.00**
2-3/4	0.182	1	137050	**57.22**	-	**-**

Solid Tungsten Carbide Saw Blades

Slotting, Slitting, Mica Undercutting

- Standards
- Metrics
- Radius Saws
- Circular Slitting Knives
- Specials
- "V" Cutters
- Re-Sharpening

- All saws are hollow ground to our standards, or your specifications.
- Sizes priced are considered standard saws.
- For metrics, special sizes, or tolerances, call or write for availability and prices. Many variations can be made, some at no additional cost.
- If you need engineering assistance in selecting or designing a saw, we're only a phone call way and delighted to help.
- When ordering, specify: O.D.; I.D.; thickness; no. of teeth; hub (if desired); and any special tolerances or extras. Various quantity discounts are available on all saws.
- Although not standard on carbide saws, the manufacturer can provide keyways upon request, at an additional cost.



STM

MICRO GRAIN CARBIDE

O.D.	I.D. +0.001-0.000			No. of Teeth	Thickness Range (dec.)	Thickness Range (in.)
5/16		1/8		12	0.011 - 0.045	1/32 - 3/64
3/8	1/8		3/16	14	0.011 - 0.045	1/32 - 3/64
1/2	1/8		3/16	14	0.011 - 0.045	1/32 - 3/64
9/16	3/16		1/4	16	0.011 - 0.045	1/32 - 3/64
5/8	3/16		1/4	16	0.011 - 0.0625	1/32 - 1/16
11/16	3/16		1/4	16	0.011 - 0.0625	1/32 - 1/16
3/4	1/4		5/16	18	0.011 - 0.0625	1/32 - 1/16
7/8	5/16		3/8	18	0.011 - 0.0625	1/32 - 1/16
1	1/4		9/32			
	5/16	3/8	1/2	20	0.011 - 0.0625	1/32 - 1/16
1-1/8	3/8		1/2	22	0.011 - 0.0625	1/32 - 1/16
1-1/4	5/16	3/8	1/2	24	0.011 - 0.0625	1/32 - 1/16
1-3/8		1/2		24	0.015 - 0.080	1/32 - 3/32
1-1/2	5/16		1/2	32	0.015 - 0.080	1/32 - 3/32
1-3/4	1/2		5/8	32	0.015 - 0.080	1/32 - 3/32
2	1/2		1	40	0.015 - 0.125	1/32 - 1/8
2-1/4	5/8		1	44	0.015 - 0.125	1/32 - 1/8
2-3/8	5/8		1	48	0.015 - 0.125	1/32 - 1/8
2-1/2	1/2		1	48	0.015 - 0.125	1/32 - 1/8
2-3/4		1		56	0.015 - 0.125	1/32 - 1/8
3		1		60	0.020 - 0.150	1/32 - 3/16
4		1		72	0.020 - 0.150	1/32 - 1/4
5		1		90	0.030 - 0.150	1/16 - 1/4
6		1		120	0.020 - 0.150	1/32 - 1/4

Revolving Knurling Tool Holder

The Revolving Head Knurling Tools embody all the features of standard model Knurling Tools plus one important extra – these tools are fitted with four pairs of knurls; any of which can be instantly brought to bear on the workpiece. No time is lost changing knurls. Furnished with press-style, standard face diamond pattern knurls in fine and coarse pitch.

narex

Holder

Holder Size	Dia.	Knurl Face Size	Hole	Code No.	Price $
20 x 30 x 200mm	20mm	10mm	6mm	474200	**328.67**

Replacement Knurls

Size	Replacement Knurls	Pitch	Code No.	Price $
20 x 10 x 6mm	Straight coarse	20 x 1	474230	**7.67**
20 x 10 x 6mm	Straight fine	20 x 0.6	474235	**7.67**
20 x 10 x 6mm	Diagonal coarse right hand	20 x 1	474240	**7.67**
20 x 10 x 6mm	Diagonal fine right hand	20 x 0.6	474245	**7.67**
20 x 10 x 6mm	Diagonal left hand coarse	20 x 1	474250	**7.67**
20 x 10 x 6mm	Diagonal left hand fine	20 x 0.6	474255	**7.67**

Indexable Cutting Tools

Indexable Cutting Tools

SELECTION OF GRADES & CHIPBREAKERS E2-7

TURNING

Turning Inserts E8-33
Turning Inserts for Aluminum E34-37
C.B.N. Turning Inserts E38
CERAMIC Inserts E39-41
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Turning Toolholders E47-59

BORING

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Boring Bars E64-73

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MILLING & DRILLING

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TECHNICAL INFORMATION E155-177

Sowa Indexable Grade Identification

This is your **quick reference colour band guide** that you will see throughout this catalogue. It will make your insert choice **quick, easy, and accurate.**

Material Group

P	M	K	S
Steel	Stainless Steel	Cast Iron - Alum	Heat Resistant Alloy

P	T	10	C
Material	Application	ISO Grade	Coating

P	Steel
M	Stainless Steel
K	Cast Iron Aluminum
S	Heat Resistant Alloy Titanium Alloy

T = Turning
M = Milling

10 = ISO 10 Grade
20 = ISO 20 Grade
30 = ISO 30 Grade
40 = ISO 40 Grade

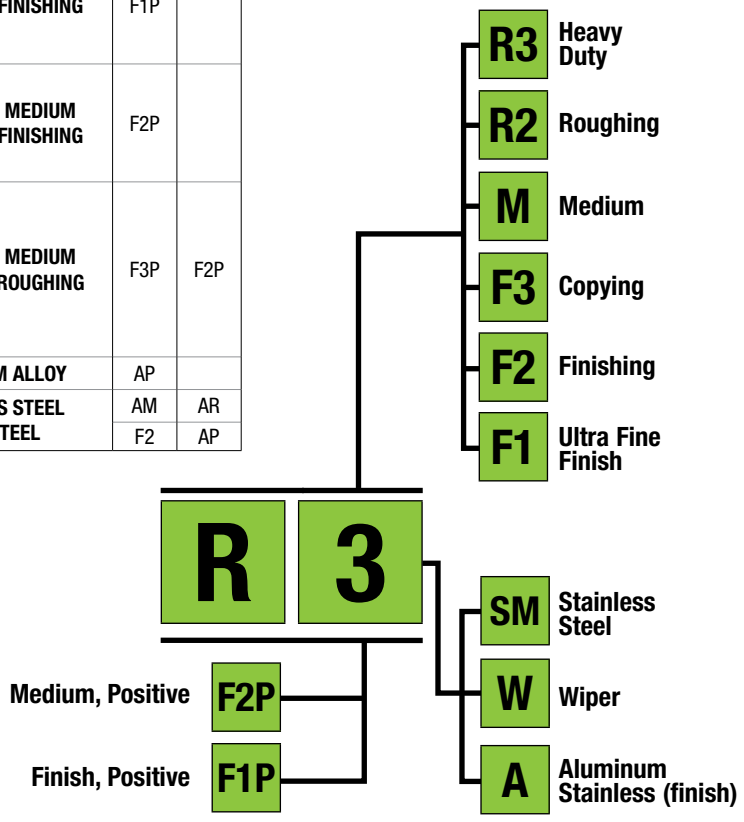
C = C.V.D. Coated
U = Uncoated
S = Cermet
P = P.V.D. Coated

Chipbreaker Quick Choice

APPLICATION			SOWA MAIN	SOWA SUB
NEGA•TYPE	STEELS	EXTREME FINISHING	F1	VF
		FINISHING	F2	
		MEDIUM FINISHING	F3	M
		MEDIUM ROUGHING	M	
		ROUGHING	R2	R1
		HEAVY	R3	
		WIPER	W	
	GENERAL			
	STAINLESS STEEL MILD STEEL		G	R2
			A	F3
			SM	M
			MM	R1
			MI	VM
	CAST IRON			G
			R1	R2
	ALUMINUM		A	

APPLICATION			SOWA MAIN	SOWA SUB
POSI•TYPE	STEEL	CAST IRON FINISHING	F1P	
		CAST IRON MEDIUM FINISHING	F2P	
		CAST IRON MEDIUM ROUGHING	F3P	F2P
	ALUMINUM ALLOY		AP	
	STAINLESS STEEL MILD STEEL		AM	AR
			F2	AP

Code Key



i.e. CNMG 432 R3 PT10C

Sowa Indexable Grades

Coated Carbide

- Turning
  - P: PT10C | PT25C | PT30C | PT40C | PTM50C
  - M: MT20C | PT30C | MT30P | SM20P
  - K: KT05C | KT10C | KT15C
  - S: ST10P
- Milling
  - P: PM10P | PM25C | PM30C | PM30P | PM35P | PTM50P
  - M: PM25C | PM30P | PM30C | MM30P | SM20P
  - K: KM20C | KT10P

Cermet

- Turning: PT10S | PT20S
- Milling: PM20S | PM30S

CBN

KB320 | KB330 | KB350 | KB360 | KB420

Ceramic

- Turning: GP100 | GP300
- Milling: S400

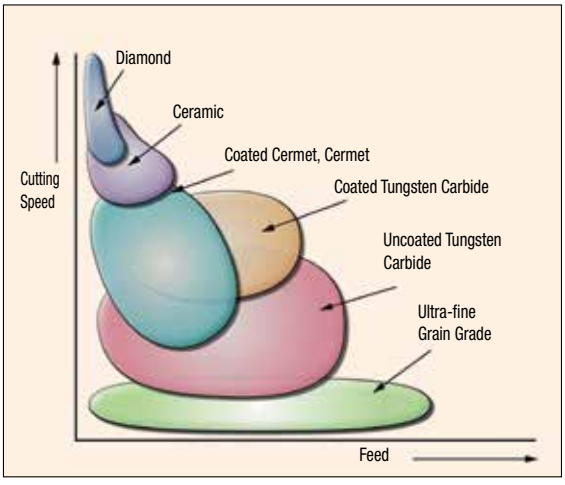
Diamond Coated Carbide

- Turning: ND100
- Milling: ND200
- Drill, Endmill: ND300

Uncoated Carbide

- Turning
  - P: PT20U
  - M: PTM30U
  - K: KT10U | KTM10U
- Milling
  - P: PTM30U
  - K: KTM10U

Application Range



Tungsten Carbide ISO Grade

Class	Class of Symbol	Workpiece	Way of Cut	Working Condition	High Performance Diection	
					Cutting Condition	Quality of Tip
P	P01	Steels, Cast Steels	Precision Turning, Precision Boring	Small cutting area in high cutting speed. Expect good dimension and surface with no vibration.	Cutting Speed ↑ Feed Speed ↓	Wear Resistance ↑ Toughness ↓
	P10	Steels, Cast Steels	Turning, Copy Machining, Threading Cutting, Surface Finish Milling	Small cutting area in high cutting speed or good working condition.		
	P20	Steels, Cast Steels, Malleable Cast Iron	Turning, Copy Machining, Milling, Planing	Medium cutting area in medium cutting speed and small cutting area in planing.		
	P30	Steels, Cast Steels, Malleable Cast Iron	Turning, Milling, Planing	Medium/large cutting area in low/medium cutting speed or poor working condition.		
M	M10	Steels, Cast Steels, Cast Iron	Turning, Milling	Small/medium cutting area in medium/high cutting speed or using in common for castability cast iron.	Cutting Speed ↑ Feed Speed ↓	Wear Resistance ↑ Toughness ↓
	M20	Steels, Cast Steels, Cast Iron	Turning, Milling	Medium cutting area in medium cutting speed or no using in common for steels, cast iron. Or poor working condition.		
		Hadfield, Steels, Austenite Steels, Special Cast Iron	Turning, Milling	Medium cutting area in medium cutting speed or poor working condition.		
	M30	Steels, Cast Steels, Cast Iron, Austenite Steels, Special Cast Iron, Heat Resisting Alloy	Turning, Milling, Planing, Cutting-Off	Medium/large cutting area in medium cutting speed. Or working condition is worse than M20.		
K	K01	Cast Iron	Precision Turning, Precision Boring, Surface Finish Milling	Small cutting arear in high cutting speed or no vibration.	Cutting Speed ↑ Feed Speed ↓	Wear Resistance ↑ Toughness ↓
		High Hardness Cast Iron, Quenched Steels	Turning	Small cutting area in exfrom low cutting speed or no vibration.		
		Black Lead, Hard Paper, Ceramic High Si-Al		No vibration.		
	K10	Cast Iron, Malleable Cast Iron	Turning, Milling, Boring, Reamer	Small/medium cutting area in medium cutting speed. Or Generd working in comparating.		
		Quenched Steels	Turning	Small cutting area in low cutting speed or no vibration in comparative.		
		Si-Al Alloy, High Hardness Copper, Glass, Ceramic, Hard Rubber, Hard Paper, Synthetic Resin		No vibration in comparative.		
	K20	Cast Iron (Hb200 and Below)	Turning, Milling, Planing, Boring, Reamer, Broach	Medium/large cutting speed in medium cutting speed or general working demanding high toughness.		
	K30	Low Hardness Cast Iron, Copper, Aluminum	Turning, Milling, Planing, Copy Machining	Large cutting area or poor working condition.		

Grade Application

Turning

Cutting Condition		ISO	Coated Carbide	Cermet	C.B.N.	Ceramic	Uncoated Carbide
P	Intermittent & Heavy Duty	P50	PT40C, PTM50C				
	Low Speed	P40					
		P30	PT30C				
	Medium Speed	P20	PT25C	PT20S			
		P10	PT10C	PT10S		GP100, GP300	PT20U
	High Speed	P01					
M	Low Speed	M40	MT30P				
	Medium Speed	M30	PT30C				
		M20	MT20C				
	High Speed	M10					
K	Low Speed	K40					
		K30					
	Medium Speed	K20	KT10C			GP100, GP300	KTM10U
		K10	KT05C		KB350, KB360		KT10U
	High Speed	K01					
S	Continuous Cutting	S10	ST10P				
	Interrupted Cutting	S20					

Milling

Cutting Condition		ISO	Coated Carbide	Cermet	C.B.N.	Ceramic	Uncoated Carbide
P	Intermittent & Heavy Duty	P50	PM40P				
	Low Speed	P40					
		P30	PM30C, PM30P	PT30S			PTM30U
	Medium Speed	P20	PM25C	PM20S		GP100, GP300	PM20U
		P10	PM10C				
	High Speed	P01					
M	Low Speed	M40	MM30P				
	Medium Speed	M30					
		M20	PTM50P				
	High Speed	M10	PM10P				
K	Low Speed	K40					
		K30					
	Medium Speed	K20	KM20C			GP100, GP300	KTM10U
		K10	KT15C, KT10P		KB350, KB360		
	High Speed	K01					

Drilling

Coated Carbide
PM10P
PM10P
PM10P

Turning Insert Code System

1 Insert Shape

C	D	E	K
L	R	S	T
V	W		

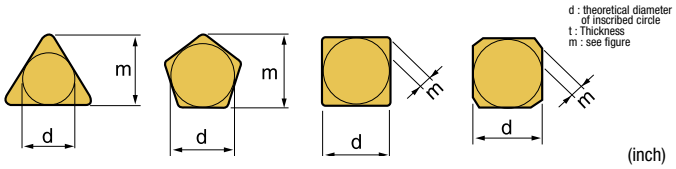
2 Clearance Angle

B	C	D	E
F	N	P	
Special			
O			

T N M G

1 2 3 4

3 Tolerance



(inch)

class	d	m	t
A	+_ 0.0010	+_ 0.0002	+_ 0.0010
C	+_ 0.0010	+_ 0.0005	+_ 0.0010
H	+_ 0.0005	+_ 0.0005	+_ 0.0010
E	+_ 0.0010	+_ 0.0010	+_ 0.0010
G	+_ 0.0010	+_ 0.0010	+_ 0.005
J	+_ 0.002 - +_ 0.006	+_ 0.0002	+_ 0.001
K	+_ 0.002 - +_ 0.006	+_ 0.0005	+_ 0.001
L	+_ 0.002 - +_ 0.006	+_ 0.0010	+_ 0.001
M	+_ 0.002 - +_ 0.006	+_ 0.003 - 0.008	+_ 0.005
U	+_ 0.003 - +_ 0.01	+_ 0.005 - 0.015	+_ 0.005

Tolerance on C, H, R, T, W class (exceptional)

d	Tolerance on d		Tolerance on m	
	J, K, L, M, N	U	M, N	U
1/4	+_ 0.002	+_ 0.003	+_ 0.003	+_ 0.005
3/8	+_ 0.002	+_ 0.003	+_ 0.003	+_ 0.005
1/2	+_ 0.003	+_ 0.005	+_ 0.005	+_ 0.008
5/8	+_ 0.004	+_ 0.007	+_ 0.06	+_ 0.011
3/4	+_ 0.004	+_ 0.007	+_ 0.06	+_ 0.011
1	+_ 0.005	+_ 0.01	+_ 0.07	+_ 0.015

Tolerance on D class (exceptional)

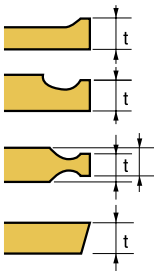
d	Tolerance on d	Tolerance on m
1/4	+_ 0.002	+_ 0.0043
3/8	+_ 0.002	+_ 0.0043
1/2	+_ 0.003	+_ 0.006
5/8	+_ 0.004	+_ 0.007
3/4	+_ 0.004	+_ 0.007

4 Cross Section Type

	C'Sink 70° - 90°
A	B
C'Sink 70° - 90°	
C	F
	C'Sink 70° - 90°
G	H
C'Sink 70° - 90°	
J	M
	C'Sink 40° - 60°
N	Q
	C'Sink 40° - 60°
R	T
C'Sink 40° - 60°	C'Sink 40° - 60°
U	W
Special Type	
X	

Turning Insert Code System

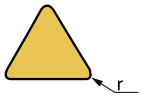
6 Height of Cutting Edge



Symbol		Height of Cutting Edge (t)	
Metric	Inch	mm	Inch
-	0.5(1)	0.79	1/32
T0	0.6	1.00	0.040
01	1(2)	1.59	1/16
T1	1.2	1.98	5.64
02	1.5(3)	2.38	3/32
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

( ) Symbol for small size insert

7 Nose Corner Radius (Nose R)

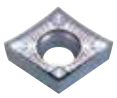
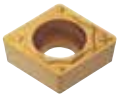
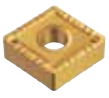


Symbol		Corner Radius	
Metric	Inch	mm	Inch
01	0	0.1	0.004
02	0.5	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Round Insert (Inch)	
M0	-	Round Insert (Metric)	

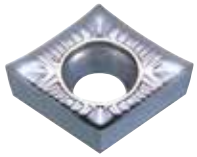
5 Cutting Edge Length, Diameter of Inscribed Circle

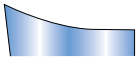
Symbol								IC
C	D	S	T	R	V	W		
Metric							Inch	d(inch)
03	04	03	06	03	-	02	1.2(5)	5/32
04	05	04	08	04	08	S3	1.5(6)	3/16
05	06	05	09	05	09	03	1.8(7)	7/32
-	-	-	-	06	-	-	-	0.236
06	07	06	11	06	11	04	2	1/4
08	09	07	13	07	13	05	2.5	5/16
-	-	-	-	08	-	-	-	0.315
09	11	09	16	09	16	06	3	3/8
-	-	-	-	10	-	-	-	0.394
11	13	11	19	11	19	07	3.5	7/16
-	-	-	-	12	-	-	-	0.472
12	15	12	22	12	22	08	4	1/2
14	17	14	24	14	24	09	4.5	9/16
16	19	15	27	15	27	10	5	5/8
-	-	-	-	16	-	-	-	0.630
17	21	17	30	17	30	11	5.5	11/16
19	23	19	33	19	33	13	6	3/4
-	-	-	-	20	-	-	-	0.787
22	27	22	38	22	38	15	7	7/8
-	-	-	-	25	-	-	-	0.984
25	31	25	44	25	44	17	8	1
32	38	31	54	31	54	21	10	1-1/4
-	-	-	-	32	-	-	-	1.260

8 Chip Breaker for Turning

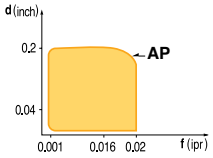
A	AM	 AP	 F1P
F2P	F3P	F1	F2
 F3	G	M	M1
MM	R1	R2	R3
SM	WF	WM	

CCGT-AP (AP Chipbreaker is for Aluminum)

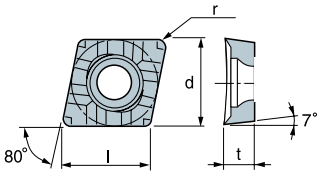




- Exclusive chip breaker for aluminum and aluminum alloy

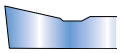


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



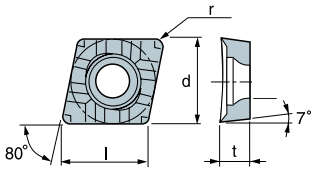
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT30C**	**PM10P**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**ND100**	**KT10U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
CCGT 21.51-AP	060204												**146024 $ 14.76**	0.256	1/4	3/32	1/64	**Turning**	
CCGT 32.50.5-AP	09T302												**146027 $ 17.29**	0.382	3/8	5/32	0.008	SCACR/L	E55
CCGT 32.51-AP	09T304											**146701 $ 39.89**	**146011 $ 17.29**	0.382	3/8	5/32	1/64	**Boring**	
CCGT 32.52-AP	09T308												**146012 $ 17.29**	0.382	3/8	5/32	1/32	SCLCR/L	E69
CCGT 431-AP	120404												**146627 $ 20.03**	0.508	1/2	3/16	1/64		
CCGT 432-AP	120408												**146023 $ 20.03**	0.508	1/2	3/16	1/32		

CCGT-AM (AM Chipbreaker is for Aluminum)



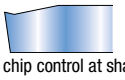
- High stability of cutting edge secures great performance in high speed and interrupted cutting
- High speed of medium and interrupted operation

- USE
  Aluminum Cutting
- Recommendation
  d = 0.020~0.157inch
  f = 0.002~0.020ipr

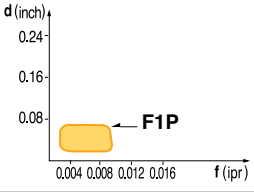


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT30C**	**PM10P**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**KTM10U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
CCGT 21.50.5-AM	060202													**145661 $ 14.76**	0.256	1/4	3/32	0.008	**Turning**	
CCGT 21.51-AM	060204													**145681 $ 14.76**	0.256	1/4	3/32	1/64	SCACR/L	E55
CCGT 21.52-AM	060208													**145682 $ 14.76**	0.256	1/4	3/32	1/32	**Boring**	
CCGT 32.50.5-AM	09T302													**145662 $ 17.29**	0.382	3/8	5/32	0.008	SCLCR/L	E69
CCGT 32.51-AM	09T304													**145683 $ 17.29**	0.382	3/8	5/32	1/64		
CCGT 430.5-AM	120402													**145684 $ 20.03**	0.508	1/2	3/16	0.008		
CCGT 431-AM	120404													**145685 $ 20.03**	0.508	1/2	3/16	1/64		
CCGT 432-AM	120408													**145686 $ 20.03**	0.508	1/2	3/16	1/32		

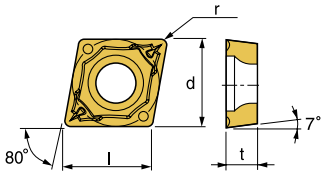
CCGT-F1P



- Excellent chip control at shallow depth of cut and low feed rate
- Excellent surface finish of workpiece due to reduced cutting force
- Suitable for fine boring



- USE
  Finishing
- Recommendation
  F1P d = 0.004~0.06inch
  f = 0.002~0.01ipr

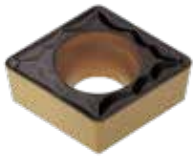


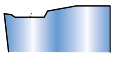
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT25C**	**PT30C**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**KTM10U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
CCGT 32.50.5-F1P	09T302							**145626 $ 18.39**			**145627 $ 18.39**				0.382	3/8	5/32	0.008	**Turning**	
CCGT 32.51-F1P	09T304				**149289 $ 18.65**	**145691 $ 18.39**							**149177 $ 14.95**		0.382	3/8	5/32	1/64	SCACR/L	E55
CCGT 32.52-F1P	09T308							**145693 $ 18.39**							0.382	3/8	5/32	1/32	**Boring**	
																			SCLCR/L	E69

Quick Choice Grade Selection

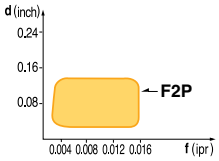
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

CCMT-F1P/F2P

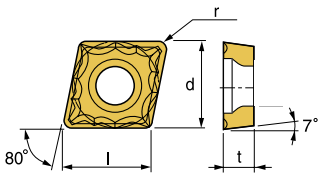




- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting

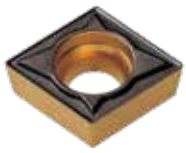


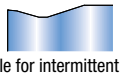
- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



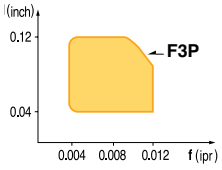
		Coated Carbide											Cermet	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CCMT 21.50.5-F1P	060202														0.256	1/4	3/32	0.008	Turning	
CCMT 32.51-F1P	09T304				149257 $ 10.92										0.382	3/8	5/32	1/64	SCACR/L	E55
CCMT 21.50.5-F2P	060202		149494 $ 10.41		149252 $ 10.42										0.256	1/4	3/32	0.008	Boring	
CCMT 21.51-F2P	060204		149495 $ 10.42		149227 $ 10.41		149255 $ 10.42					148450 $ 10.41			0.256	1/4	3/32	1/64	SCLCR/L	E69
CCMT 21.52-F2P	060208		149496 $ 10.41		149497 $ 10.42										0.256	1/4	3/32	1/32		
CCMT 32.50.5-F2P	09T302		149498 $ 10.74									148452 $ 10.74			0.382	3/8	5/32	0.008		
CCMT 32.51-F2P	09T304		149499 $ 10.74		149220 $ 10.74	149010 $ 10.74	149238 $ 10.74		145698 $ 10.74			148453 $ 10.74			0.382	3/8	5/32	1/64		
CCMT 32.52-F2P	09T308		149501 $ 10.74		149221 $ 10.74	148549 $ 10.74	149247 $ 10.74					148454 $ 10.74			0.382	3/8	5/32	1/32		
CCMT 431-F2P	120404					145718 $ 14.20			145732 $ 14.20						0.508	1/2	3/16	1/64		
CCMT 432-F2P	120408				149299 $ 14.20		149337 $ 14.20		145632 $ 14.20						0.508	1/2	3/16	1/32		

CCMT-F3P

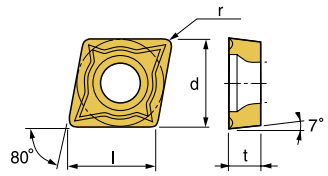




- Suitable for intermittent cutting and cast iron machining
- Good surface finish due to low cutting force
- Suitable for both boring and outer diameter turning

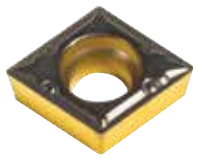


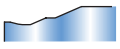
- USE
  Medium
- Recommendation
  F3P d = 0.04~0.12inch
  f = 0.004~0.012ipr



		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	r	Holder	Page No.
CCMT 21.51-F3P	060204				149241 $ 10.41	145735 $ 10.41									0.256	1/4	3/32	1/64	Turning	
CCMT 21.52-F3P	060208					145750 $ 10.41									0.256	1/4	3/32	1/32	SCACR/L	E55
CCMT 32.51-F3P	09T304				149230 $ 10.74	145774 $ 10.74									0.382	3/8	5/32	1/64	Boring	
CCMT 32.52-F3P	09T308				149242 $ 10.74			145797 $ 10.74							0.382	3/8	5/32	1/32	SCLCR/L	E69
CCMT 431-F3P	120404				149262 $ 14.20	145894 $ 14.20									0.508	1/2	3/16	1/64		
CCMT 432-F3P	120408				149287 $ 14.20	146159 $ 14.20									0.508	1/2	3/16	1/32		

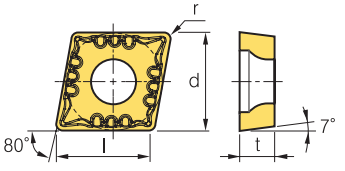
CCMT-FVL





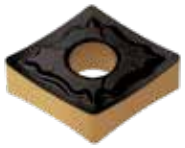
- Stable chip control in high toughness material; low carbon steel, pipe steel and steel plates
- Improved chip control for facing, copy machining, and better surface finish

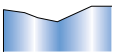
- USE
  Finishing
- Recommendation
  FVL d = 0.008~0.059inch
  f = 0.004~0.014ipr



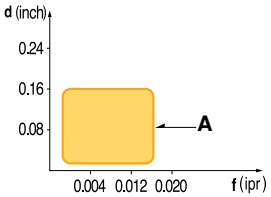
		Coated Carbide											Cermet	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CCMT 21.50.5-FVL	060202		149468 $ 10.58												0.256	1/4	3/32	0.008	Turning	
																			SCACR/L	E55
																			Boring	
																			SCLCR/L	E69

CNMG-A

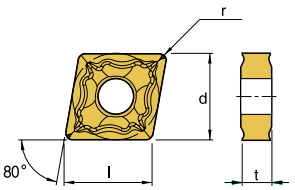




- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum

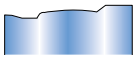


- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.16inch
  f = 0.002~0.016ipr

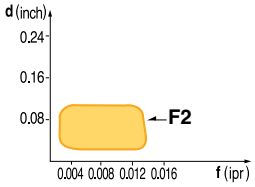


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-A	120404													**147524 $ 10.16**	0.508	1/2	3/16	1/64	**Turning**	
																			MCKNR/L	E48
																			MCLNR/L	E48
																			MCRNR/L	E49
CNMG 432-A	120408				**149285 $ 12.66**			**147525 $ 12.65**			**148378 $ 12.65**			**147526 $ 10.16**	0.508	1/2	3/16	1/32	**Boring**	
																			MCLNR/L	E64
																			PCLNR/L	E67

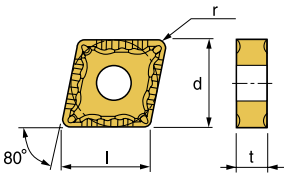
CNMG-F2



- Excellent chip control at varied depth of cutting
- Strong cutting edge toughness due to special design

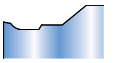


- USE
  Finishing
- Recommendation
  F2 d = 0.01~0.1inch
  f = 0.002~0.014ipr

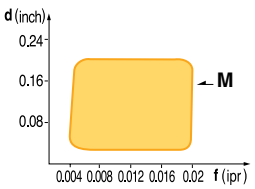


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT25C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-F2	120404		**149333 $ 12.65**												0.508	1/2	3/16	1/64	**Turning**	
																			MCKNR/L	E48
																			MCLNR/L	E48
																			MCRNR/L	E49
CNMG 432-F2	09T304		**149390 $ 12.65**	**149391 $ 12.65**											0.508	1/2	3/16	1/32	**Boring**	
																			MCLNR/L	E64
																			PCLNR/L	E67

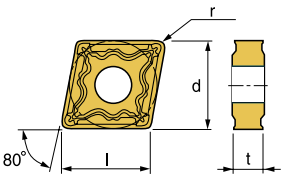
CNMG-M/M1



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining

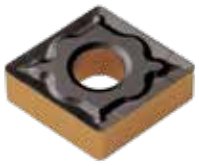


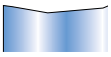
- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



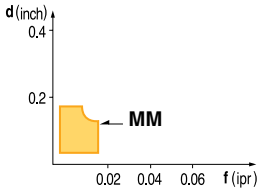
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-M	120404				**149394 $ 12.65**	**147531 $ 12.65**		**148819 $ 12.65**							0.508	1/2	3/16	1/64	**Turning**	
																			MCKNR/L	E48
CNMG 431-M1	120404				**149251 $ 12.65**										0.508	1/2	3/16	1/64	MCLNR/L	E48
																			MCRNR/L	E49
CNMG 432-M1	120408		**149393 $ 12.65**		**149377 $ 12.65**										0.508	1/2	3/16	1/32	**Boring**	
																			MCLNR/L	E64
CNMG 432-M	120408				**149231 $ 12.65**	**147535 $ 12.65**									0.508	1/2	3/16	1/32	PCLNR/L	E67
CNMG 433-M	120412				**149375 $ 12.65**	**147538 $ 12.65**									0.508	1/2	3/16	3/64		
CNMG 433-M1	120142		**149555 $ 12.65**												0.508	1/2	3/16	3/64		
CNMG 543-M	160612					**148306 $ 19.97**									0.634	5/8	1/4	3/64		
CNMG 643-M	190612										**148949 $ 21.62**				0.760	3/4	1/4	3/64		

CNMG-MM

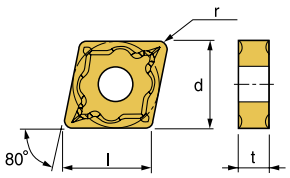




- Excellent choice for a variety of steels including Stainless Steel

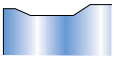


- USE
  Steels/Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr

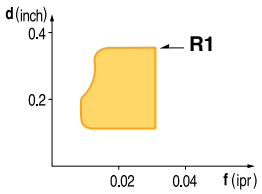


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT15C	PT20C	PT25C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
CNMG 432-MM	120408			**149256 $ 12.90**		**149322 $ 12.86**		**146014 $ 12.65**							0.508	1/2	3/16	1/32	MCKNR/L	E48
																			MCLNR/L	E48
																			MCRNR/L	E49
																			Boring	
CNMG 433-MM	120412							**146019 $ 12.65**							0.508	1/2	3/16	3/64	MCLNR/L	E64
																			PCLNR/L	E67

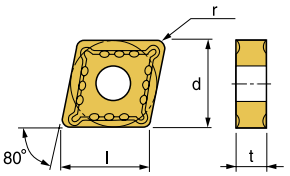
CNMG-R1



- Suitable for deep depth of cut and fast feed cutting of steel and cast iron
- Suitable for intermittent cutting

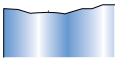


- USE
  Roughing
- Recommendation
  R1 d = 0.12~0.32inch
  f = 0.012~0.032ipr

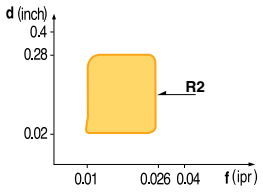


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	PT40C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
CNMG 432-R1	120408				**149254 $ 12.65**	**147485 $ 12.65**	**146025 $ 12.65**								0.508	1/2	3/16	1/32	MCKNR/L	E48
CNMG 543-R1	160612				**149345 $ 19.67**	**146187 $ 19.67**									0.634	5/8	1/4	3/64	MCLNR/L	E48
																			MCRNR/L	E49
CNMG 544-R1	160616					**146028 $ 19.67**									0.634	5/8	1/4	1/16	**Boring**	
CNMG 643-R1	190612				**149330 $ 26.32**	**146198 $ 26.32**									0.760	3/4	1/4	3/64	MCLNR/L	E64
																			PCLNR/L	E67
CNMG 644-R1	190616					**146033 $ 26.32**									0.760	3/4	1/4	1/16		

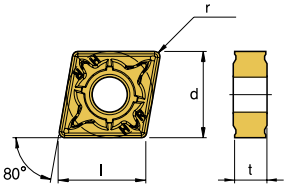
CNMG-R2



- Excellent chip control at deep depth of cut and fast feed rate
- Strong cutting edge makes excellent cutting performance at intermittent cutting



- USE
  Roughing
- Recommendation
  R2 d = 0.1~0.28inch
  f = 0.01~0.026ipr

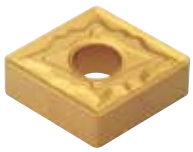


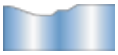
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT25C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
CNMG 432-R2	120408			**149398 $ 12.86**											0.508	1/2	3/16	1/32	MCKNR/L	E48
CNMG 433-R2	120412				**147495 $ 12.65**										0.508	1/2	3/16	3/64	MCLNR/L	E48
																			MCRNR/L	E49
CNMG 543-R2	160612			**149399 $ 12.86**		**148700 $ 20.00**									0.634	5/8	1/4	3/64	**Boring**	
CNMG 642-R2	190608				**147500 $ 26.71**										0.760	3/4	1/4	1/32	MCLNR/L	E64
																			PCLNR/L	E67
CNMG 643-R2	190612			**149409 $ 19.97**	**147501 $ 26.32**	**148699 $ 26.32**									0.760	3/4	1/4	3/64		

Quick Choice Grade Selection

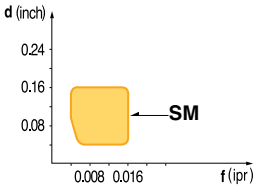
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

CNMG-SM (SM Chipbreaker is for Stainless Steel medium feed.)

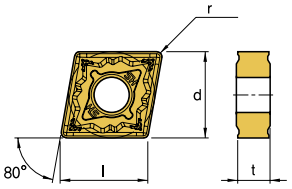




- Exclusive design for stainless steel cutting provides longer tool life
- Wear resistance has been reinforced through high rake angle of chip breaker land

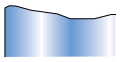


- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr

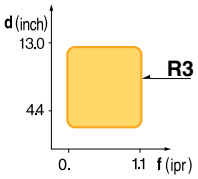


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-SM	120404					149296 $ 12.90		147487 $ 12.65			148379 $ 12.65				0.508	1/2	3/16	1/64	**Turning**	
CNMG 432-SM	120408							147489 $ 12.65			148380 $ 12.65				0.508	1/2	3/16	1/32	MCKNR/L MCLNR/L MCRNR/L	E48 E48 E49
CNMG 433-SM	120412							146040 $ 12.65			148855 $ 12.65				0.508	1/2	3/16	3/64	**Boring**	
CNMG 543-SM	160612							148940 $ 19.67							0.634	5/8	1/4	3/64	MCLNR/L PCLNR/L	E64 E67
CNMG 643-SM	190612							148939 $ 26.32			148952 $ 26.32				0.760	3/4	1/4	3/64		

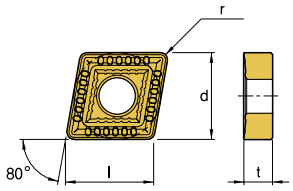
CNMM-R3



- Specially designed toughest cutting edge provides superior cutting performance at deep depth of cut and fast feed rate
- Unique design of dot on cutting edge makes smooth chip flow and reduce cutting force

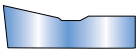


- USE
  Heavy Duty
- Recommendation
  R3 d = 0.16~0.52inch
  f = 0.018~0.06ipr



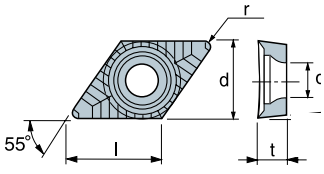
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMM 432-R3	120408				147505 $ 12.86										0.508	1/2	3/16	1/32	**Turning**	
CNMM 643-R3	190612				147508 $ 26.32										0.760	3/4	1/4	3/64	MCKNR/L MCLNR/L MCRNR/L	E48 E48 E49
																			Boring	
																			MCLNR/L PCLNR/L	E64 E67

DCGT-AM (AM Chipbreaker is for Aluminum)



- Exclusive chip breaker for aluminum and aluminum alloy

- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr

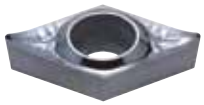


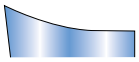
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AM	070202												146048 $ 14.76	0.307	1/4	3/32	0.008	**Turning**	
DCGT 21.52-AM	070208												146052 $ 14.76	0.307	1/4	3/32	1/32	SDJCR/L SDNCN	E56 E57
DCGT 32.50.5-AM	11T302												145664 $ 17.29	0.457	3/8	5/32	0.008	**Boring**	
DCGT 32.51-AM	11T304												146059 $ 17.29	0.457	3/8	5/32	1/64	SDQCR SDUCR SDZCR/L	E70 E70 E71
DCGT 32.52-AM	11T308												146063 $ 17.29	0.457	3/8	5/32	1/32		

Quick Choice Grade Selection

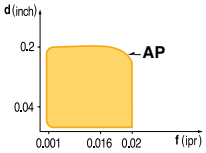
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

DCGT-AP (AP Chipbreaker is for Aluminum)

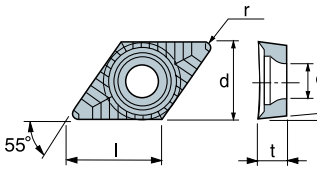




- Exclusive chip breaker for aluminum and aluminum alloy

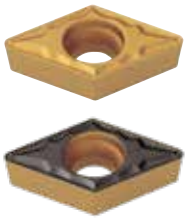


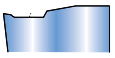
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



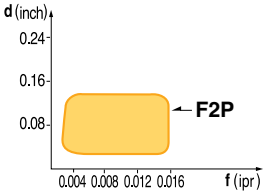
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AP	070202												146988 $ 14.76	0.307	1/4	3/32	0.008	**Turning**	
DCGT 21.51-AP	070204												146989 $ 14.76	0.307	1/4	3/32	1/64	SDJCR/L SDNCN	E56 E57
DCGT 32.50.5-AP	11T302												146990 $ 17.29	0.457	3/8	5/32	0.008	**Boring**	
DCGT 32.51-AP	11T304											146703 $ 39.89	146991 $ 17.29	0.457	3/8	5/32	1/64	SDQCR SDUCR SDZCR/L	E70 E70 E71
DCGT 32.52-AP	11T308											146704 $ 39.89	146992 $ 17.29	0.457	3/8	5/32	1/32		
DCGT 32.53-AP	120404												147764 $ 17.29	0.457	3/8	5/32	3/64		

DCMT-F1P/F2P

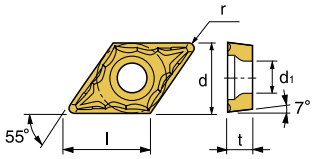




- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting

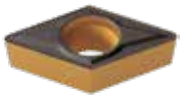


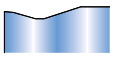
- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



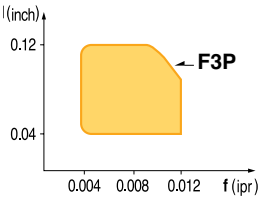
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	MT15C	MT20C	MT30P	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DCMT 21.51-F2P	070204		149503 $ 10.83		149260 $ 12.02				149011 $ 12.02						0.307	1/4	3/32	1/64	**Turning**	
DCMT 21.52-F2P	070208		149505 $ 10.83		149507 $ 10.83						148457 $ 12.02				0.307	1/4	3/32	1/32	SDJCR/L SDNCN	E56 E57
DCMT 32.50.5-F2P	11T302		149509 $ 13.37												0.457	3/8	5/32	0.008	**Boring**	
DCMT 32.51-F2P	11T304		149511 $ 13.37		149222 $ 13.37	146069 $ 13.37	149250 $ 13.37				148459 $ 13.37				0.457	3/8	5/32	1/64	SDQCR SDUCR SDZCR/L	E70 E70 E71
DCMT 32.52-F2P	11T308		149513 $ 13.37		149226 $ 13.37		149292 $ 13.37				148460 $ 13.37				0.457	3/8	5/32	1/32		

DCMT-F3P

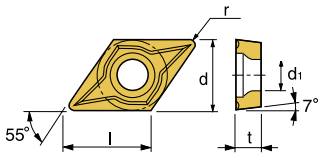




- Excellent chip control at shallow depth of cut and low feed rate
- Excellent surface finish of workpiece due to reduced cutting force
- Suitable for fine boring

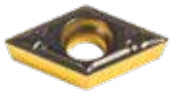


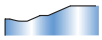
- USE
  Medium
- Recommendation
  F3P d = 0.04~0.12inch
  f = 0.004~0.012ipr



		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT22C	PT25C	PT30C	MT15C	MT30P	KT05C	KT10C	PT10S	PT20S	KTM10U	PM20U	l	d	t	r	Holder	Page No.
DCMT 21.51-F3P	070204				149332 $ 12.02										0.307	1/4	3/32	1/64	**Turning**	
DCMT 32.51-F3P	11T304				149267 $ 13.37	146030 $ 13.37									0.457	3/8	5/32	1/64	SDJCR/L SDNCN	E56 E57
DCMT 32.52-F3P	11T308		149329 $ 13.37		149328 $ 13.37	146032 $ 13.37									0.457	3/8	5/32	1/32	**Boring**	
																			SDQCR SDUCR SDZCR/L	E70 E70 E71

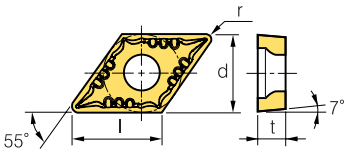
DCMT-FVL





- Stable chip control in high toughness material; low carbon steel, pipe steel, and steel plates
- Improved chip control for facing, copy machining, and better surface finish

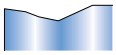
- USE
  Finishing
- Recommendation
  FVL d = 0.008~0.059inch
  f = 0.004~0.014ipr



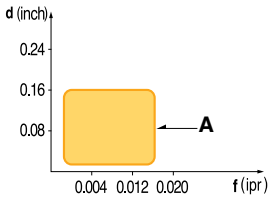
		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT22C	PT25C	PT30C	MT15C	MT30P	KT05C	KT10C	PT10S	PT20S	KTM10U	PM20U	l	d	t	r	Holder	Page No.
																			Turning	
DCMT 21.50.5-FVL	070202		**149469 $ 10.83**												0.307	1/4	3/32	0.008	SDJCR/L SDNCN	E56 E57
																			Boring	
																			SDQCR SDUCR SDZCR/L	E70 E70 E71

DNM_ 55° Negative Turning Inserts

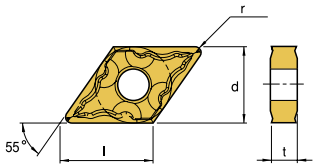
DNMG-A



- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum

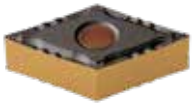


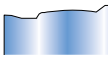
- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.16inch
  f = 0.002~0.016ipr



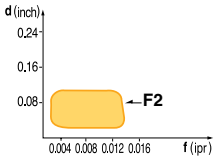
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
DNMG 431-A	150404							**147577 $ 15.50**			**148381 $ 15.50**			**147578 $ 12.42**	0.610	1/2	3/16	1/64	MDJNR/L	E49
																			Boring	
DNMG 432-A	150408					**149338 $ 15.50**		**147580 $ 15.50**			**148382 $ 15.50**			**147581 $ 12.42**	0.610	1/2	3/16	1/32	PDSNR/L PDUNR/L	E67 E68

DNMG-F2

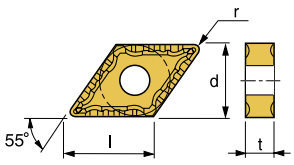




- Excellent chip control at varied depth of cutting
- Strong cutting edge toughness due to special design



- USE
  Finishing
- Recommendation
  F2 d = 0.015~0.1inch
  f = 0.002~0.014ipr

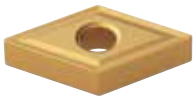


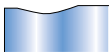
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
DNMG 431-F2	150404		**149298 $ 15.50**												0.610	1/2	3/16	1/64	MDJNR/L	E49
																			Boring	
DNMG 432-F2	150408		**149435 $ 15.50**		**149437 $ 15.50**										0.610	1/2	3/16	1/32	PDSNR/L PDUNR/L	E67 E68

Quick Choice Grade Selection

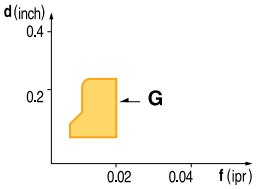
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

DNMG-G

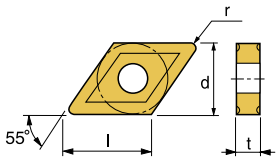




- Suitable for general cutting

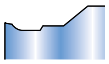


- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr

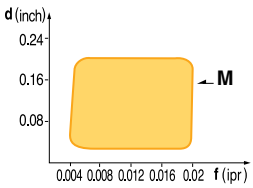


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT30C**	**PM10P**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**KTM10U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
DNMG 432-G	150408				**147554 $ 15.50**										0.610	1/2	3/16	1/32	**Turning** MDJNR/L **Boring** PDSNR/L PDUNR/L	E49 E67 E68

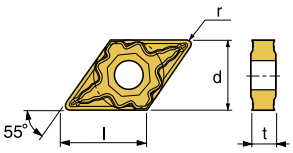
DNMG-M/M1



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining

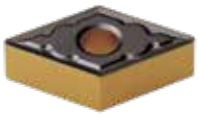


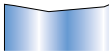
- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



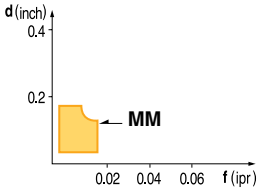
		Coated Carbide									Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT15C**	**PT20C**	**PT25C**	**PT30C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**KTM10U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
DNMG 431-M	150404				**149261 $ 15.78**									0.610	1/2	3/16	1/64	**Turning** MDJNR/L **Boring** PDSNR/L PDUNR/L	E49 E67 E68
DNMG 432-M	150408		**149334 $ 15.77**		**149233 $ 15.50**									0.610	1/2	3/16	1/32		
DNMG 441-M	150604		**149441 $ 15.77**		**149445 $ 15.77**									0.610	1/2	1/4	1/64		
DNMG 431-M1	150404		**149439 $ 15.50**											0.610	1/2	3/16	1/64		
DNMG 432-M1	150408				**149243 $ 15.50**	**145651 $ 15.50**								0.610	1/2	3/16	1/32		

DNMG-MM

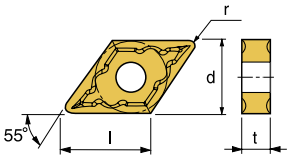




· Excellent choice for a variety of steels including Stainless Steel

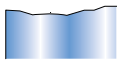


- USE
  Steels/Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr

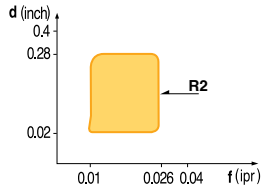


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
DNMG 431-MM	150404				**149258 $ 15.78**										0.610	1/2	3/16	1/64	MDJNR/L	E49
																			Boring	
DNMG 432-MM	150408				**149279 $ 15.78**										0.610	1/2	3/16	1/32	PDSNR/L PDUNR/L	E67 E68

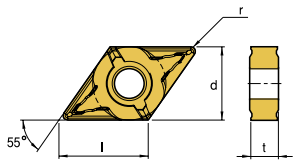
DNMG-R2



· Excellent chip control at deep depth of cut and fast feed rate
· Strong cutting edge makes excellent cutting performance at intermittent cutting

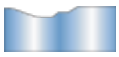


- USE
  Roughing
- Recommendation
  F3 d = 0.1~0.28inch
  f = 0.01~0.026ipr

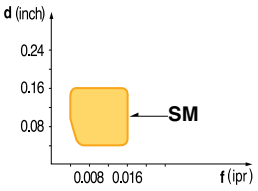


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
DNMG 432-R2	150408				**147564 $ 15.78**										0.610	1/2	3/16	1/32	MDJNR/L	E49
																			Boring	
																			PDSNR/L	E67
																			PDUNR/L	E68

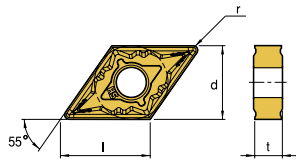
DNMG-SM



· Exclusive design for stainless steel cutting provides longer tool life
· Wear resistance has been reinforced through high rake angle of chip breaker land



- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr



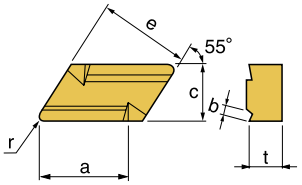
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Turning	
DNMG 431-SM	150404					**149297 $ 15.77**					**148383 $ 15.50**				0.610	1/2	3/16	1/64	MDJNR/L	E49
																			Boring	
DNMG 432-SM	150408							**147561 $ 15.50**			**148384 $ 15.50**				0.610	1/2	3/16	1/32	PDUNR/L	E68

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

KNUX 55° Negative Turning Inserts

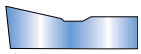
- USE
  General Cutting



		Coated Carbide									Uncoated Carbide		(inch)						Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	PT20U	PTM30U	a	e	t	r	c	b	Holder	Page No.
KNUX 160405 R11					149223 $ 20.21	147597 $ 20.21						146853 $ 16.21	0.630	0.636	3/16	0.0197	3/8	0.087	Turning CKJNR/L	E47
KNUX 160410 R11						147599 $ 20.21							0.630	0.636	3/16	0.0394	3/8	0.087		
KNUX 160405 L11					149266 $ 20.21								0.630	0.636	3/16	0.0197	3/8	0.087		
KNUX 160410 L11					149336 $ 20.21								0.630	0.636	3/16	0.0394	3/8	0.126		

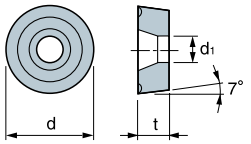
RC_ _ Positive Turning Inserts

RCGT-AM (“AM” Chipbreaker is for Aluminum)



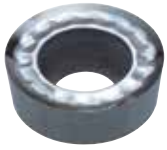
· Exclusive chip breaker for aluminum and aluminum alloy

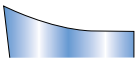
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr



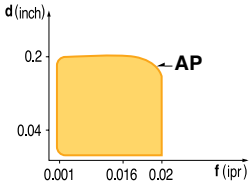
		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0803M0-AM													146078 $ 16.21			0.315	1/8	9/64	Turning PRDCN	E55
RCGT 1003M0-AM													146081 $ 20.59			0.394	1/8	5/32		
RCGT 10T3M0-AM													145665 $ 20.59			0.394	5/32	11/64		
RCGT 1204M0-AM													145666 $24.14			0.472	3/16	11/64		

RCGT-AP (“AP” Chipbreaker is for Aluminum)

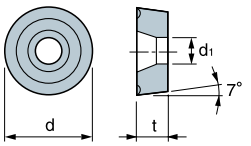




· Exclusive chip breaker for aluminum and aluminum alloy

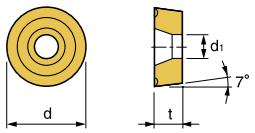


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



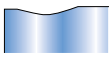
		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0803M0-AP													146315 $ 16.21			0.315	1/8	9/64	Turning PRDCN	E55
RCGT 10T3M0-AP													147377 $ 20.59			0.394	5/32	11/64		
RCGT 1204M0-AP													148421 $ 24.14			0.472	3/16	11/64		

RCMX

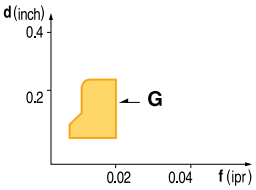


		Coated Carbide									Cermet		Uncoated Carbide				(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCMX 1003M0					149294 $ 10.67											0.394	1/8	0.142	Turning PRDCN	E55
RCMX 1204M0					149272 $ 13.65											0.472	3/16	0.165		

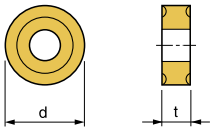
RNMG Negative Turning Inserts



· Suitable for general cutting



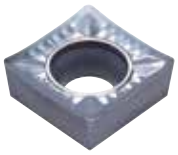
- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr

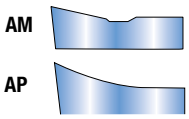


		Coated Carbide									Cermet		Uncoated Carbide				(inch)			Applicable Holders	
Designation	ISO	PT10C	PT22C	PT30C	PM25C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RNMG 43-G	120400			148724 $ 13.07												1/2	3/16	13/64		
RNMG 64-G	190600			146783 $ 25.22												3/4	1/4	5/16		
RNMG 84-G	250600			146092 $ 47.05												1	1/4	23/64		

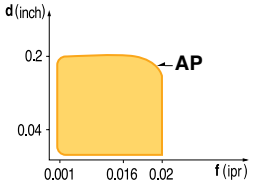
SC_T 90° Positive Turning Inserts

SCGT-AM/AP (AM & AP Chipbreakers are for Aluminum)

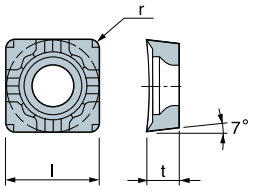




· Exclusive chip breakers for aluminum and aluminum alloy



- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr

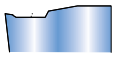


		Coated Carbide										Diamond Coated	Uncoated Carbide				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	t	r	Holder	Page No.
SCGT 32.51-AM	09T304												146094 $ 18.05	3/8	5/32	1/64	Turning SSBCR/L	E57
SCGT 32.52-AM	09T308												145667 $ 18.05	3/8	5/32	1/32	SSSCR/L Boring	E58
SCGT 431-AM	120404												146101 $ 20.03	1/2	3/16	1/64	SSKCR/L	E71
SCGT 432-AM	120408												145668 $ 20.03	1/2	3/16	1/32		
SCGT 32.51-AP(K)	09T304												146993 $ 18.05	3/8	5/32	1/64		
SCGT 32.52-AP	09T308												146994 $ 18.05	3/8	5/32	1/32		
SCGT 431-AP	120404												146996 $ 20.03	1/2	3/16	1/64		
SCGT 432-AP	120408												146995 $ 20.03	1/2	3/16	1/32		

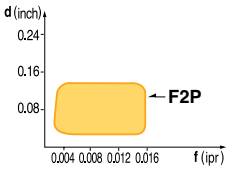
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

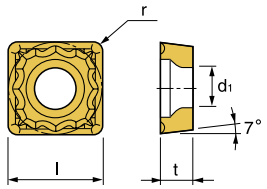
SCMT-F2P



- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting

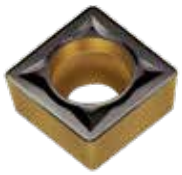


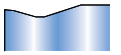
- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



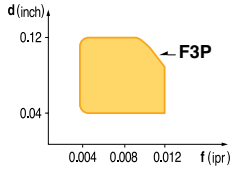
		Coated Carbide							Cermet			Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
Designation	**ISO**	**PT10C**	**PT15C**	**PT20C**	**PT30C**	**PM10P**	**KT05C**	**KT10C**	**PT10S**	**PT20S**	**ST10P**	**ND100**	**KT10U**	**l**	**t**	**r**	**Holder**	**Page No.**
SCMT 32.52-F2P	09T308		**149281 $ 10.74**		**146932 $ 10.74**									3/8	5/32	1/32	**Turning**	
																	SSBCR/L	E57
																	SSSCR/L	E58
																	Boring	
																	SSKCR/L	E71

SCMT-F3P

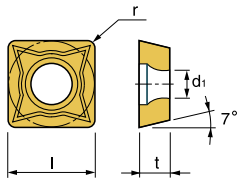




- Suitable for intermittent cutting and cast iron machining
- Good surface finish due to low cutting force
- Suitable for both boring and outer diameter turning



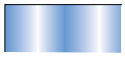
- USE
  Medium
- Recommendation
  F3P d = 0.04~0.12inch
  f = 0.004~0.012ipr



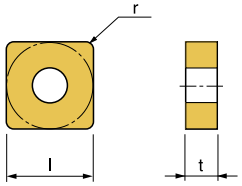
		Coated Carbide							Cermet		Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
Designation	**ISO**	**PT10C**	**PT15C**	**PT20C**	**PT25C**	**PT30C**	**KT10C**	**KT15C**	**PT20S**	**PT30S**	**ND100**	**KT10U**	**l**	**t**	**r**	**Holder**	**Page No.**
SCMT 21.51-F2P	070204					**146107 $ 10.41**							1/4	3/32	1/64	**Turning**	
																SSBCR/L	E57
SCMT 32.51-F3P	09T304					**146109 $ 10.74**							3/8	5/32	1/64	SSSCR/L	E58
																Boring	
SCMT 32.52-F3P	09T308				**149281 $ 10.74**	**148830 $ 10.74**		**149224 $ 10.74**					3/8	5/32	1/32	SSKCR/L	E71
SCMT 431-F3P	120404				**149319 $ 14.20**								1/2	3/16	1/64		
SCMT 432-F3P	120408		**149320 $ 14.20**										1/2	3/16	1/32		

SNM_ 90° Negative Turning Inserts

SNMA

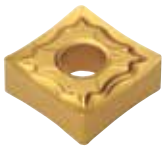


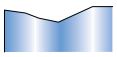
- Flat top geometry for the machining of Cast Iron & Hardened steels



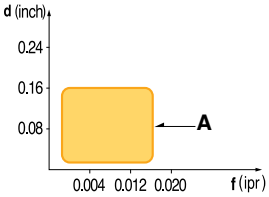
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT30C**	**PM10P**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**KT15C**	**PT10S**	**PT20S**	**KTM10U**	**l**	**t**	**r**	**Holder**	**Page No.**
SNMA 434	120416										**149327 $ 12.65**				1/2	3/16	1/16	**Turning**	
																		MSDNN	E50
																		MSKNR/L	E50
																		MSRNR/L	E51
																		Boring	
																		PSKNR/L	E68

SNMG-A

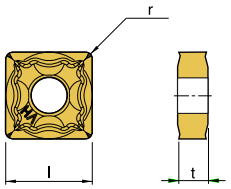




- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum

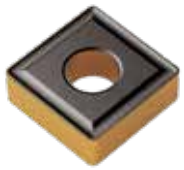


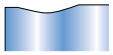
- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.14inch
  f = 0.004~0.016ipr



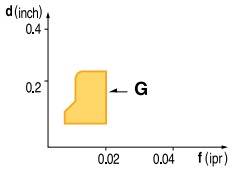
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
																		Turning	
SNMG 431-A	120404							147710 $ 12.65							1/2	3/16	1/64	MSDNN	E50
																		MSKNR/L	E50
SNMG 432-A	120408							147713 $ 12.65						147714 $ 10.16	1/2	3/16	1/32	MSRNR/L	E51
																		Boring	
																		PSKNR/L	E68

SNMG-G

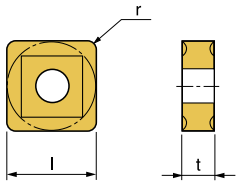




- Suitable for general cutting condition cutting

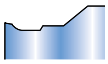


- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr

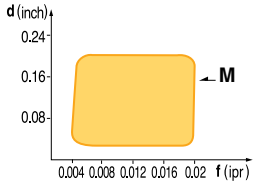


		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
																		Turning	
SNMG 431-G	120404					147741 $ 12.65									1/2	3/16	1/64	MSDNN	E50
SNMG 432-G	120408				149280 $ 12.65										1/2	3/16	1/32	MSKNR/L	E50
																		MSRNR/L	E51
SNMG 642-G	190608					146436 $ 26.32									3/4	1/4	1/32	Boring	
																		PSKNR/L	E68
SNMG 866-G	250924					146156 $ 54.14									1.00	3/8	3/32		

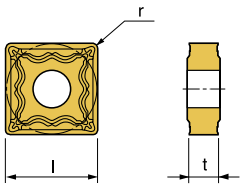
SNMG-M



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



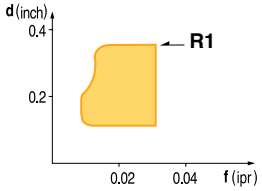
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
																		Turning	
SNMG 432-M	120408				149325 $ 12.90										1/2	3/16	1/32	MSDNN	E50
																		MSKNR/L	E50
																		MSRNR/L	E51
																		Boring	
																		PSKNR/L	E68

Quick Choice Grade Selection

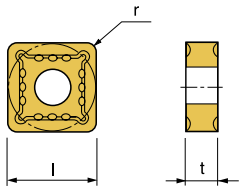
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

SNMG-R1

- Excellent chip control at deep depth of cut and fast feed rate
- Strong cutting edge makes excellent cutting performance at intermittent cutting



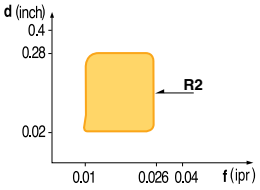
- USE
  Roughing
- Recommendation
  R1 d = 0.12~0.32inch
  f = 0.012~0.032ipr



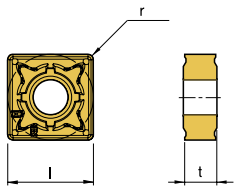
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 433-R1	120412				146415 $ 12.65										1/2	3/16	3/64	**Turning**	
SNMG 543-R1	150612				146429 $ 20.15										5/8	1/4	3/64	MSDNN MSKNR/L MSRNR/L	E50 E50 E51
SNMG 643-R1	190612				146079 $ 26.32										3/4	1/4	3/64	**Boring**	
																		PSKNR/L	E68

SNMG(M)-R2

- Suitable for heavy duty cutting due to strong cutting edge
- Wide chip control range with low cutting force



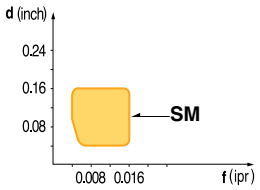
- USE
  Roughing
- Recommendation
  R2 d = 0.12~0.44inch
  f = 0.012~0.052ipr



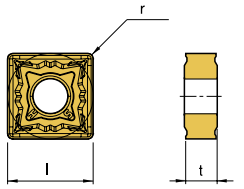
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PM20U	l	t	r	Holder	Page No.
SNMG 433-R2	120412				147753 $ 12.90										1/2	3/16	3/64	**Turning**	
SNMG 543-R2	150612				147757 $ 20.15										5/8	1/4	3/64	MSDNN MSKNR/L MSRNR/L	E50 E50 E51
SNMG 643-R2	190612				146412 $ 26.32	148626 $ 26.71									3/4	1/4	3/64	**Boring**	
SNMG 644-R2	190616				146377 $ 26.32										3/4	1/4	1/16	PSKNR/L	E68

SNMG-SM

- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance has been reinforced through high rake angle of chip breaker land

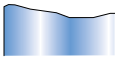


- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr

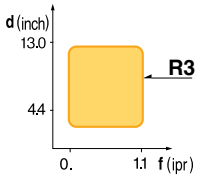


		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 431-SM	120404							148161 $ 12.65							1/2	3/16	1/64	**Turning**	
SNMG 432-SM	120408							147747 $ 12.65							1/2	3/16	1/32	MSDNN MSKNR/L MSRNR/L	E50 E50 E51
																		Boring	
																		PSKNR/L	E68

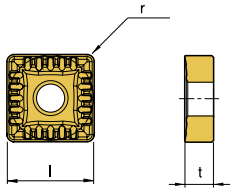
SNMM-R3



- Specially designed toughest cutting edge provides superior cutting performance at deep depth of cut and fast feed rate
- Unique design of dot on cutting edge makes smooth chip flow and reduce cutting force



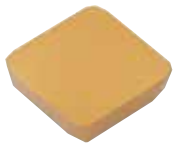
- USE
  Heavy Duty
- Recommendation
  R3 d = 0.16~0.52inch
  f = 0.018~0.06ipr

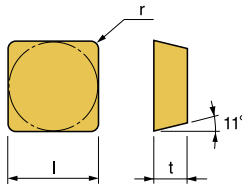


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PM20U	l	t	r	Holder	Page No.
																		Turning	
SNMM 643-R3	190612				**147703 $ 26.71**										3/4	1/4	3/64	MSDNN	E50
																		MSKNR/L	E50
SNMM 856-R3	250724				**147706 $ 48.18**										1.00	5/16	3/32	MSRNR/L	E51
																		Boring	
																		PSKNR/L	E68

SP_ _ 90° Positive Turning Inserts

SPG

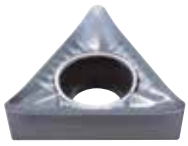


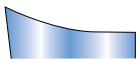


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PM20U	l	t	r	Holder	Page No.
SPG 633	190412													**146463 $ 23.01**	3/4	3/16	3/64		

TC_T 60° Positive Turning Inserts

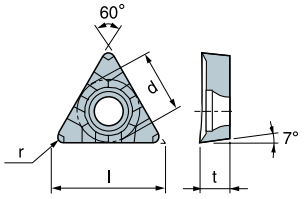
TCGT-AM (AM Chipbreaker is for Aluminum)





- Exclusive chip breaker for aluminum and aluminum alloy

- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr



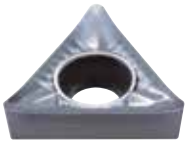
Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
																		Turning	
TCGT 21.51-AM	110204												**146120 $ 15.03**	0.433	1/4	3/32	1/64	STFCR/L	E58
TCGT 21.52-AM	110208												**146121 $ 15.03**	0.433	1/4	3/32	1/32	STGCR/L	E59
																		Boring	
TCGT 32.50.5	16T302												**146123 $ 19.01**	0.650	3/8	5/32	1/64	STFCR/L	E72
																		Chamfer	
TCGT 32.51-AM	16T304												**146135 $ 19.01**	0.650	3/8	5/32	1/64	CT45°	E142
TCGT 32.52-AM	16T308												**146137 $ 19.01**	0.650	3/8	5/32	1/32		

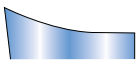
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

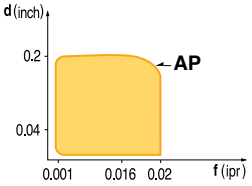
TC_T 60° Positive Turning Inserts

TCGT-AP (AP Chipbreaker is for Aluminum)

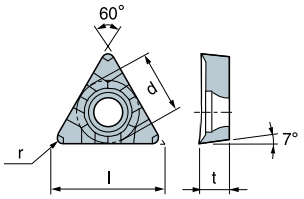




- Exclusive chip breaker for aluminum and aluminum alloy

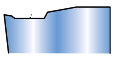


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr

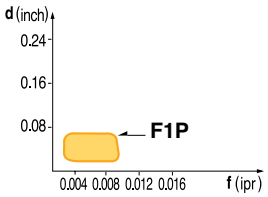


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
TCGT 21.50.5-AP	110202												146504 $ 15.03	0.433	1/4	3/32	0.008	Turning	
TCGT 21.51-AP	110204												146505 $ 15.03	0.433	1/4	3/32	1/64	STFCR/L STGCR/L	E58 E59
TCGT 21.52-AP	110208												146506 $ 15.03	0.433	1/4	3/32	1/32	Boring STFCR/L	E72
TCGT 32.51-AP(K)	16T304												146507 $ 19.01	0.650	3/8	5/32	1/64	Chamfer CT45°	E142
TCGT 32.52-AP(K)	16T308												146508 $ 19.01	0.650	3/8	5/32	1/32		

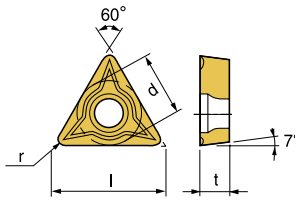
TCGT-F1P



- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting

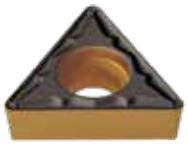


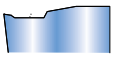
- USE
  Medium
- Recommendation
  F1P d = 0.004~0.06inch
  f = 0.002~0.01ipr



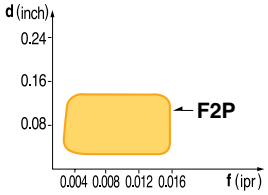
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PM30C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
TCGT 1.81.51-F1P	090204													146690 $ 8.55	0.378	7/32	3/32	1/64	Turning STFCR/L STGCR/L Boring STFCR/L Chamfer CT45°	 E58 E59 E72 E142

TCMT-F1P/F2P

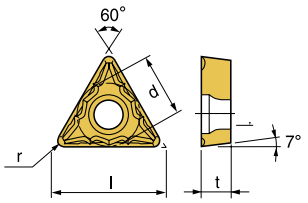




- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting

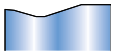


- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr

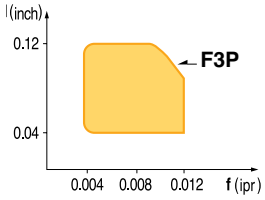


		Coated Carbide											Cermet		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PM30C	PT30C	MT15C	MT20C	MT30P	KT10C		PT10S	PT20S	l	d	t	r	Holder	Page No.
TCMT 32.50.5-F1P	16T302		149517 $ 12.48												0.650	3/8	5/32	0.008	Turning	
TCMT 21.50.5-F2P	110202		149514 $ 10.21												0.433	1/4	3/32	0.008	STFCR/L STGCR/L	E58 E59
TCMT 21.51-F2P	110204		149515 $ 10.20		149282 $ 10.20		146138 $ 10.21	149331 $ 10.21		146140 $ 10.21					0.433	1/4	3/32	1/64	Boring STFCR/L	 E72
TCMT 21.52-F2P	110208		149516 $ 10.20		149286 $ 10.20	146142 $ 10.21									0.433	1/4	3/32	1/32	Chamfer CT45°	 E142
TCMT 32.51-F2P	16T304		149518 $ 12.31		149232 $ 12.31										0.650	3/8	5/32	1/64		
TCMT 32.52-F2P	16T308		149343 $ 12.31		149362 $ 12.31	146613 $ 12.51		149263 $ 12.31							0.650	3/8	5/32	1/32		

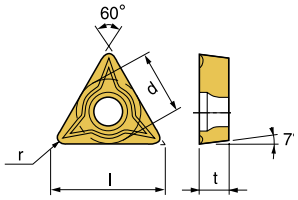
TCMT-F3P



- Suitable for intermittent cutting and cast iron machining
- Good surface finish due to low cutting force
- Suitable for both boring and outer diameter turning



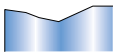
- USE
  Medium
- Recommendation
  F3P d = 0.04~0.12inch
  f = 0.004~0.012ipr



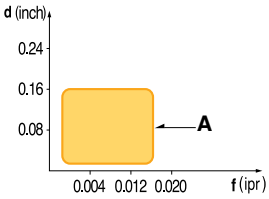
		Coated Carbide								Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	MT30P	KT05C	KT10C	PT10S	PT20S	KTM30U	PM20U	l	d	t	r	Holder	Page No.
TCMT 21.51-F3P	110204				149253 $ 10.21	146503 $ 10.21								0.433	1/4	3/32	1/64	**Turning**	
TCMT 21.52-F3P	110208					146144 $ 10.21								0.433	1/4	3/32	1/32	STFCR/L STGCR/L	E58 E59
TCMT 32.51-F3P	16T304				149235 $ 12.31									0.650	3/8	5/32	1/64	**Boring** STFCR/L	E72
TCMT 32.52-F3P	16T308		149342 $ 12.31		149239 $ 12.31									0.650	3/8	5/32	1/32	**Chamfer** CT45°	E142

TNMG 60° Negative Turning Inserts

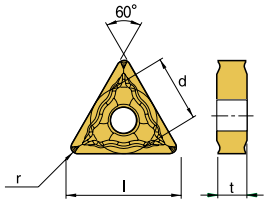
TNMG-A



- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum



- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.16inch
  f = 0.002~0.016ipr



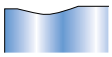
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
TNMG 331-A	160404					149290 $ 11.06		147632 $ 11.06						147633 $ 8.92	0.650	3/8	3/16	1/64	**Turning**	
TNMG 332-A	160408				149346 $ 11.06			147635 $ 11.06						147636 $ 8.92	0.650	3/8	3/16	1/32	MTCNN MTFNR/L MTENN MTGNR/L MTJNR/L	E51 E52 E52 E53 E53
TNMG 432-A	220408				149293 $ 15.73									148375 $ 12.52	0.866	1/2	3/16	1/32	**Boring** MTFNR MTUNR PTFNR/L	E65 E65 E69

Quick Choice Grade Selection

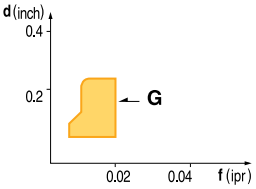
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

TNMG 60° Negative Turning Inserts

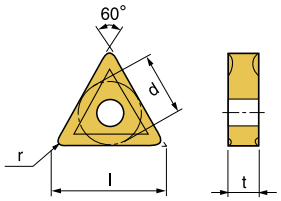
TNMG-G



- Suitable for general cutting condition cutting

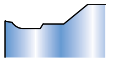


- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr

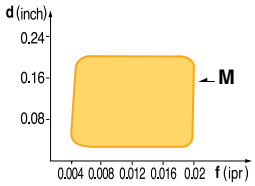


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT20C**	**PT22C**	**PT25C**	**PT30C**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**PTM30U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
TNMG 321-G	160304					**146270 $ 10.16**									0.650	3/8	1/8	1/64	**Turning**	
TNMG 322-G	160308					**146093 $ 10.16**									0.650	3/8	1/8	1/32	MTCNN	E51
TNMG 431-G	220404				**149324 $ 15.73**										0.886	1/2	3/16	1/64	MTFNR/L	E52
TNMG 432-G	220408				**149283 $ 15.73**										0.886	1/2	3/16	1/32	MTENN	E52
TNMG 433-G	220412					**146633 $ 15.73**									0.886	1/2	3/16	3/64	MTGNR/L	E53
TNMG 438-G	220432					**146726 $ 15.73**									0.886	1/2	3/16	1/8	MTJNR/L	E53
TNMG 543-G	270612				**149275 $ 25.22**										1.083	5/8	1/4	3/64	**Boring**	
TNMG 544-G	270616					**148550 $ 25.22**									1.083	5/8	1/4	1/16	MTFNR	E65
																			MTUNR	E65
																			PTFNR/L	E69

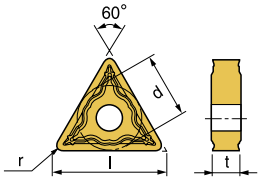
TNMG-M/M1



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



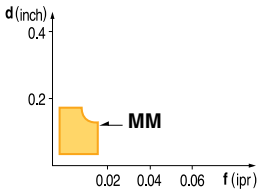
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	**ISO**	**PT10C**	**PT15C**	**PT20C**	**PT25C**	**PT30C**	**MT20C**	**MT30P**	**KT05C**	**KT10C**	**ST10P**	**PT10S**	**PT20S**	**PTM30U**	**l**	**d**	**t**	**r**	**Holder**	**Page No.**
TNMG 331-M1	160404				**149259 $ 11.06**										0.650	3/8	3/16	1/64	**Turning**	
TNMG 332-M	160408					**147641 $ 11.06**									0.650	3/8	3/16	1/32	MTCNN	E51
TNMG 431-M	220404				**149240 $ 15.99**										0.886	1/2	3/16	1/64	MTFNR/L	E52
TNMG 432-M	220408		**149449 $ 15.73**		**149228 $ 15.99**	**147645 $ 15.73**									0.886	1/2	3/16	1/32	MTENN	E52
TNMG 432-M1	220408				**149278 $ 15.73**										0.886	1/2	3/16	1/32	MTGNR/L	E53
TNMG 433-M	220412				**149288 $ 15.94**										0.886	1/2	3/16	3/64	MTJNR/L	E53
																			Boring	
																			MTFNR	E65
																			MTUNR	E65
																			PTFNR/L	E69

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

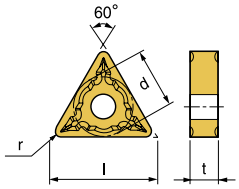
Images are representational only and may not reflect actual product.

TNMG-MM

- Excellent choice for a variety of steels including stainless steel



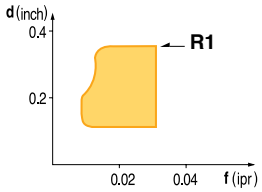
- USE
  Steels/Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr



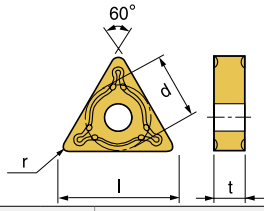
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 332-MM	160408				**149323 $ 11.79**										0.650	3/8	3/16	1/32	**Turning**	
																			MTCNN	E51
																			MTFNR/L	E52
TNMG 431-MM	220404				**149244 $ 15.94**										0.886	1/2	3/16	1/64	MTENN	E52
																			MTGNR/L	E53
																			MTJNR/L	E53
TNMG 432-MM	220408				**149234 $ 15.99**										0.886	1/2	3/16	1/32	**Boring**	
																			MTFNR	E65
																			MTUNR	E65
																			PTFNR/L	E69

TNMG-R1

- Excellent chip control at deep depth of cut and fast feed rate
- Strong cutting edge makes excellent cutting performance at intermittent cutting



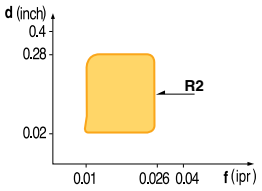
- USE
  Roughing
- Recommendation
  R1 d = 0.1~0.28inch
  f = 0.010~0.026ipr



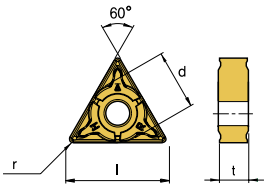
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 332-R1	160408				**146573 $ 11.06**										0.650	3/8	3/16	1/32	**Turning**	
																			MTCNN	E51
																			MTFNR/L	E52
TNMG 432-R1	220408				**146621 $ 15.73**										0.886	1/2	3/16	1/32	MTENN	E52
																			MTGNR/L	E53
																			MTJNR/L	E53
TNMG 433-R1	220412				**146638 $ 15.73**										0.886	1/2	3/16	3/64	**Boring**	
																			MTFNR	E65
																			MTUNR	E65
																			PTFNR/L	E69

TNMG-R2

- Suitable for heavy duty cutting due to strong cutting edge
- Wide chip control range with low cutting force



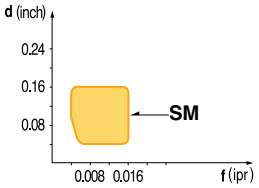
- USE
  Roughing
- Recommendation
  R2 d = 0.12~0.44inch
  f = 0.012~0.052ipr



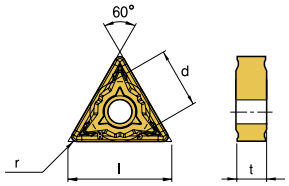
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 432-R2	220408		**149340 $ 12.66**		**147623 $ 15.73**										0.886	1/2	3/16	1/32	**Turning**	
																			MTCNN	E51
																			MTFNR/L	E52
																			MTENN	E52
																			MTGNR/L	E53
																			MTJNR/L	E53
TNMG 433-R2	220412				**147625 $ 15.94**										0.886	1/2	3/16	3/64	**Boring**	
																			MTFNR	E65
																			MTUNR	E65
																			PTFNR/L	E69

TNMG-SM

- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance has been reinforced through high rake angle of chip breaker land



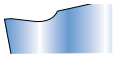
- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr

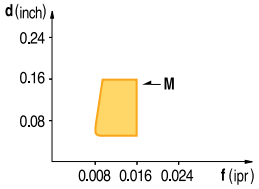


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
																			Turning	
TNMG 331-SM	160404							146169 $ 11.06							0.650	3/8	3/16	1/64	MTCNN MTFNR/L	E51 E52
TNMG 332-SM	160408							147614 $ 11.06							0.650	3/8	3/16	1/32	MTENN MTGNR/L MTJNR/L	E52 E53 E53
																			Boring	
TNMG 432-SM	220408					149271 $ 15.94		147616 $ 15.73							0.886	1/2	3/16	1/32	MTFNR MTUNR PTFNR/L	E65 E65 E69

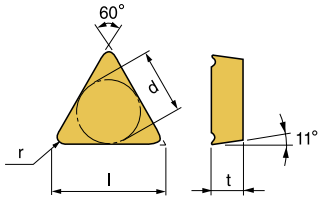
TPMR 60° Positive Turning Inserts

TPMR-F/TPMR-M





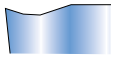
- Recommendation
  M d = 0.06~0.16inch
  f = 0.008~0.016ipr

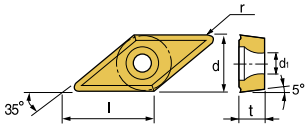


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TPMR 321-F	160304				149268 $ 11.22										0.650	3/8	1/8	1/64		
TPMR 322-M	160308				149229 $ 11.22										0.650	3/8	1/8	1/32		
TPMR 432-M	220408					147957 $ 21.44									0.886	1/2	3/16	1/32		

V_ _ T 35° Positive Turning Inserts

VBMT/VBMT-F2P



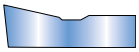


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
																			Boring	
VBMT 331	160404				149276 $ 17.79	146846 $ 17.79									0.650	3/8	3/16	1/64	SVQBR/L SVUBR/L	E72 E73
VBMT 332	160408				149269 $ 17.79	146849 $ 17.79									0.650	3/8	3/16	1/32		
VBMT 32.51-F2P	16T304							145633 $ 13.37							0.650	3/8	5/32	1/64		
VBMT 331-F2P	160404					146171 $ 17.79									0.650	3/8	3/16	1/64		
VBMT 332-F2P	160408							145622 $ 17.79			145623 $ 17.79				0.650	3/8	3/16	1/32		

Quick Choice Grade Selection

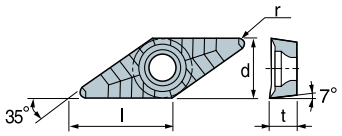
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

VCGT-AM (AM Chip breaker is for Aluminum)



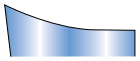
- Exclusive chip breaker for aluminum and aluminum alloy

- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr

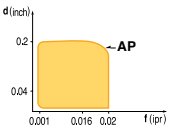


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 221-AM	110304												145670 $ 18.15	0.354	1/4	1/8	1/64	Turning	
VCGT 222-AM	110308												145671 $ 18.15	0.354	1/4	1/8	1/32	SVJCR/L	E59
VCGT 330.5-AM	160402												145672 $ 20.70	0.650	3/8	3/16	0.008		
VCGT 331-AM	160404												146177 $ 20.70	0.650	3/8	3/16	1/64		
VCGT 332-AM	160408												146180 $ 20.70	0.650	3/8	3/16	1/32		
VCGT 333-AM	160412												146181 $ 20.70	0.650	3/8	3/16	3/64		

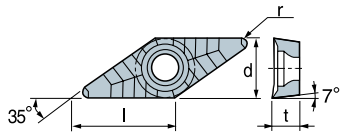
VCGT-AP (AP Chip breaker is for Aluminum)



- Exclusive chip breaker for aluminum and aluminum alloy

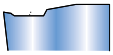


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr

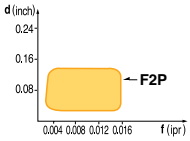


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 331-AP	160404												146850 $ 20.70	0.650	3/8	3/16	1/64	Turning	
VCGT 332-AP	160408												146545 $ 20.70	0.650	3/8	3/16	1/32	SVJCR/L	E59
VCGT 333-AP	160412												146852 $ 20.70	0.650	3/8	3/16	3/64		

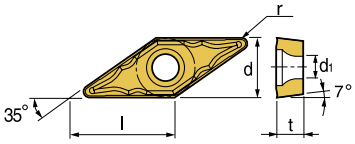
VCMT-F2P



- Excellent chip control at wide range of cutting conditions
- Suitable for stainless steel cutting



- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



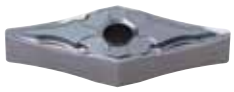
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
VCMT 331-F2P	160404										148461 $ 17.84				0.650	3/8	3/16	1/64	Turning	
VCMT 332-F2P	160408				149273 $ 17.85						148462 $ 17.84				0.650	3/8	3/16	1/32	SVJCR/L	E59

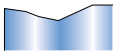
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

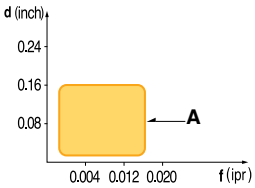
VNMG 35° Negative Turning Inserts

VNMG-A

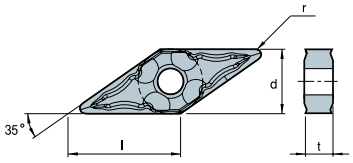




- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum

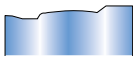


- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.16inch
  f = 0.002~0.016ipr

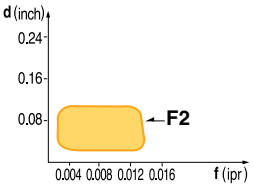


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
VNMG 331-A	160404										148385 $ 16.11			145546 $ 12.84	0.654	3/8	3/16	1/64	Turning MVJNR/L	E54
VNMG 332-A	160408										148386 $ 16.11			145547 $ 12.84	0.654	3/8	3/16	1/32		

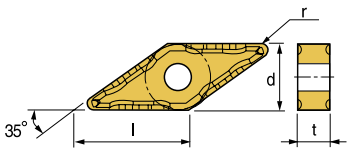
VNMG-F2



- Excellent chip control at varied depth of cutting
- Strong cutting edge toughness due to special design

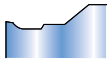


- USE
  Finishing
- Recommendation
  F2 d = 0.012~0.1inch
  f = 0.002~0.014ipr

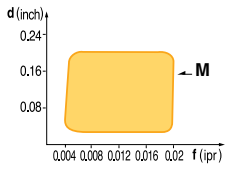


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
VNMG 330.5-F2	160402				149270 $ 16.12								147660 $ 13.05		0.654	3/8	3/16	0.008	Turning MVJNR/L	E54
VNMG 331-F2	160404				149321 $ 16.11								147661 $ 12.84		0.654	3/8	3/16	1/64		
VNMG 332-F2	160408												147662 $ 13.05		0.654	3/8	3/16	1/32		

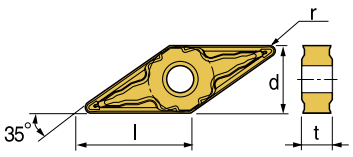
VNMG-M/M1



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining



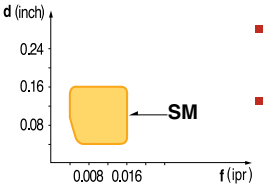
- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



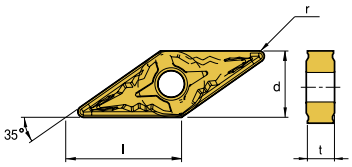
		Coated Carbide									Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT25C	PT30C	MT15C	MT20C	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
VNMG 331-M	160404			149284 $ 16.38										0.653	3/8	3/16	1/64	Turning MVJNR/L	E54
VNMG 332-M	160408			149265 $ 16.11		149339 $ 16.38								0.653	3/8	3/16	1/32	Boring MVUNR/L	E66
VNMG 333-M	160412				148866 $ 16.38									0.653	3/8	3/16	3/64		
VNMG 333-M1	160412			149274 $ 16.12										0.653	3/8	3/16	3/64		

VNMG-SM

- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance has been reinforced through high rake angle of chip breaker land



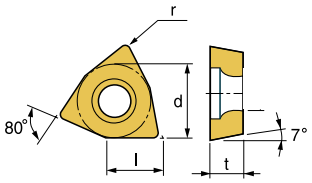
- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr



		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
																			Turning	
VNMG 332-SM	160408										**148390 $ 16.11**				0.654	3/8	3/16	1/32	MVJNR/L	E54

W_ _ T 80° Positive Turning Inserts

WCMT-C20/C21

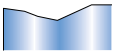


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	PM35P	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
																			Boring	
WCMT 1.81.52-C20	030208					**146242 $ 15.08**								**146537 $ 12.07**	0.149	7/32	3/32	1/32	SWLCR/L	E73
WCMT 21.52-C20	040208					**146237 $ 15.13**								**147155 $ 12.09**	0.169	1/4	3/32	1/32		
WCMT 2.522-C20	050308					**146236 $ 16.11**									0.212	5/16	1/8	1/32		
WCMT 32.52-C20	06T308					**146235 $ 16.11**								**146539 $ 12.88**	0.256	3/8	5/32	1/32		
WCMT 432-C20	080408					**146855 $ 19.71**									0.342	1/2	3/16	1/32		
WCMT 433-C20	080412					**146000 $ 19.71**								**146563 $ 15.78**	0.342	1/2	3/16	3/64		

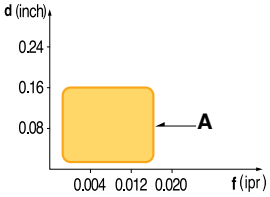
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

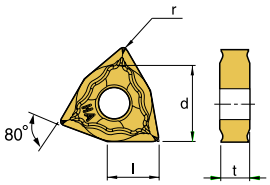
WNMG-A



- Sharp cutting edge generates low cutting force
- Specially designed tough main cutting edge
- Suitable for cutting of low carbon steel, stainless steel, aluminum

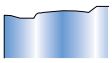


- USE
  Light & Medium
- Recommendation
  A d = 0.032~0.16inch
  f = 0.004~0.016ipr

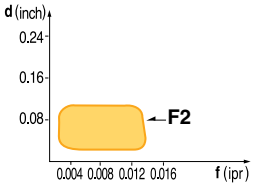


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 431-A	080404							147689 $ 12.65			148422 $ 12.65			147690 $ 10.16	0.343	1/2	3/16	1/64	Turning MWLNR/L	E54
WNMG 432-A	080408							147692 $ 12.65			148423 $ 12.65			147693 $ 10.16	0.343	1/2	3/16	1/32	Boring MWLNR/L	E66

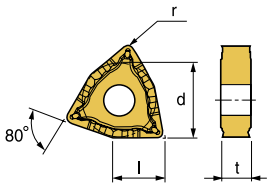
WNMG-F2



- Excellent chip control at varied depth of cutting
- Strong cutting edge toughness due to special design

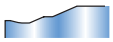


- USE
  Finishing
- Recommendation
  F2 d = 0.01~0.1inch
  f = 0.002~0.014ipr



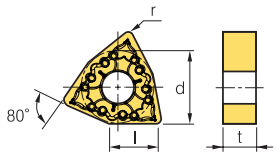
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 431-F2	080404		149411 $ 12.65												0.343	1/2	3/16	1/64	Turning MWLNR/L Boring MWLNR/L	E54 E66

WNMG-FVL



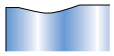
- Stable chip control in high toughness material; low carbon steel, pipe steel, and steel plates
- Improved chip control for facing, copy machining, and better surface finish

- USE
  Finishing
- Recommendation
  FVL d = 0.008~0.059inch
  f = 0.004~0.014ipr

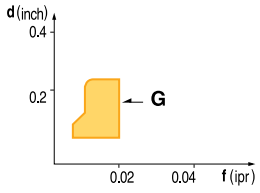


		Coated Carbide									Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-FVL	080404		149413 $ 12.66		149415 $ 12.65									0.343	1/2	3/16	1/64	Turning MWLNR/L Boring MWLNR/L	E54 E66

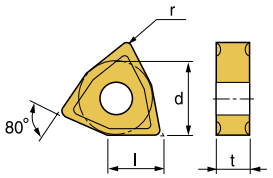
WNMG-G



- Suitable for general cutting

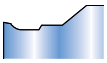


- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr

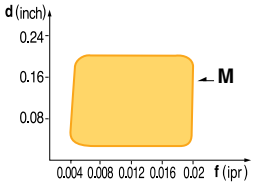


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-G	080408				146861 $ 12.65										0.343	1/2	3/16	1/32	Turning MWLNR/L Boring MWLNR/L	E54 E66

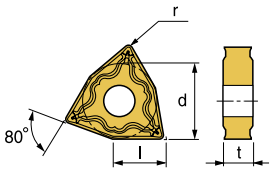
WNMG-M/M1



- Wide available chip control range from medium-finishing to medium-roughing
- Suitable chip breaker for CNC machining

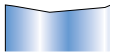


- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr

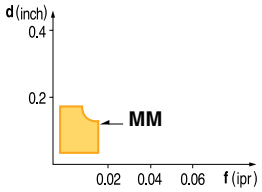


		Coated Carbide									Cermet		Uncoated Carbide				(inch)		Applicable Holders	
Designation	ISO	PT10C	PT15C	PT20C	PT25C	PT30C	PTM50C	MT30P	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 431-M	080404		149417 $ 12.65		149326 $ 12.86									0.343	1/2	3/16	1/64	Turning MWLNR/L	E54
WNMG 432-M	080408		149335 $ 12.86		149248 $ 12.90	147695 $ 12.65								0.343	1/2	3/16	1/32	Boring MWLNR/L	E66
WNMG 431-M1	080404				149423 $ 12.66									0.343	1/2	3/16	1/64		
WNMG 432-M1	080408		149419 $ 12.65		149425 $ 12.65		145639 $ 16.11	145660 $ 12.65						0.343	1/2	3/16	1/32		
WNMG 433-M1	080412		149421 $ 12.65		149427 $ 12.65									0.343	1/2	3/16	3/64		

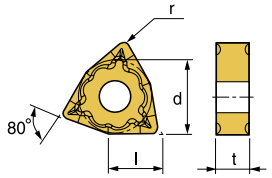
WNMG-MM



- Excellent choice for a variety of steels including stainless steel



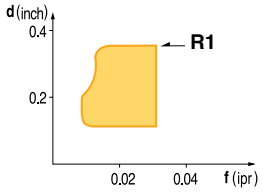
- USE
  Steels/Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr



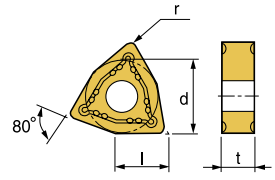
		Coated Carbide									Cermet		Uncoated Carbide				(inch)		Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-MM	080408				149249 $ 12.86	149318 $ 12.86		146188 $ 12.65							0.343	1/2	3/16	1/32	Turning MWLNR/L	E54
																			Boring MWLNR/L	E66

WNMG-R1

- Excellent chip control at deep depth of cut and fast feed rate
- Strong cutting edge makes excellent cutting performance at intermittent cutting

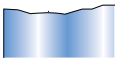


- USE
  Roughing
- Recommendation
  R1 d = 0.1~0.28inch
  f = 0.010~0.026ipr

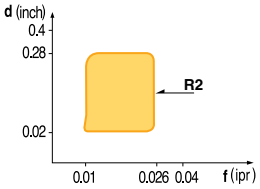


		Coated Carbide									Cermet		Uncoated Carbide				(inch)		Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT25C	PT30C	PT40C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-R1	080408				149277 $ 12.65	146857 $ 12.65	146194 $ 12.65								0.343	1/2	3/16	1/32	Turning MWLNR/L	E54
WNMG 433-R1	080412					146862 $ 12.65	146199 $ 12.65								0.343	1/2	3/16	1/64	Boring MWLNR/L	E66

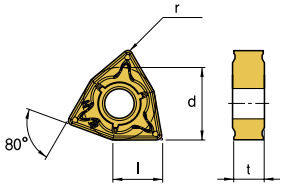
WNMG-R2



- Suitable for heavy duty cutting due to strong cutting edge
- Wide chip control range with low cutting force

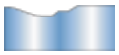


- USE
  Roughing
- Recommendation
  R2 d = 0.12~0.44inch
  f = 0.012~0.052ipr

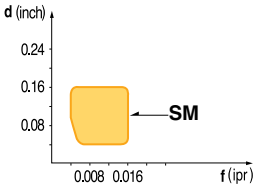


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 432-R2	080408				148170 $ 12.65										0.343	1/2	3/16	1/32	Turning MWLNR/L	E54
WNMG 433-R2	080412				147684 $ 12.90										0.343	1/2	3/16	3/64	Boring MWLNR/L	E66

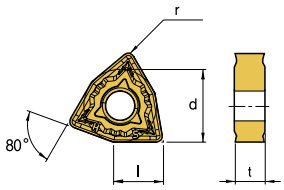
WNMG-SM



- Exclusive design for stainless steel cutting providing longer tool life
- Wear resistance has been reinforced through high rake angle of chip breaker land



- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr



		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 331-SM	060404							146201 $ 10.64							0.256	3/8	3/16	1/64	Turning MWLNR/L	E54
WNMG 332-SM	060408					149344 $ 10.80		146202 $ 10.64							0.256	3/8	3/16	1/32	Boring MWLNR/L	E66
WNMG 431-SM	080404							146204 $ 12.65			148424 $ 12.65				0.343	1/2	3/16	1/64		
WNMG 432-SM	080408							147677 $ 12.65			148425 $ 12.65				0.343	1/2	3/16	1/32		
WNMG 433-SM	080412							147678 $ 12.65							0.343	1/2	3/16	3/64		

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Images are representational only and may not reflect actual product.

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

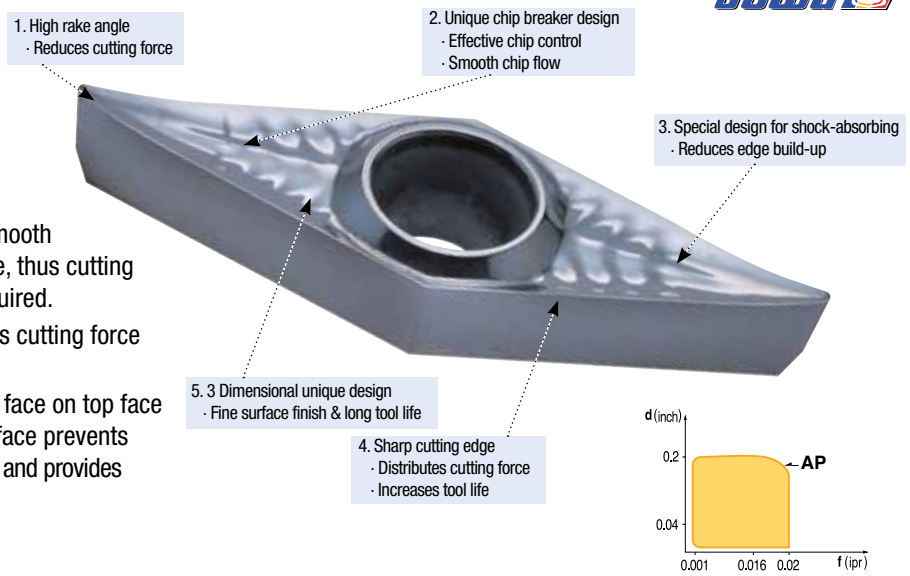
Aluminum Machining Chip Breaker AP

Recommended Cutting Condition

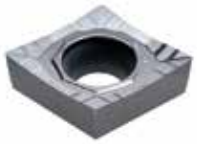
d=0.004~0.200inch
f=0.0012~0.0020ipr

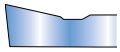
Special Features

1) Uniquely designed inclined plane provides smooth chip flow and chip breaking at the same time, thus cutting force is lower and longer tool life can be acquired.
2) High rake angle of main cutting edge reduces cutting force and prolongs tool life.
3) "AP" type chip breaker equipped with mirror face on top face through special buffing process. This mirror face prevents sticking of workpiece material on cutting edge and provides smooth chip flow.



CCGT-AM (AM Chip breaker is for Aluminum)

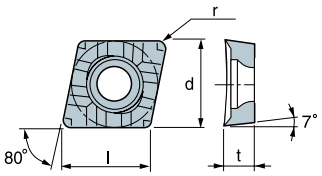




- High stability of cutting edge secures great performance in high speed and interrupted cutting
- High speed of medium and interrupted operation

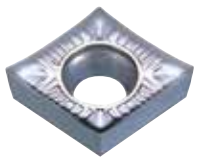
■ USE
Aluminum Cutting

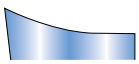
■ Recommendation
W d = 0.020~0.157inch
f = 0.002~0.020ipr



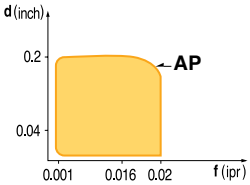
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CCGT 21.50.5-AM	060202													145661 $ 14.76	0.256	1/4	3/32	0.008	**Turning**	
CCGT 32.50.5-AM	09T302													145662 $ 17.29	0.382	3/8	5/32	0.008	SCACR/L SCLCR/L	E55 E56
CCGT 32.51-AM	09T304													145683 $ 17.29	0.382	3/8	5/32	1/64	**Boring** SCLCR/L	E69
CCGT 430.5-AM	120402													145684 $ 20.03	0.508	1/2	3/16	0.008		
CCGT 431-AM	120404													145685 $ 20.03	0.508	1/2	3/16	1/64		
CCGT 432-AM	120408													145686 $ 20.03	0.508	1/2	3/16	1/32		

CCGT-AP (AP Chip breaker is for Aluminum)



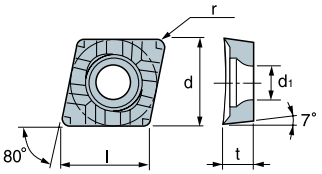


- Exclusive chip breaker for aluminum and aluminum alloy



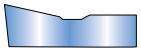
■ USE
Aluminum Cutting

■ Recommendation
AP d = 0.005~0.2inch
f = 0.001~0.02ipr



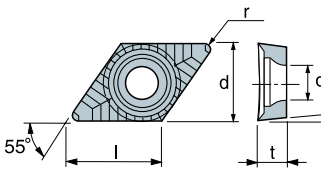
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
CCGT 21.51-AP	060204												146024 $ 14.76	0.256	1/4	3/32	1/64	**Turning**	
CCGT 32.50.5-AP	09T302												146027 $ 17.29	0.382	3/8	5/32	0.008	SCACR/L SCLCR/L	E55 E56
CCGT 32.51-AP	09T304											146701 $ 39.89	146011 $ 17.29	0.382	3/8	5/32	1/64	**Boring** SCLCR/L	E69
CCGT 32.52-AP	09T308												146012 $ 17.29	0.382	3/8	5/32	1/32		
CCGT 431-AP	120404												146627 $ 20.03	0.508	1/2	3/16	1/64		
CCGT 432-AP	120408												146023 $ 20.03	0.508	1/2	3/16	1/32		

DCGT-AM (AM Chip breaker is for Aluminum)



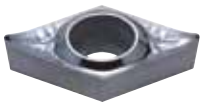
· Exclusive chip breaker for aluminum and aluminum alloy

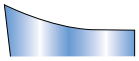
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr



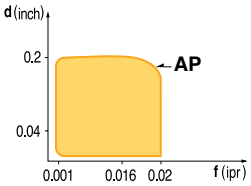
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AM	070202												146048 $ 14.76	0.307	1/4	3/32	0.008	**Turning**	
DCGT 21.52-AM	070208												146052 $ 14.76	0.307	1/4	3/32	1/32	SDJCR/L SDNCN	E56 E57
DCGT 32.50.5-AP	11T302												145664 $ 17.29	0.457	3/8	5/32	0.008	**Boring**	
DCGT 32.52-AP	11T308												146063 $ 17.29	0.457	3/8	5/32	1/32	SDQCR/L SDUCR/L SDZCR/L	E70 E70 E71

DCGT-AP (AP Chip breaker is for Aluminum)

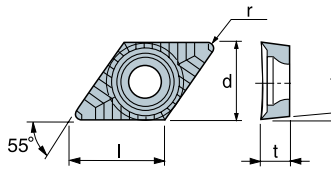




· Exclusive chip breaker for aluminum and aluminum alloy

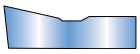


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



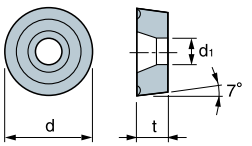
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AP	070202												146988 $ 14.76	0.307	1/4	3/32	0.008	**Turning**	
DCGT 21.51-AP	070204												146989 $ 14.76	0.307	1/4	3/32	1/64	SDJCR/L SDNCN	E56 E57
DCGT 32.50.5-AP	11T302												146990 $ 17.29	0.457	3/8	5/32	0.008	**Boring**	
DCGT 32.51-AP	11T304											146703 $ 39.89	146991 $ 17.29	0.457	3/8	5/32	1/64	SDQCR/L SDUCR/L SDZCR/L	E70 E70 E71
DCGT 32.52-AP	11T308											146704 $ 39.89	146992 $ 17.29	0.457	3/8	5/32	1/32		
DCGT 32.53-AP	120404												147764 $ 17.29	0.457	3/8	5/32	3/64		

RCGT-AM (AM Chip breaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy

- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr

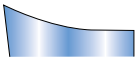


		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0803M0-AM													146078 $ 16.21			0.315	1/8	0.008	**Turning**	
RCGT 1003M0-AP													146081 $ 20.59			0.394	1/8	9/64	PRDCN	E55
RCGT 10T3M0-AM													145665 $ 20.59			0.394	5/32	1/64		
RCGT 1204M0-AM													145666 $ 24.14			0.472	3/16	1/32		

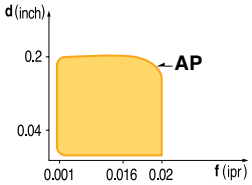
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

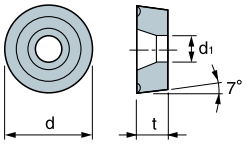
RCGT-AP (AP Chip breaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy

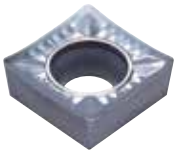


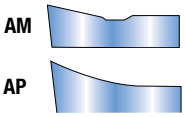
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.02inch
  f = 0.001~0.02ipr



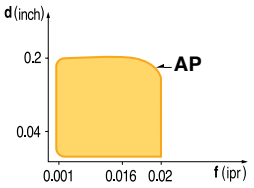
		Coated Carbide									Cermet		Uncoated Carbide		(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	d	t	d1	Holder	Page No.
RCGT 0803MO-AP													146315 $ 16.21		0.315	1/8	0.008	Turning PRDCN	 E55
RCGT 10T3MO-AP													147377 $ 20.59		0.394	5/32	1/64		
RCGT 1204MO-AP													148421 $ 24.14		0.472	3/16	1/32		

SCGT-AM/AP (AM & AP Chip breakers are for Aluminum)

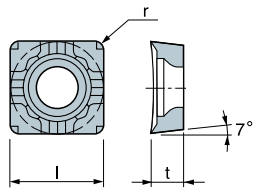




· Exclusive chip breakers for aluminum and aluminum alloy

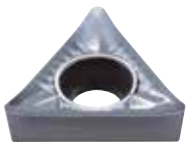


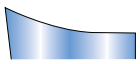
- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	t	r	Holder	Page No.
SCGT 32.51-AM	09T304												146094 $ 18.05	3/8	5/32	1/64	Turning SSBCR/L	 E57
SCGT 431-AM	120404												146101 $ 20.03	1/2	3/16	1/64	SSSCR/L Boring	E58
SCGT 432-AM	120408												145668 $ 20.03	1/2	3/16	1/32	SSKCR/L	E71
SCGT 32.51-AP(K)	09T304												146993 $ 18.05	3/8	5/32	1/64		
SCGT 32.52-AP	09T308												146994 $ 18.05	3/8	5/32	1/32		
SCGT 431-AP	120404												146996 $ 20.03	1/2	3/16	1/64		
SCGT 432-AP	120408												146995 $ 20.03	1/2	3/16	1/32		

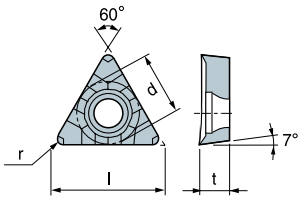
TCGT-AM (AM Chip breaker is for Aluminum)





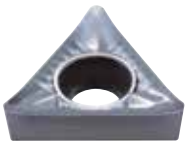
· Exclusive chip breaker for aluminum and aluminum alloy

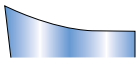
- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr



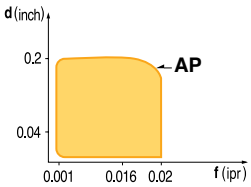
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
TCGT 21.51-AM	110204												146120 $ 15.03	0.433	1/4	3/32	1/64	Turning STFCR/L	 E58
TCGT 21.52-AM	110208												146121 $ 15.03	0.433	1/4	3/32	1/32	STGCR/L Boring	E59
TCGT 32.50.5	16T302												146123 $ 19.01	0.650	3/8	5/32	1/64	STFCR/L	E72
TCGT 32.51-AM	16T304												146135 $ 19.01	0.650	3/8	5/32	1/64		
TCGT 32.52-AM	16T308												146137 $ 19.01	0.650	3/8	5/32	1/32		

TCGT-AP (AP Chip breaker is for Aluminum)

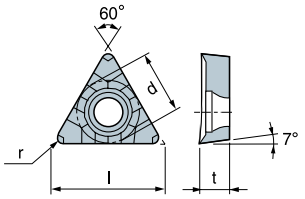




· Exclusive chip breaker for aluminum and aluminum alloy

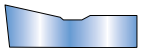


- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



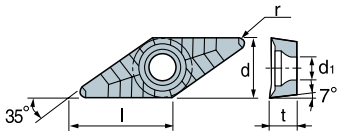
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
TCGT 21.50.5-AP	110202												146504 $ 15.03	0.433	1/4	3/32	0.008	Turning	
TCGT 21.51-AP	110204												146505 $ 15.03	0.433	1/4	3/32	1/64	STFCR/L	E58
TCGT 21.52-AP	110208												146506 $ 15.03	0.433	1/4	3/32	1/32	STGCR/L	E59
TCGT 32.51-AP(K)	16T304												146507 $ 19.01	0.650	3/8	5/32	1/64	Boring	
TCGT 32.52-AP(K)	16T308												146508 $ 19.01	0.650	3/8	5/32	1/32	STFCR/L	E72

VCGT-AM (AM Chip breaker is for Aluminum)



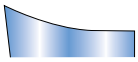
· Exclusive chip breaker for aluminum and aluminum alloy

- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr

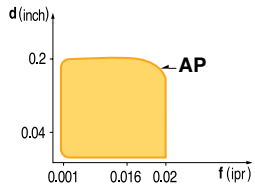


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 222-AM	110308												145671 $ 18.15	0.354	1/4	1/8	1/32	Turning	
VCGT 330.5-AM	160402												145672 $ 20.70	0.650	3/8	3/16	0.008	SVJCR/L	E59
VCGT 331-AM	160404												146177 $ 20.70	0.650	3/8	3/16	1/64		
VCGT 332-AM	160408												146180 $ 20.70	0.650	3/8	3/16	1/32		
VCGT 333-AM	160412												146181 $ 20.70	0.650	3/8	3/16	3/64		

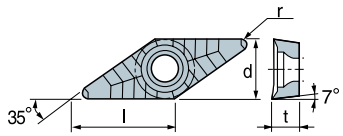
VCGT-AP (AP Chipbreaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy



- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 331-AP	160404												146850 $ 20.70	0.650	3/8	3/16	1/64	Turning	
VCGT 332-AP	160408												146545 $ 20.70	0.650	3/8	3/16	1/32	SVJCR/L	E59
VCGT 333-AP	160412												146852 $ 20.70	0.650	3/8	3/16	3/64		

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

C.B.N. Turning Inserts

SOWA C.B.N. products are made from Cubic Boron Nitride powder and special ceramic binder.
SOWA C.B.N. can provide excellent cutting performance for hardened steel and cast iron having high hardness.
Using a C.B.N. can replace additional grinding processes, thus saving costs.

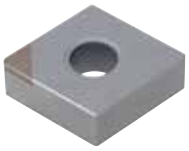
· Suitable for sintered alloy, hard material, heat treated alloy · Excellent surface finish at the cutting of hardened steel.
· Excellent for cast iron cutting

Recommended Cutting Condition

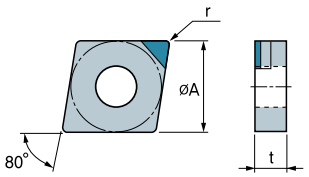
*For additional technical information see page **E161**

Workpiece	Speed (sfm)	Feed Turning(ipr) Milling(ipt)	Depth (inch)	1st Recommended Grade
Gray Cast Iron (180~230 HRB)	1325 ~ 3275	0.004 ~ 0.02	0.005 ~ 0.04	KB350
	1325 ~ 3275	0.004 ~ 0.02	0.005 ~ 0.04	KB360
Heat Treated Steel (over 45HRC)	325 ~ 450	0.001 ~ 0.012	0.005 ~ 0.04	KB320 KB330
High Temp Alloy (over 45HRC)	175 ~ 600	0.002 ~ 0.008	0.005 ~ 0.04	KB360
Sintered Alloy	175 ~ 825	0.001 ~ 0.008	0.005 ~ 0.04	KB360
Carbide Roll, High Speed Steel Roll	150 ~ 200	0.024 ~ 0.031	0.08 ~ 0.16	KB360

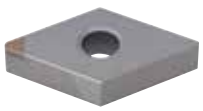
CNMA



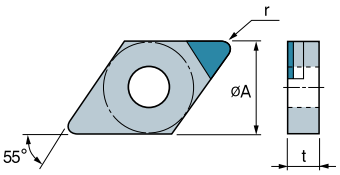
		C.B.N.			(inch)			Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Holder	Page No.
CNMA 432	120408	146131 $ 56.96	147886 $ 25.66	147965 $ 25.66	1/2	3/16	1/32	**Turning**	
								MCKNR/L	E48
								MCLNR/L	E48
								Boring	
								MCLNR/L	E64
								PCLNR/L	E67



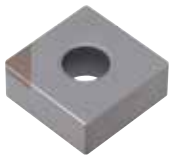
DNMA



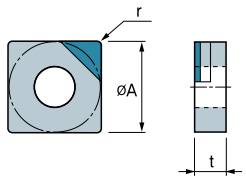
		C.B.N.			(inch)			Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Holder	Page No.
DNMA 432	120408	146132 $ 56.96			1/2	3/16	1/32	**Turning**	
								MDJNR/L	E49
								Boring	
								PSDNR/L	E67
								PDUNR/L	E68



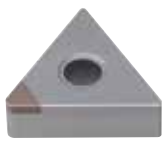
SNMA



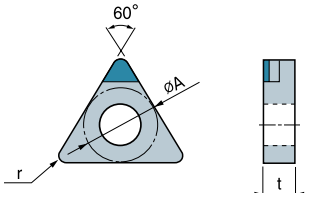
		C.B.N.			(inch)			Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Holder	Page No.
SNMA 432	120408	146133 $ 25.66			1/2	3/16	1/32	**Turning**	
								MSDNN	E50
								MSKNR/L	E50
SNMA-433	120412	146134 $ 25.66			1/2	3/16	3/64	MSRNR/L	E51
								Boring	
								PSKNR/L	E68



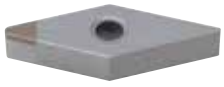
TNMA



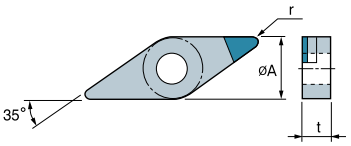
		C.B.N.			(inch)			Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Holder	Page No.
TNMA 332	160408	146139 $ 24.86			3/8	3/16	1/32	**Turning**	
								MTFNR/L	E52
								MTENN	E52
TNMA-432	220408	146141 $ 25.66			1/2	3/16	1/32	MTJNR/L	E53
								Boring	
								PTFNR/L	E69



VNMA



		C.B.N.			(inch)				Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Hole	Holder	Page No.
VNMA 331	160402			147968 $ 27.46	3/8	3/16	1/64		**Turning**	
									MVJNR/L	E54

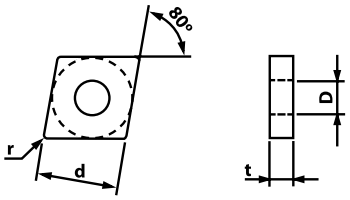


CERAMIC Inserts

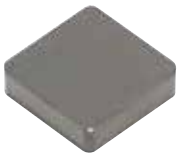
CNGA

*For additional technical information see page **E163-164**

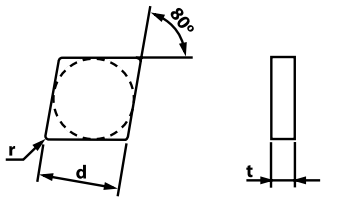
		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
CNGA 431	120404	149416 $ 10.85	149418 $ 11.40		0.500	0.187	0.016	**Turning**	
CNGA 432	120408	149420 $ 15.44	149422 $ 14.06		0.500	0.187	0.031	MCKNR/L MCLNR/L	E48 E48
CNGA 433	120412	149424 $ 10.85	149426 $ 14.06		0.500	0.187	0.047	MCRNR/L **Boring**	E49
CNGA 434	120416	149428 $ 10.85	149430 $ 11.40		0.500	0.187	0.063	MCLNR/L PCLNR/L	E64 E67
CNGA 452	120708	149432 $ 13.15	149434 $ 13.85		0.500	0.313	0.031		
CNGA 453	120712	149436 $ 13.15	149438 $ 13.85		0.500	0.313	0.047		



CNGN

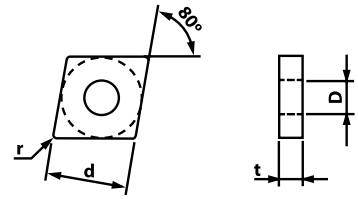


		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
CNGN 431	150404	149400 $ 10.85	149402 $ 11.40		0.500	0.187	0.016		
CNGN 432	150408	149404 $ 10.85	149406 $ 11.40		0.500	0.187	0.031		
CNGN 433	150412	149408 $ 10.85	149410 $ 11.40		0.500	0.187	0.047		
CNGN 434	150416	149412 $ 10.85	149414 $ 11.40		0.500	0.187	0.063		



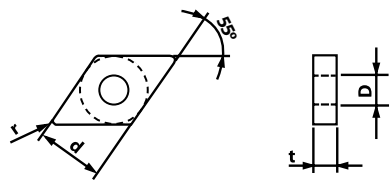
CNMA

		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
CNMA 432	150404			149558 $ 18.30	0.500	0.187	0.031	**Turning**	
CNMA 433	150412			149592 $ 20.00	0.500	0.187	0.047	MCKNR/L MCLNR/L	E48 E48
CNMA 434	150416			149562 $ 18.30	0.500	0.187	0.063	MCRNR/L **Boring**	E49
CNMA 544	160416			149564 $ 26.75	0.625	0.250	0.063	MCLNR/L PCLNR/L	E64 E67



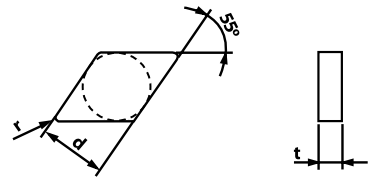
DNGA

		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
DNGA 431	150404	149448 $ 19.09	149450 $ 16.25		0.500	0.187	0.016	**Turning**	
DNGA 432	150408	149452 $ 15.50	149454 $ 19.09		0.500	0.187	0.031	MDJNR/L **Boring**	E49
DNGA 441	150604	149456 $ 16.45	149458 $ 17.30		0.500	0.250	0.016	PDSNR/L PDUNR/L	E67 E68
DNGA 442	150608	149460 $ 16.45	149462 $ 15.50		0.500	0.250	0.031		
DNGA 443	150612	149464 $ 16.45	149466 $ 17.30		0.500	0.250	0.047		



DNGN

		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
DNGN 432	150408	149440 $ 15.50			0.500	0.187	0.031		
DNGN 433	150412	149442 $ 15.50			0.500	0.187	0.047		
DNGN 442	150608	149444 $ 16.45			0.500	0.250	0.031		
DNGN 443	150612	149446 $ 16.45			0.500	0.250	0.047		

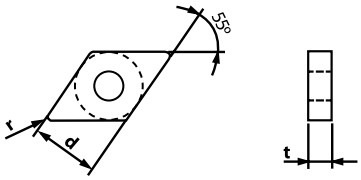


CERAMIC Inserts

DNMA

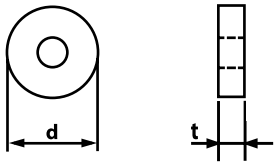
*For additional technical information see page **E163-164**

Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
DNMA 443	150612			149576 $ 28.85	0.500	0.250	0.047	**Turning**	
								MDJNR/L	E49
								Boring	
								PDSNR/L	E67
								PDUNR/L	E68



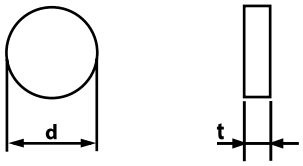
RNGA

Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
RNGA 43	120400	149480 $ 12.45	149482 $ 13.10		0.500	0.187			



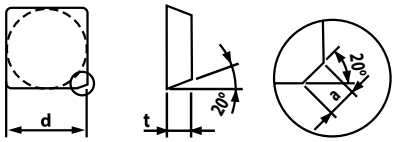
RNG

Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	Applicable Holders: Holder	Applicable Holders: Page No.
RNG 32	090300	149470 $ 9.45			0.375	0.125		
RNG 33	090400	149472 $ 9.95	149474 $ 10.45		0.375	0.187		
RNG 43	120400	149476 $ 12.45	149478 $ 10.39		0.500	0.187		

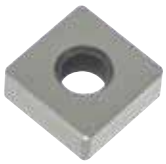


SEKN (For Milling)

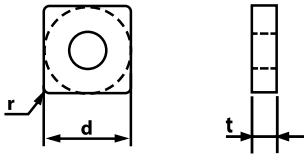
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S300	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
SEKN 42 AFTN	1203AFTN			149556 $ 24.85	0.500	0.125	0.079		



SNGA

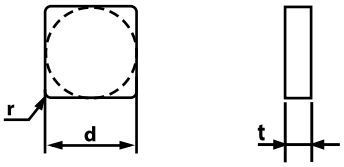


Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
SNGA 432	120408	149586 $ 9.90			0.500	0.187	0.031	**Turning**	
								MSDNN	E51
								MSKNR/L	E50
SNGA 433	120412	149588 $ 9.90	149590 $ 10.40		0.500	0.187	0.047	MSRNR/L	E51
								Boring	
								PSKNR/L	E68



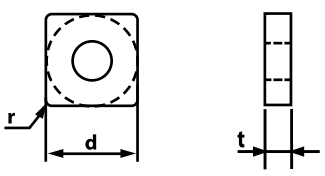
SNGN

Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
SNGN 432	120408	149580 $ 9.90			0.500	0.187	0.031		
SNGN 433	120412	149582 $ 9.90	149584 $ 10.40		0.500	0.187	0.047		



SNMA

Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Applicable Holders: Page No.
SNMA 433	120412			149560 $ 18.30	0.500	0.187	0.047	**Turning**	
								MSDNN	E51
								MSKNR/L	E50
SNMA 434	120416			149594 $ 14.85	0.500	0.187	0.063	MSRNR/L	E51
								Boring	
								PSKNR/L	E68

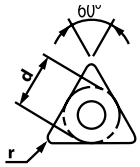


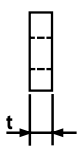
CERAMIC Inserts

TNGA

*For additional technical information see page **E163-164**

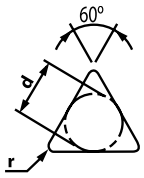
		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
TNGA 222	110308	149403 $ 8.50	149401 $ 8.95		0.250	0.125	0.031	**Turning**	
TNGA 331	160404	149520 $ 9.35	149522 $ 9.80		0.375	0.187	0.016	MTCNN	E51
TNGA 332	160408	149524 $ 9.35	149526 $ 8.50		0.375	0.187	0.031	MTENN	E52
TNGA 333	160412	149528 $ 9.35	149529 $ 9.80		0.375	0.187	0.047	MTFNR/L	E52
TNGA 432	220408	149530 $ 16.54			0.500	0.187	0.031	MTGNR/L	E53
TNGA 433	220412	149532 $ 14.30			0.500	0.187	0.047	MTJNR/L	E53
TNGA 434	220416	149534 $ 14.30			0.500	0.187	0.063	**Boring**	
								MTFNR/L	E65
								MTUNR/L	E65
								PTFNR/L	E69

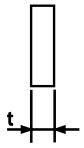




TNG

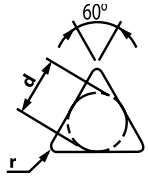
		CERAMIC					(inch)	Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
TNG 321	160304	149500 $ 9.10			0.375	0.125	0.016		
TNG 332	160408	149502 $ 9.35	149504 $ 8.94		0.375	0.187	0.031		
TNG 333	160412	149506 $ 9.35			0.375	0.187	0.047		
TNG 431	220404	149508 $ 14.30			0.500	0.187	0.016		
TNG 432	220408	149510 $ 14.30			0.500	0.187	0.031		
TNG 433	220412	149512 $ 14.30			0.500	0.187	0.047		

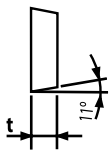




TPG

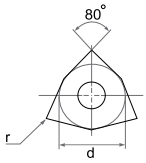
		CERAMIC					(inch)	Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
TPG 221	110304	149536 $ 12.20	149538 $ 12.80		0.250	0.125	0.016		
TPG 222	110408	149540 $ 12.20	149542 $ 12.80		0.250	0.125	0.031		
TPG 321	160304	149544 $ 13.00	149546 $ 13.65		0.375	0.125	0.016		
TPG 322	160308	149548 $ 13.00	149550 $ 11.46		0.375	0.125	0.031		
TPG 323	160312	149552 $ 13.00	149554 $ 13.65		0.375	0.125	0.047		





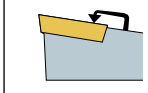
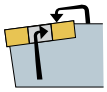
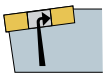
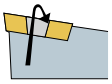
WNGA

		CERAMIC			(inch)			Applicable Holders	
Designation	ISO	GP100	GP300	S400	d	t	r	Holder	Page No.
WNGA 432	080408		149628 $ 16.34	149630 $ 24.90	0.500	0.187	0.031		
WNGA 433	080412		149632 $ 15.95	149634 $ 24.90	0.500	0.187	0.047		



Turning Toolholder Code System

1 Method of Mounting of Insert

 Top clamping without hole	Top clamping with hole (Double Clamp Lock)	 Top and Hole clamping (Multi clamp, Pin and Clamp)	 Hole Clamping (Pin Lock)
C	D	M	P
 Screw on			
S			

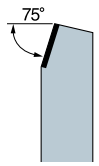
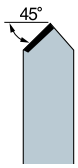
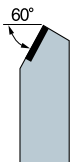
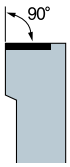
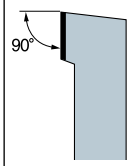
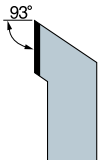
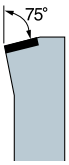
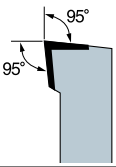
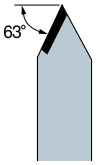
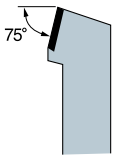
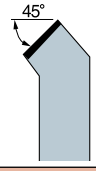
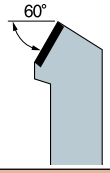
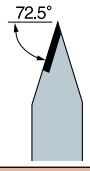
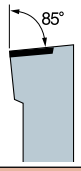
2 Insert Shape

C	D	E	K
L	R	S	T
V	W		

M S K N R

1 2 3 4 5

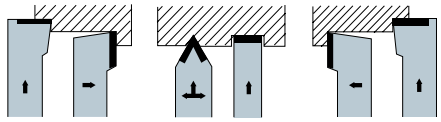
3 Holder Style

				
B	D	E	F	G
				
J	K	L	N	R
				
S	T	V	Y	

4 Clearance Angle of Insert

B	C
N	P

5 Hand of Tool

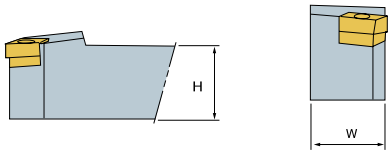


L	N	R

6 Pocket Style

C	Single Wall (full construction)
	Otherwise Full Wall

7 Holder Size



No.	Width	Height	No.	Width	Height
10	0.625	0.625	06	0.375	0.375
12	0.75	0.75	05	0.3125	0.3125
16	1.00	1.00	64	0.75	1.00
20	1.25	1.25	66	0.75	1.50
24	1.50	1.50	85	1.00	1.25
32	2.00	2.00	86	1.00	1.50
08	0.50	0.50	91	1.25	1.50

S 6 | 16 7 | 4 8 | D 9

8 Insert Size IC

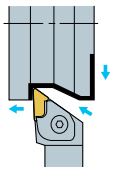
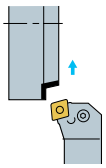
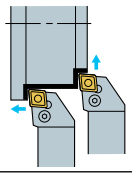
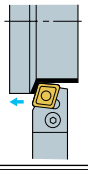
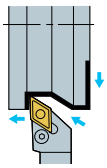
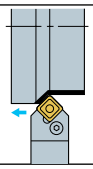
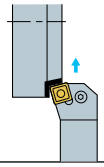
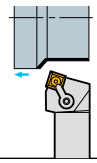
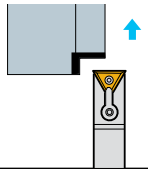
Number of 1/8" of inscribed circle

2 : 0.25
3 : 0.375
4 : 0.5
5 : 0.625
6 : 0.75
7 : 0.875
8 : 1.0
9 : 1.125
10 : 1.250
11 : 1.375
12 : 1.50

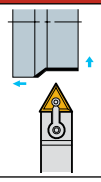
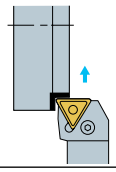
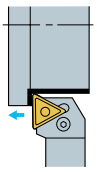
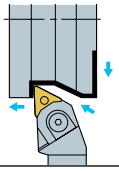
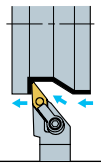
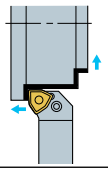
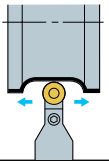
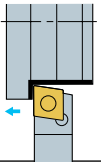
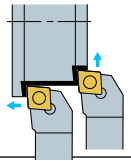
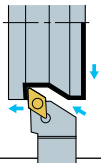
9 Qualified Surface & Length

A	Qualified back and end 4" long
B	Qualified back and end 4.5" long
C	Qualified back and end 5" long
D	Qualified back and end 6" long
E	Qualified back and end 7" long
F	Qualified back and end 8" long
M	Qualified front and end 4"
N	Qualified front and end 4.5"
P	Qualified front and end 5"
R	Qualified front and end 6"
S	Qualified front and end 7"
T	Qualified front and end 8"
G	Qualified back and end 10" long
H	Qualified back and end 12" long
I	Qualified back and end 2.5" long
J	Qualified back and end 2.75" long
K	Qualified back and end 3.15

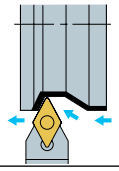
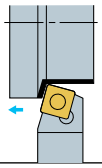
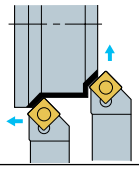
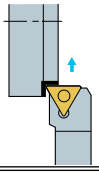
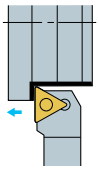
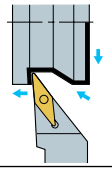
Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
CKJNR/L ➤ P. E47		**2525-M16** **3232-P16**	●	●			KN □□ 1604□□ ➤ P. E17
MCKNR/L ➤ P. E48		**12-4B** **16-4D** **20-4D** **86-4D** **16-4D-3** **86-4D-3**			●		CN □□ 43 □ 44 □ ➤ P. E10-12, E38-39
MCLNR/L ➤ P. E48		**12-4B** **16-4D** **85-4D** **20-5D** **20-6D** **24-8E**	●		●		CN □□ 32 □ 43 □ 54 □ 64 □ 86 □ ➤ P. E10-12, E38-39
MCRNR/L ➤ P. E49		**16-4D** **20-4D** **20-5D** **20-6D** **24-6E**	●				CN □□ 43 □ 54 □ 64 □ 86 □ ➤ P. E10-12, E39
MDJNR/L ➤ P. E49		**12-4B** **16-4D** **20-4D** **24-4D**	●	●			DN □□ 33 □ 43 □ 44 □ ➤ P. E14-16, E38-40
MSDNN ➤ P. E50		**12-4B** **16-4D** **85-4D** **20-5** **85-5D** **24-6E**	●	●			SN □□ 32 □ 43 □ 54 □ 64 □ 85 □ ➤ P. E19-22, E38, E40
MSKNR/L ➤ P. E50		**16-4D** **20-5D** **20-6D** **24-6E**			●		SN □□ 32 □ 43 □ 54 □ 64 □ ➤ P. E19-22, E38, E40
MSRNR/L ➤ P. E51		**12-4B** **16-4D** **20-5D** **20-6D** **24-6E**	●				SN □□ 32 □ 43 □ 54 □ 64 □ 85 □ ➤ P. E19-22, E38-40
MTCNN ➤ P. E51		**12-4B**	●				TN □□ 33 □ 32.5 □ 44 □ ➤ P. E24-27, E41

Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
MTENN ➤ P. E52		**10-3B** **12-3B** **16-4D** **20-5D**	●	●			TN □□ 33 □ 32.5 □ 44 □ ➤ P. E24-27, E38, E41
MTFNR/L ➤ P. E52		**12-3B** **16-3D** **16-4D** **20-5D**			●		TN □□ 33 □ 43 □ 54 □ ➤ P. E24-27, E38, E41
MTGNR/L ➤ P. E53		**10-3B** **12-3B** **16-3D** **16-4D** **20-4D** **16-5D** **20-5D**	●				TN □□ 21.5 □ 33 □ 43 □ 54 □ ➤ P. E24-27, E41
MTJNR/L ➤ P. E53		**10-3B** **12-3B** **16-3D** **16-4D** **20-4D** **20-5D**	●	●	●		TN □□ 33 □ 43 □ ➤ P. E24-27, E41
MVJNR/L ➤ P. E54		**8-3A** **12-3C** **16-3D** **20-4D**	●	●			VN □□ 33 □ ➤ P. E29, E38
MWLNR/L ➤ P. E54		**12-3B** **12-4D** **16-4D** **20-4D**	●		●		WN□□ 43 □ ➤ P. E31-33
PRDCN ➤ P. E55		**2525-M12**	●	●			RCMX M0 □ M0 □ ➤ P. E18, E36
SCACR/L **Screw On System** ➤ P. E55		**06-2J** **08-3K** **12-4B**	●				CC□□ 21.5 □ 32.5 □ ➤ P. E8-9
SCLCR/L ➤ P. E56		**06-2** **12-3** **08-2** **16-3** **08-3** **12-4** **10-3** **16-4**	●		●		CC□T 21.5 □ 32.5 □ ➤ P. E34
SDJCR/L ➤ P. E56		**06-2J** **10-3A** **08-2K** **12-3B** **10-2A** **16-3D** **12-2B**	●	●			DC□T 21.5 □ 32.5 □ ➤ P. E14, E35

Turning Toolholder Index

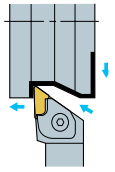
Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
SDNCN ➤ P. E57		**06-2J** **08-2K** **08-3A** **10-3A** **12-3B**	●	●			DC□T 21.5 □ 32.5 □ ➤ P. E14, E35
SSBCR/L ➤ P. E57		**08-3K** **10-3A** **12-4B**	●				SC□T 32.5 □ 43 □ ➤ P. E19, E36
SSSCR/L ➤ P. E58		**10-3A** **12-4B**	●		●		SC□T 32.5 □ 43 □ ➤ P. E19, E36
STFCR/L ➤ P. E58		**06-1.8J** **08-2K** **10-2A** **10-3A** **12-3B**			●		TC□T 1.81.5 □ 21.5 □ 32.5 □ ➤ P. E22-24
STGCR/L **Screw On System** ➤ P. E59		**05-1.8I** **06-1.8J** **08-2K** **10-2A** **8-3** **12-3B** **16-3D**	●				TC□T 1.81.5 □ 21.5 □ 32.5 □ ➤ P. E22-24
SVJCR/L ➤ P. E59		**08-2K** **12-2.5B** **10-2A** **10-3A** **12-B** **12-3B** **08-2.5K** **16-3D** **10-2.5A**	●	●			VC□T 22 □ VC□T 2.52 □ VC□T 33 □ ➤ P. E28

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

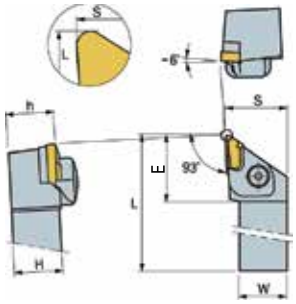
Images are representational only and may not reflect actual product.

External Turning Toolholders

CKJNR/L



Feed direction



Right-hand shown

Ref	Holder Style	Application
Comment	J Style, Approach Angle 93°	Turning, Copying

Designation		Code #	Price $	H	W	L	S	h	E	Inserts
CKJNR	2525-M16	145857	**173.23**	0.984	0.984	5.900	1.260	0.984	1.260	KN□□1604□□R
	3232-P16	145858	**190.92**	1.26	1.260	6.900	1.575	1.260	1.260	
CKJNL	2525-M16	145715	**173.23**	0.984	0.984	5.900	1.260	0.984	1.260	KN□□1604□□L
	3232-P16	146266	**190.92**	1.26	1.260	6.900	1.575	1.260	1.260	

Parts						
Clamp	Clamping Screw	Spring	Pin	Shim	Shim Screw	Wrench
CTH6R1	CHX0625	SR3	PN0515	SK33C	SHX0310	HW20L
146151	**146541**	**146153**	**146152**	**146955**	**146155**	**146954**
$ 30.23	**$ 21.37**	**$ 2.71**	**$ 3.47**	**$ 20.42**	**$ 7.88**	**$ 2.21**
CTH6L1	CHX0625	SR3	PN0515	SK33CL	SHX0310	HW20L
146542	**146541**	**146153**	**146152**	**146264**	**146155**	**146954**
$ 33.26	**$ 21.37**	**$ 2.71**	**$ 3.47**	**$ 20.42**	**$ 7.88**	**$ 2.21**

➤ P. E17

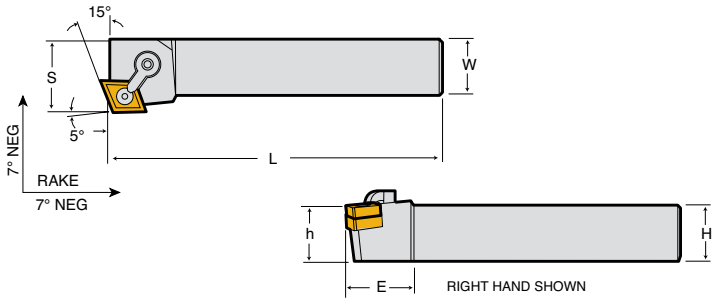
G3 TOOLING

High Performance Live Centres

Precision.
Quality.
Performance.

See Pages H114-118

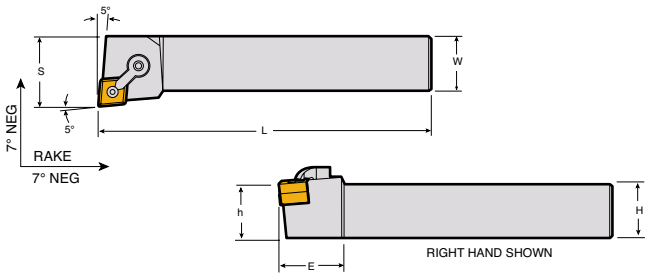
MCKNR/L



Ref	Holder Style				Application						Inserts	Parts				
Comment	K Style, Approach Angle 75°				Facing											
MCKNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	Wrench
16-4D	145820	**159.51**	145821	**163.38**	1.000	1.000	6.000	1.250	1.000	1.25	WN□□43□	CL-20	XNS-48	ICSN-432	NL-46	
20-4D	145822	**196.13**	145823	**196.13**	1.250	1.250	6.000	1.500	1.000	1.25		**146918**	**146922**	**146908**	**146912**	
												$ 6.93	**$ 1.56**	**$ 7.58**	**$ 3.42**	
20-5D	145824	**107.92**	145825	**107.92**	1.250	1.250	6.000	1.500	1.375	1.47	CN□□54□	CL-12	XNS-510	ICSN-533	NL-58	
												146917	**146920**	**146909**	**146913**	
												$ 6.93	**$ 1.65**	**$ 9.39**	**$ 3.89**	
20-6D	145826	**117.31**	145827	**117.31**	1.250	1.250	6.000	1.500	1.500	1.44	CN□□64□	CL-12	XNS-510	ICSN-633	NL-68	
												146917	**146920**	**146910**	**146914**	
												$ 6.93	**$ 1.65**	**$ 10.85**	**$ 4.36**	

➤ P. E10-12, E38-39

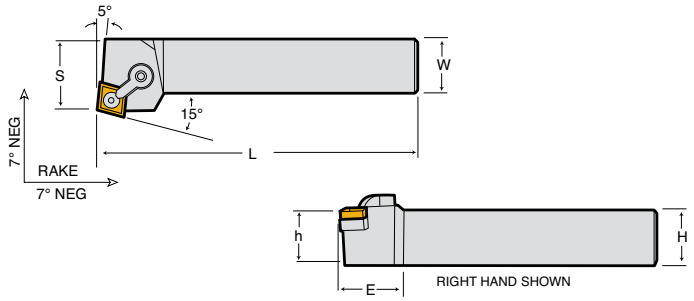
MCLNR/L

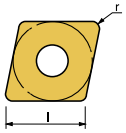


Ref	Holder Style				Application						Inserts	Parts			
Comment	L Style, Approach Angle 95°				Turning, Facing										
MCLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-4B	145780	**144.84**	145745	**144.84**	0.750	0.750	4.500	1.000	0.750	1.200	CN□□43□	CL-20	XNS-48	ICSN-432	NL-46
16-4D	145828	**163.38**	145829	**159.51**	1.000	1.000	6.000	1.250	1.000	1.200		**146918**	**146922**	**146908**	**146912**
20-4D	145838	**191.48**	145782	**196.13**	1.250	1.250	6.000	1.500	1.250	1.300		**$ 6.93**	**$ 1.56**	**$ 7.58**	**$ 3.42**
20-5D	145830	**196.13**	145831	**196.13**	1.250	1.250	6.000	1.500	1.250	1.370	CN□□54□	CL-12	XNS-510	ICSN-533	NL-58
												146917	**146920**	**146909**	**146913**
												$ 6.93	**$ 1.65**	**$ 9.39**	**$ 3.89**
20-6D	145832	**196.13**	145833	**196.13**	1.250	1.250	6.000	1.500	1.250	1.370	CN□□64□	CL-12	XNS-510	ICSN-633	NL-68
24-6E	145834	**230.79**			1.500	1.500	7.00	2.000	1.500	1.496		**146917**	**146920**	**146910**	**146914**
												$ 6.93	**$ 1.65**	**$ 10.85**	**$ 4.36**

➤ P. E10-12, E38-39

MCRNR/L

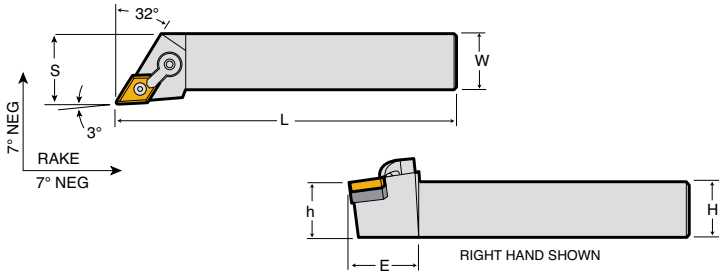


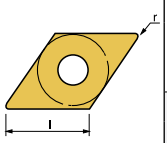
Ref	Holder Style	Application	Inserts	Parts
Comment	R Style, Approach Angle 75°	Turning, Facing		

MCRNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin
16-4D	145835	**163.38**	145836	**163.38**	1.000	1.000	6.000	1.25	1.000	1.24	CL-20	XNS-48	ICSN-432	NL-46
20-4D	145837	**194.27**	145778	**199.77**	1.250	1.250	6.000	1.50	1.250	1.24	**146918**	**146922**	**146908**	**146912**
											$ 6.93	**$ 1.56**	**$ 7.58**	**$ 3.42**
20-5D	145839	**196.13**	145840	**196.13**	1.250	1.250	6.000	1.50	1.250	1.34	CN□□54□	CL-12	XNS-510	ICSN-533	NL-58
												146917	**146920**	**146909**	**146913**
												$ 6.93	**$ 1.65**	**$ 9.39**	**$ 3.89**
20-6D	145841	**196.13**	145842	**144.69**	1.250	1.250	6.000	1.25	1.250	1.24	CN□□64□	CL-12	XNS-510	ICSN-633	NL-68
24-6E	145843	**230.79**	145844	**138.32**	1.500	1.500	7.000	2.00	1.500	1.49		**146917**	**146920**	**146910**	**146914**
												$ 6.93	**$ 1.65**	**$ 10.85**	**$ 4.36**

➤ P. E10-12, E39

MDJNR/L

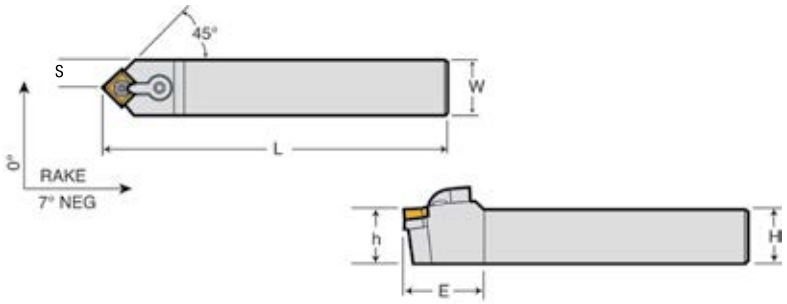


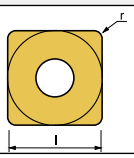
Ref	Holder Style	Application	Inserts	Parts
Comment	J Style, Approach Angle 93°	Turning, Copying		

MDJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin
12-4B	146328	**144.84**	146330	**144.84**	0.750	0.750	4.500	1.000	0.750	1.200	CL-12	XNS-59	IDSN-432	NL-46
16-4D	145845	**159.51**	145846	**159.51**	1.000	1.000	6.000	1.250	1.000	1.250	**146917**	**146921**	**146907**	**146912**
20-4D	145847	**196.13**	145848	**196.13**	1.250	1.250	6.000	1.500	1.250	1.240	**$ 6.93**	**$ 1.65**	**$ 6.93**	**$ 3.42**
											DN□□44□			

➤ P. E14-16, E38-40

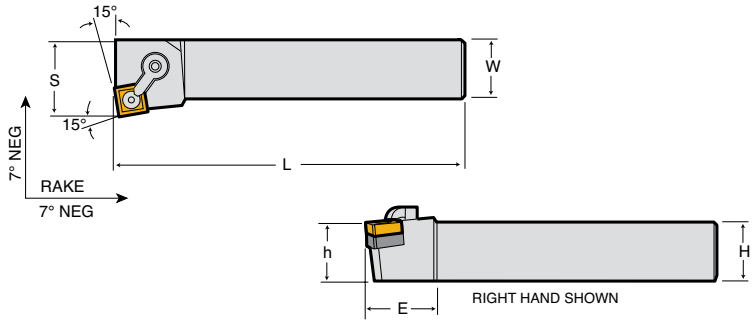
MSDNN

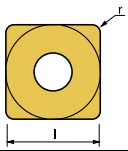


Ref	Holder Style		Application						Inserts	Parts			
Comment	D Style, Approach Angle 45°		Turning, Copying										
MSDNN	Code #	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-4B	145860	**55.18**	0.750	0.750	4.500	0.375	0.750	1.375	SN□□43□	CL-20 **146918** **$ 6.93**	XNS-48 **146922** **$ 1.56**	ISSN-432 **146903** **$ 7.48**	NL-46 **146912** **$ 3.42**
16-4D	145799	**159.51**	1.000	1.000	6.000	0.500	1.000	1.375		CL-9 **146916** **$ 6.93**	XNS-59 **146921** **$ 1.65**	ISSN-432 **146903** **$ 7.48**	NL-46 **146912** **$ 3.42**
85-4D	145759	**196.13**	1.250	1.000	6.000	0.500	1.000	1.375					
20-5E	147227	**114.83**	1.250	1.250	7.000	0.625	1.250	1.610	SN□□54□	CL-12 **146917** **$ 6.93**	XNS-510 **146920** **$ 1.65**	ISSN-533 **146904** **$ 8.47**	NL-58 **146913** **$ 3.89**
85-5D	145763	**114.83**	1.250	1.000	6.000	0.500	1.250	1.610					
20-6D	145866	**196.13**	1.250	1.250	6.000	0.625	1.250	1.750	SN□□64□	CL-12 **146917** **$ 6.93**	XNS-510 **146920** **$ 1.65**	ISSN-633 **146905** **$ 11.11**	NL-68 **146914** **$ 4.36**
24-6E	147404	**130.99**	1.500	1.500	7.000	0.750	1.500	1.750					

➤ P. E19-22, E38, E40

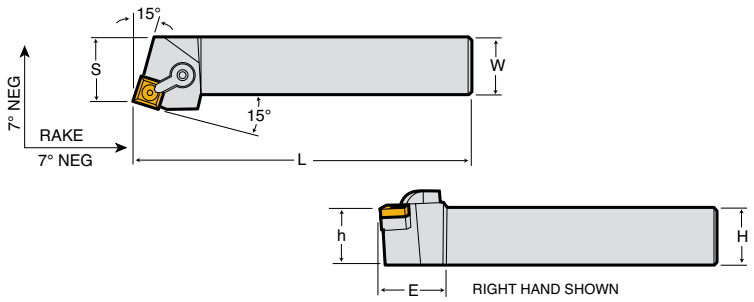
MSKNR/L



Ref	Holder Style				Application						Inserts	Parts			
Comment	K Style, Approach Angle 75°				Facing										
MSKNR/L	Code #		Code #		H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
	Right	Price $	Left	Price $											
16-4D	145849	**163.38**	145850	**163.38**	1.000	1.000	6.000	1.250	1.000	1.250	SN□□43□	CL-9 **146916** **$ 6.62**	XNS-59 **146921** **$ 1.65**	ISSN-432 **146903** **$ 7.48**	NL-46 **146912** **$ 3.42**
20-6D	145853	**196.13**			1.250	1.250	6.000	1.500	1.250	1.560	SN□□64□	CL-12 **146917** **$ 6.93**	XNS-510 **146920** **$ 1.65**	ISSN-633 **146905** **$ 11.11**	NL-68 **146914** **$ 4.36**
24-6E	145855	**230.79**			1.500	1.500	7.000	2.000	1.500	1.560					

➤ P. E19-22, E38, E40

MSRNR/L

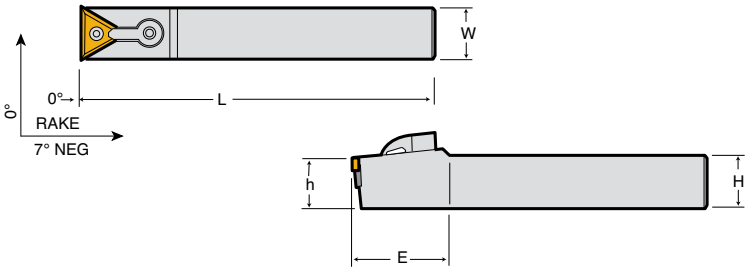


Ref	Holder Style	Application	Inserts	Parts
Comment	R Style, Approach Angle 75°	Turning		

MSRNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin
											SN□□43□			
12-4B	145869	**64.21**	145870	**64.21**	0.750	0.750	4.500	0.878	0.750	1.230	CL-12	XNS-48	ISSN-432	NL-46
16-4D	145800	**163.38**	145801	**163.38**	1.000	1.000	6.000	1.128	1.000	1.230	**146917**	**146922**	**146903**	**146912**
											$ 6.93	**$ 1.56**	**$ 7.48**	**$ 3.42**
20-5D	145802	**196.13**	145803	**143.05**	1.250	1.250	6.000	1.350	1.250	1.375	SN□□54□			
											CL-12	XNS-59	ISSN-533	NL-58
											146917	**146921**	**146904**	**146913**
											$ 6.93	**$ 1.65**	**$ 8.47**	**$ 3.89**
20-6D	145804	**196.13**	145805	**196.13**	1.250	1.250	6.000	1.318	1.250	1.500	SN□□64□			
											CL-12	XNS-510	ISSN-633	NL-68
24-6E	145806	**230.79**	145807	**230.79**	1.500	1.500	7.000	1.818	1.500	1.500	**146917**	**146920**	**146905**	**146914**
											$ 6.93	**$ 1.65**	**$ 11.11**	**$ 4.36**

➤ P. E19-22, E38, E40

MTCNN

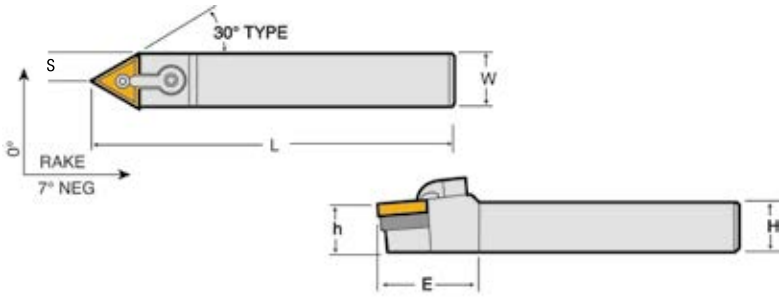


Ref	Holder Style	Application	Inserts	Parts
Comment	C Style	Turning		

MTCNN	Code #	Price $	H	W	L	h	E		Clamp	Clamp Screw	Shim	Pin
								TN□□43□				
12-4B	145859	**194.44**	0.750	0.750	4.500	0.750	1.430		CL-12	XNS-59	ITSN-432	NL-46
									146917	**146921**	**146901**	**146912**
									$ 6.93	**$ 1.65**	**$ 8.18**	**$ 3.42**

➤ P. E24-27, E41

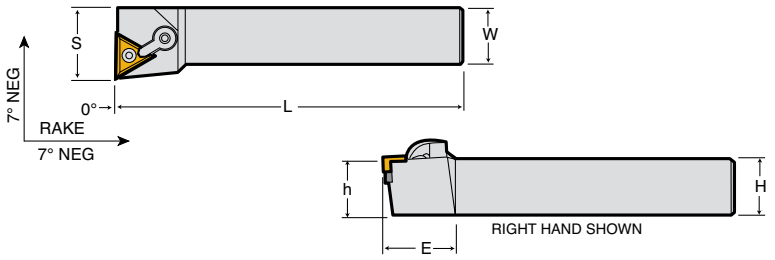
MTENN



Ref	Holder Style		Application						Inserts	Parts			
Comment	E Style, Approach Angle 60°		Turning, Copying										
MTENN	Code #	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
10-3B	145889	**108.20**	0.625	0.625	4.500	0.313	0.625	1.125	TN□□33□	CL-6	XNS-36	ITSN-332	NL-34L
12-3B	145890	**108.20**	0.750	0.750	4.500	0.375	0.750	1.125		**146915**	**146919**	**147114**	**146911**
										$ 6.93	**$ 1.56**	**$ 5.27**	**$ 3.71**
16-4D	145754	**163.38**	1.000	1.000	6.000	0.500	1.000	1.250	TN□□43□	CL-9	XNS-59	ITSN-432	NL-46
										146916	**146921**	**146901**	**146912**
										$ 6.62	**$ 1.65**	**$ 1.65**	**$ 3.42**
20-5D	145896	**114.83**	1.250	1.250	6.000	0.625	1.250	1.625	TN□□54□	CL-9	XNS-510	ITSN-533	NL-58
										146916	**146920**	**146902**	**146913**
										$ 6.62	**$ 1.65**	**$ 11.04**	**$ 3.89**

➤ P. E24-27, E38, E41

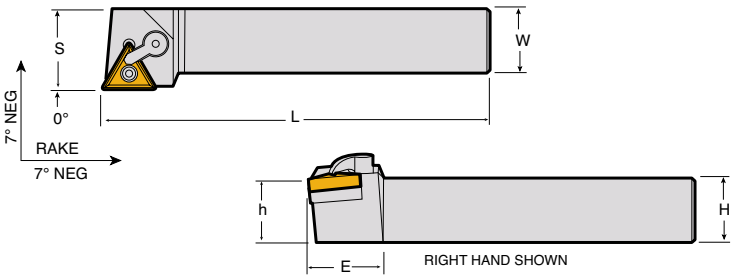
MTFNR/L



Ref	Holder Style				Application						Inserts	Parts			
Comment	F Style, Approach Angle 90°				Facing										
MTFNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-3B	145760	**64.21**	145761	**64.21**	0.750	0.750	4.500	1.000	0.750	0.787	TN□□33□	CL-20	XNS-48	ITSN-332	NL-34L
16-3D	145787	**163.38**			1.000	1.000	6.000	1.250	1.000	0.787		**146918**	**146922**	**147114**	**146911**
												$ 6.93	**$ 1.56**	**$ 5.27**	**$ 3.71**
16-4D	147370	**72.23**	147272	**163.38**	1.000	1.000	6.000	1.250	1.000	0.984	TN□□43□	CL-20	XNS-48	ITSN-433	NL-46
												146918	**146922**	**146977**	**146912**
												$ 6.93	**$ 1.56**	**$ 11.12**	**$ 3.42**
20-5D	147277	**140.18**	147273	**114.83**	1.250	1.250	6.000	1.500	1.250	1.299	TN□□54□	CL-12	XNS-510	ITSN-533	NL-58
												146917	**146920**	**146902**	**146913**
												$ 6.93	**$ 1.65**	**$ 11.04**	**$ 3.89**

➤ P. E24-27, E38, E41

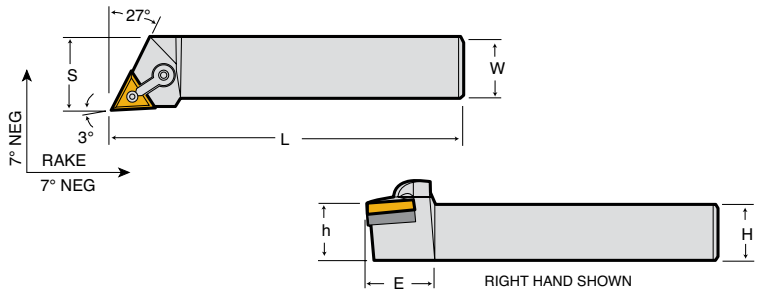
MTGNR/L



Ref	Holder Style				Application						Inserts	Parts			
Comment	G Style, Approach Angle 90°				Turning										
MTGNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
10-3B	145861	**108.20**	145862	**108.20**	0.625	0.625	4.500	0.875	0.625	1.120	TN□□33□	CL-6	XNS-36	ITSN-332	NL-34L
12-3B	145863	**148.35**	145864	**148.35**	0.750	0.750	4.500	1.000	0.750	1.120		**146915**	**146919**	**147114**	**146911**
16-3D	145812	**163.38**	145813	**163.38**	1.000	1.000	6.000	1.250	1.000	1.120		**$ 6.93**	**$ 1.56**	**$ 5.27**	**$ 3.71**
16-4D	145814	**163.38**	145815	**163.38**	1.000	1.000	6.000	1.250	1.000	1.300	TN□□43□	CL-9	XNS-59	ITSN-432	NL-46
20-4D	145816	**196.13**	145817	**196.13**	1.250	1.250	6.000	1.500	1.250	1.300		**146916**	**146921**	**146901**	**146912**
												$ 6.62	**$ 1.65**	**$ 8.18**	**$ 3.42**
16-5D	145730	**127.57**			1.000	1.000	6.000	1.250	1.000	1.440	TN□□54□	CL-12	XNS-510	ITSN-533	NL-58
20-5D	145818	**143.05**	145819	**143.05**	1.250	1.250	6.000	1.500	1.250	1.440		**146917**	**146920**	**146902**	**146913**
												$ 6.93	**$ 1.65**	**$ 11.04**	**$ 3.89**

➤ P. E24-27, E41

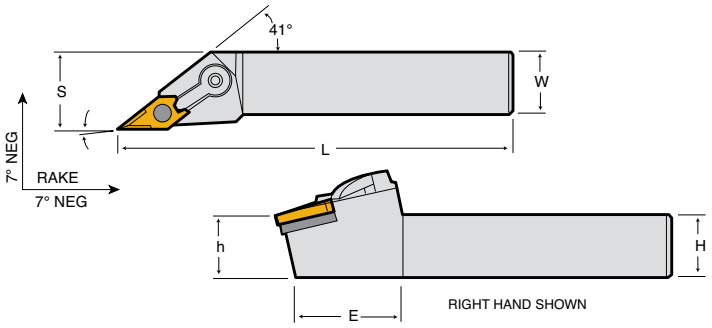
MTJNR/L



Ref	Holder Style				Application						Inserts	Parts			
Comment	J Style, Approach Angle 93°				Turning, Copying, Facing										
MTJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
10-3B	145891	**136.58**	145892	**136.58**	0.625	0.625	4.500	0.875	0.625	1.120	TN□□33□	CL-6	XNS-36	ITSN-332	NL-34L
												146915	**146919**	**147114**	**146911**
												$ 6.93	**$ 1.56**	**$ 5.27**	**$ 3.71**
12-3D	145887	**135.21**	145888	**135.21**	0.750	0.750	6.000	1.000	0.750	1.100		CL-20	XNS-48	ITSN-332	NL-34L
16-3D	145783	**148.91**	148323	**91.11**	1.000	1.000	6.000	1.250	1.000	1.299		**146918**	**146922**	**147114**	**146911**
												$ 6.93	**$ 1.56**	**$ 5.27**	**$ 3.71**
16-4D	145757	**148.91**	145756	**148.91**	1.000	1.000	6.000	1.250	1.000	1.325	TN□□43□	CL-20	XNS-48	ITSN-432	NL-46
20-4D	147147	**178.76**	147213	**178.76**	1.250	1.250	6.000	1.500	1.250	1.325		**146918**	**146922**	**146901**	**146912**
												$ 6.93	**$ 1.56**	**$ 8.18**	**$ 3.42**
20-5D	147033	**114.83**	147035	**114.83**	1.250	1.250	6.000	1.500	1.250	1.440	TN□□54□	CL-12	XNS-510	ITSN-533	NL-58
												146917	**146920**	**146902**	**146913**
												$ 6.93	**$ 1.65**	**$ 11.04**	**$ 3.89**

➤ P. E24-27, E41

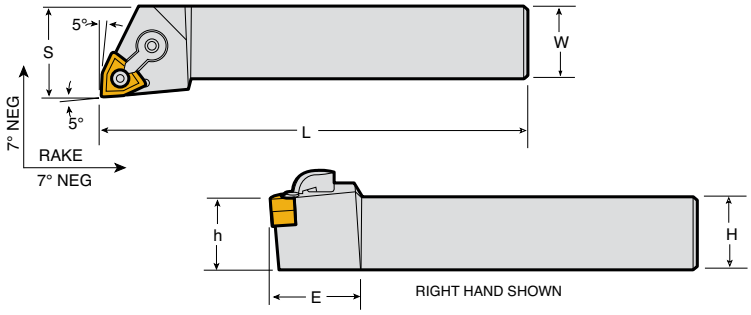
MVJNR/L



Ref	Holder Style				Application						Inserts	Parts			
Comment	J Style, Approach Angle 93°				Turning, Copying										
MVJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-3C	147265	**102.89**	147417	**102.89**	0.750	0.750	5.000	1.000	0.750	1.660	VN□□33□	CL-30	XNS-59	IVSN-322	NL-34L
16-3D	145893	**159.51**	145738	**159.51**	1.000	1.000	6.000	1.250	1.000	1.660		**147214**	**146921**	**146983**	**146911**
												$ 12.24	**$ 1.65**	**$ 5.87**	**$ 3.71**
20-4D	147226	**124.77**	147225	**122.27**	1.250	1.250	6.000	1.500	1.250	2.000	VN□□43□	CL-30	XNS-510	IVSN-433	NL-46
												147214	**146920**	**148287**	**146912**
												$ 12.24	**$ 1.65**	**$ 7.84**	**$ 3.42**

➤ P. E29, E38

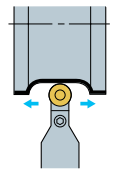
MWLNR/L

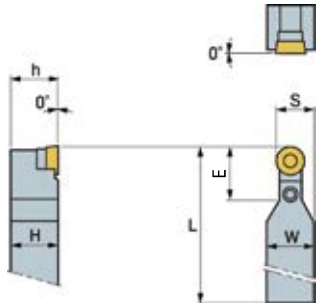


Ref	Holder Style				Application						Inserts	Parts			
Comment	L Style, Approach Angle 95°				Turning, Facing										
MWLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-3B	145744	**108.20**	147148	**129.51**	0.750	0.750	4.500	1.000	0.750	1.000	WN□□33□	CL-6	XNS-36	IWSN-322	NL-34L
												146915	**146919**	**147139**	**146911**
												$ 6.93	**$ 1.56**	**$ 14.68**	**$ 3.71**
12-4B	145875	**144.84**	145876	**144.84**	0.750	0.750	4.500	1.000	0.750	1.250	WN□□43□	CL-20	XNS-48	IWSN-432	NL-46
16-4D	145808	**119.15**	145809	**159.51**	1.000	1.000	6.000	1.250	1.000	1.250		**146918**	**146922**	**146906**	**146912**
20-4D	145810	**191.48**	145811	**196.13**	1.250	1.250	6.000	1.500	1.250	1.250		**$ 6.93**	**$ 1.56**	**$ 10.30**	**$ 3.42**

➤ P. E31-33

PRDCN



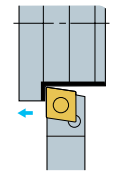


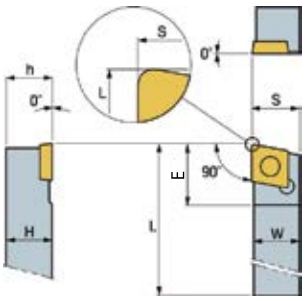
Ref	Holder Style	Application	Inserts	Parts
Comment	D Style	Turning, Copying		

PRDCN	Code #	Price $	H	W	L	S	h	E	Inserts	Lever	Screw	Shim	Shim Pin	Wrench
12-10B	148243	**65.96**	0.750	0.750	4.500	0.500	0.750	0.866	RCMX 1003 M0	LR10 **148227** **$ 17.99**	VHX0514 **148228** **$ 10.45**	SR10 **148229** **$ 5.19**	SP3 **146929** **$ 4.43**	HW20L **146954** **$ 2.21**
16-12D	145719	**76.26**	1.000	1.000	6.000	0.728	1.000	0.945	RCMX 1204 M0	LR12 **145723** **$ 17.99**	VHX0617 **146926** **$ 8.93**	SR12 **145725** **$ 5.19**	SP3 **146929** **$ 4.43**	HW25L **146956** **$ 2.21**

➤ P. E18, E36

SCACR/L





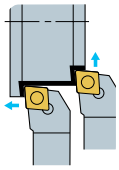
Right-hand shown

Ref	Holder Style	Application	Inserts	Parts
Comment	A Style, Approach Angle 90°	Turning		

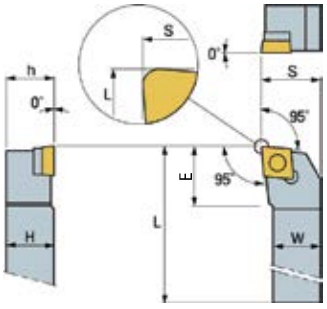
SCACR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Inserts	Screw	Shim	Shim Screw	Wrench
08-3K	146327	**89.20**	145993	**89.20**	0.500	0.500	3.150	0.500	0.500	0.630	CC□□32.5□	FTGA03508 **146931** **$ 9.94**	 - 	 - 	TW15P **146940** **$ 11.66**

➤ P. E8-9

SCLCR/L



Feed direction

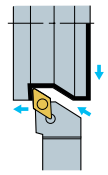


Right-hand shown

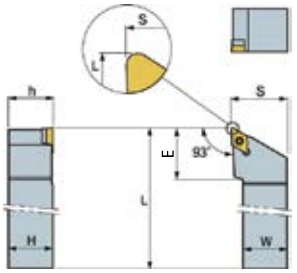
Ref	Holder Style				Application						Inserts	Parts			
Comment	L Style, Approach Angle 95°				Turning, Facing										
SCLCR/L	Code #		Code #		H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
	Right	Price $	Left	Price $											
06-2J	146981	**54.99**	147291	**71.93**	0.375	0.375	2.750	0.500	0.375	0.394	CC□T 21.5□	FTKA02565			TW07P
08-2A	146784	**79.33**	146785	**60.89**	0.500	0.500	4.000	0.625	0.500	0.490		**146930**	-	-	**146939**
												$ 10.72			**$ 11.19**
10-3A	146257	**67.28**	146787	**89.20**	0.625	0.625	4.000	0.750	0.625	0.630	CC□T 32.5□	FTGA03508			TW15P
12-3B	146788	**108.73**	147215	**94.85**	0.750	0.750	4.500	1.000	0.750	0.630		**146931**	-	-	**146940**
16-3D	146352	**73.80**	146353	**113.36**	1.000	1.000	6.000	1.250	1.000	0.670		**$ 9.94**			**$ 11.66**
12-4B	145994	**108.73**	146789	**108.73**	0.750	0.750	4.500	1.000	0.750	0.984	CC□T 43□	FTGA0411F	SC42S	SHXN0610F	TW15P
16-4D	146790	**116.11**	146791	**116.11**	1.000	1.000	6.000	1.250	1.000	1.024		**146944**	**146936**	**145998**	**146940**
												$ 9.13	**$ 9.93**	**$ 15.44**	**$ 11.66**

➤ P. E34

SDJCR/L



Feed direction

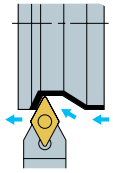


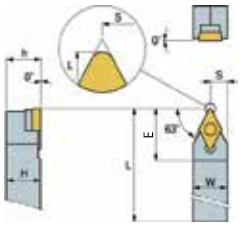
Right-hand shown

Ref	Holder Style				Application						Inserts	Parts			
Comment	J Style, Approach Angle 93°				Turning, Copying										
SDJCR/L	Code #		Code #		H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
	Right	Price $	Left	Price $											
12-3B	145798	**105.48**	147146	**102.89**	0.750	0.750	4.500	1.000	0.750	0.945	DC□T 32.5□	FTGA03512	SD32S	SHXN0509F	TW15P
16-3D	145985	**113.36**	147230	**113.36**	1.000	1.000	6.000	1.250	1.000	1.142		**146933**	**146937**	**146935**	**146940**
												$ 9.94	**$ 10.02**	**$ 15.20**	**$ 11.66**

➤ P. E14, E35

SDNCN



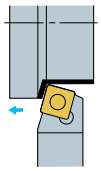


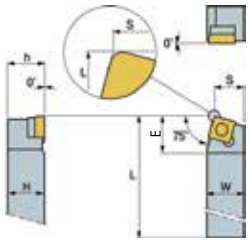
Ref	Holder Style	Application	Inserts	Parts
Comment	N Style, Approach Angle 63°	Turning, Copying		

SDNCN	Code #	Price $	H	W	L	S	h	E	Screw	Shim	Shim Screw	Wrench
12-3B	145986	**106.15**	0.750	0.750	4.500	0.375	0.750	1.181	DC□T 32.5□	FTGA03512 **146933** **$ 9.94**	SD32S **146937** **$ 10.02**	SHXN0509F **146935** **$ 15.20**	TW15P **146940** **$ 11.66**

➤ P. E14, E35

SSBCR





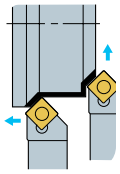
Right-hand shown

Ref	Holder Style	Application	Inserts	Parts
Comment	B Style, Approach Angle 75°	Turning		

SSBCR	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Screw	Shim	Shim Screw	Wrench
08-3K	145989	**89.20**			0.500	0.500	3.150	0.450	0.500	0.630	SC□T 32.5□	FTGA03508 **146931** **$ 9.94**	- -	- -	TW15P **146940** **$ 11.66**
12-4B	145995	**108.73**			0.750	0.750	4.500	0.600	0.750	0.984	SC□T 43□	FTGA0411F **146944** **$ 9.13**	SS42S **145997** **$ 10.02**	SHXN0610F **145998** **$ 15.44**	TW15P **146940** **$ 11.66**

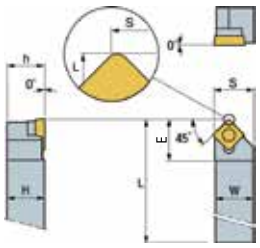
➤ P. E19, E36

SSSCR



Feed direction

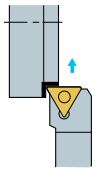
Right-hand shown



Ref	Holder Style				Application						Inserts	Parts			
Comment	S Style, Approach Angle 45°				Turning, Facing										
SSSCR	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
10-3A	145992	**89.20**			0.625	0.625	4.000	0.670	0.625	0.610	SC□T 32.5□	FTGA03512 **146933** **$ 9.94**	-	-	TW15P **146940** **$ 11.66**
12-4B	145996	**106.15**			0.750	0.750	4.500	0.659	0.750	0.945	SC□T 43□	FTGA0411F **146944** **$ 9.13**	SS42S **145997** **$ 10.02**	SHXN0610F **145998** **$ 15.44**	TW15P **146940** **$ 11.66**

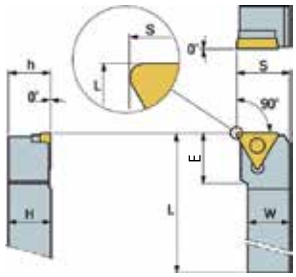
➤ P. E19, E36

STFCR



Feed direction

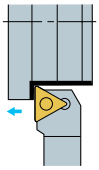
Right-hand shown



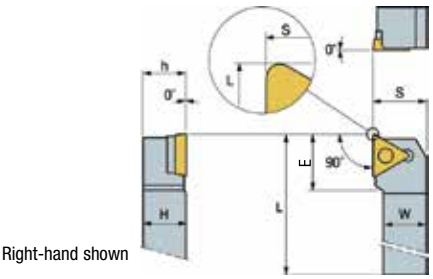
Ref	Holder Style				Application						Inserts	Parts			
Comment	F Style, Approach Angle 90°				Facing										
STFCR	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
10-2A	145777	**132.90**			0.625	0.625	4.000	0.750	0.625	0.551	TC□T 21.5□	FTKA02565 **146930** **$ 10.72**	-	-	TW07P **146939** **$ 11.19**
12-3B	145987	**108.73**			0.750	0.750	4.500	1.000	0.750	0.748	TC□T 32.5□	FTGA03512 **146933** **$ 9.94**	ST32S **145999** **$ 13.08**	SHXN0509F **146935** **$ 15.20**	TW15P **146940** **$ 11.66**

➤ P. E22-24

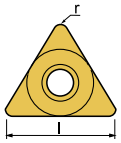
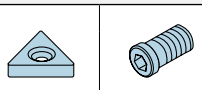
STGCR/L



Feed direction

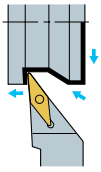


Right-hand shown

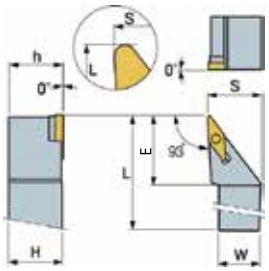
Ref	Holder Style				Application						Inserts	Parts			
Comment	G Style, Approach Angle 90°				Turning										
STGCR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
08-2K	145988	**87.09**	146713	**89.20**	0.500	0.500	3.150	0.625	0.500	0.551	TC□T 21.5□	FTKA02565 **146930** **$ 10.72**	-	-	TW07P **146939** **$ 11.19**
08-3K			146714	**77.83**	0.500	0.500	3.150	0.625	0.500	0.551		FTGA03512	ST32S	SHXN0509F	TW15P
12-3B	145991	**106.15**	146715	**108.73**	0.750	0.7500	4.500	1.000	0.750	0.827	TC□T 32.5□	**146933**	**145999**	**146935**	**146940**
16-3D	145793	**94.44**			1.000	1.000	6.000	1.250	1.000	0.827		**$ 9.94**	**$ 13.08**	**$ 15.20**	**$ 11.66**

➤ P. E22-24

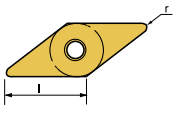
SVJCR/L



Feed direction



Right-hand shown

Ref	Holder Style				Application						Inserts	Parts			
Comment	J Style, Approach Angle 93°				Turning, Copying										
SVJCR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
12-3C	148061	**106.15**			0.750	0.750	5.000	1.000	0.750	1.575	VC□T 33□	FTGA03512	SV32S	SHXN0509F	TW15P
16-3D	147229	**97.39**	147382	**116.11**	1.000	1.000	6.000	1.250	1.000	1.575		**146933**	**146950**	**146935**	**146940**
												$ 9.94	**$ 12.72**	**$ 15.20**	**$ 11.66**

➤ P. E28

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

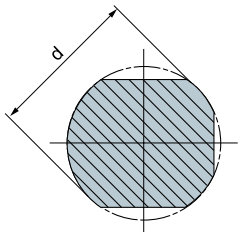
Boring Bar Code System

1 Type of Bar

A	Solid Steel with coolant hole
B	Solid Steel with anti-vibration
C	Carbide bar with fixed steel head
D	Solid steel bar with anti-vibration device and coolant hole
E	Carbide bar with fixed steel head and coolant hole
G	Carbide bar with fixed steel head and anti-vibration device and coolant hole
H	Solid heavy metal bar
J	Solid heavy metal with coolant
S	Solid steel bar
X	Special bar

2 Bar Diameter

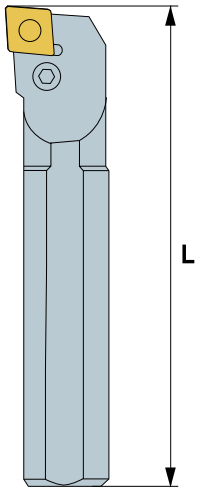
Two characters to describe bar diameter (number of sixteenths)



03	0.1875	16	1.0
04	0.250	20	1.250
05	0.3125	24	1.50
06	0.37	28	1.750
08	0.50	32	2.0
10	0.625	36	2.25
12	0.750	40	2.50

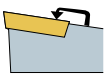
S	24	U	M	C
1	2	3	4	5

3 Type of Bar

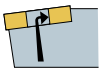


F	3
G	3.5
H	4
J	4.5
K	5.0
L	5.5
M	6
N	6.5
P	6.75
Q	7.0
R	8.0
S	10.3
T	12.0
U	14.0
V	16.0
W	18.0
Y	20.0
X	Special length

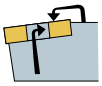
4 Method of Mounting Insert



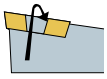
Top Clamping — **C**



Hole Clamping — **P**

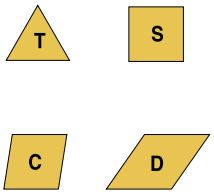


Top and Hole Clamping — **M**



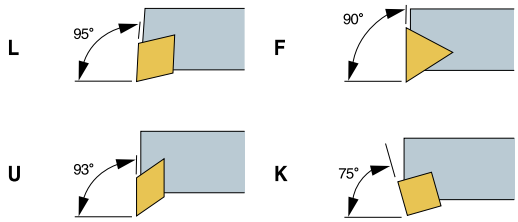
Screw On — **S**

5 Insert Shape



C	80° Rhombic
D	55° Rhombic
R	Round
S	Square
T	Triangle
V	35° Rhombic
W	80° Trigon

6 Bar Geometry

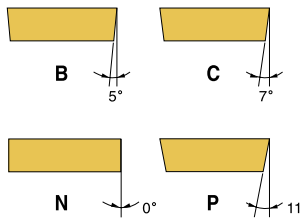


F	90°	Q	107.5°
K	75°	U	93°
L	95°	S	62.5°
P	117.5°	Z	Negative 5° pull boring

L N R 4 □

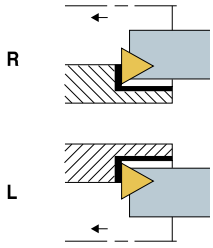
6 7 8 9 10

7 Insert Clearance Angle



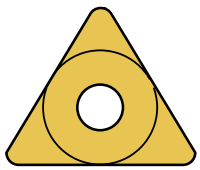
B	5°	F	25°
C	7°	G	30°
D	15°	N	0°
E	20°	P	11°

8 Hand of Bar



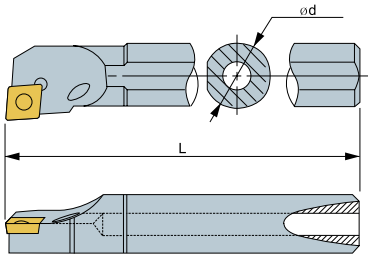
R	Right Hand
L	Left Hand
N	Neutral

9 Insert Size IC



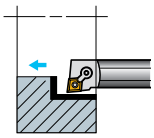
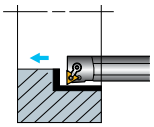
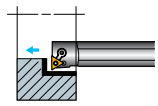
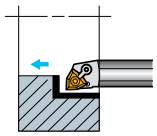
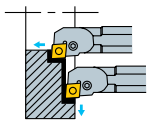
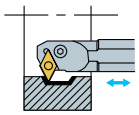
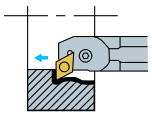
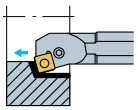
1.2	0.156	4	0.5
1.5	0.188	5	0.625
1.8	0.219	6	0.75
2	0.25	8	1.0
2.5	0.3125	10	1.250
3	0.375		

Boring Bar with Coolant Hole

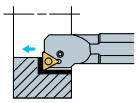
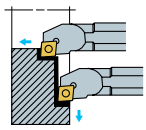
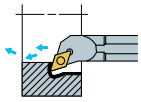
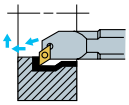
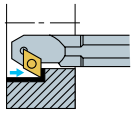
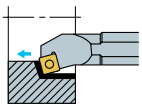


10 Manufacturing Option

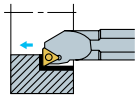
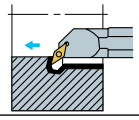
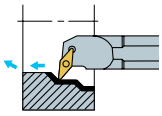
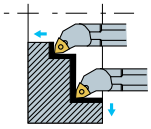
Boring Bar Index

Cutting Shape		Cat. No.	Facing	Copying	Through Hole Machining	Blind Hole Machining	Copying and Relief	Back Copying	Available Inserts
MCLNR/L **Clamp System** ➤ P. E64		**S10R-MCLNR/L3** **S12U-MCLNR/L3** **S16T-MCLNR/L3** **S16T-MCLNR/L4** **S20U-MCLNR/L4** **S24V-MCLNR/L4** **A16T-MCLNR/L4** **A20U-MCLNR/L4**	●		●	●			CN □□ 33 □ CN □□ 43 □ CN □□ 64 □ CN □□ 43 □ ➤ P. E10-12, E38-39
MTFNR/L ➤ P. E65		**S20V-MTFNR-4** **S32V-MTFNR-4** **A16T-MTFNR/L-4**	●		●	●			TN □□ 33 □ 43 □ 54 □ ➤ P. E24-27, E41
MTUNR/L ➤ P. E65		**S32V-MTUNR-4**	●		●	●			TN □□ 33 □ 43 □ 54 □ ➤ P. E24-27, E41
MVUNR/L ➤ P. E66		**A16T-MVUNR/L- 4**		●	●	●			VN □□ 43 □ ➤ P. E29
MWLNR/L ➤ P. E66		**S10R-MWLNR/L3** **S12U-MWLNR/L3** **S16T-MWLNR/L3** **S16T-MWLNR/L4** **S20U-MWLNR/L4** **S24V-MWLNR/L4** **A16T-MWLNR/L4** **A20U-MWLNR/L4**	●		●	●			WN □□ 43 □ ➤ P. E31-33
PCLNR/L **Lever Lock System** ➤ P. E67		**S10R-PCLNR/L3** **S12U-PCLNR/L3** **S16T-PCLNR/L3** **S16T-PCLNR/L4** **S20U-PCLNR/L4** **S24V-PCLNR/L4** **S32W-PCLNR/L4** **S32W-PCLNR/L6** **A16R-PCLNR/L4** **A20S-PCLNR/L4**	●		●	●			CN □□ 33 □ CN □□ 43 □ CN □□ 65 □ CN □□ 43 □ ➤ P. E10-12, E38-39
PDSNR ➤ P. E67		**S20U-PDSNR/L4** **S24V-PDSNR/L4** **S20U-PDSNR/L4-3** **S24V-PDSNR/L4-3** **A20S-PDSNR/L4** **A20S-PDSNR/L4-3**		●	●				DN □□ 44 □ 43 □ ➤ P. E14-16, E39-40
PDUNR ➤ P. E68		**S12S-PDUNR/L 3** **S16T-PDUNR/L 3** **S20U-PDUNR/L 3** **S20U-PDUNR/L 4** **S24V-PDUNR/L 4** **S32W-PDUNR/L 4** **S20U-PDUNR/L 4-3** **S24V-PDUNR/L 4-3** **A20S-PDUNR/L 4** **A20S-PDUNR/L 4-3**		●	●	●			DN □□ 33 □ 44 □ 43 □ ➤ P. E14-16, E39-40
PSKNR/L ➤ P. E68		**S16T-PSKNR/L 4** **S20U-PSKNR/L 4** **S24V-PSKNR/L 4** **A16R-PSKNR/L 4** **A20S-PSKNR/L 4**			●				SN □□ 43 □ ➤ P. E19-22, E38, E40

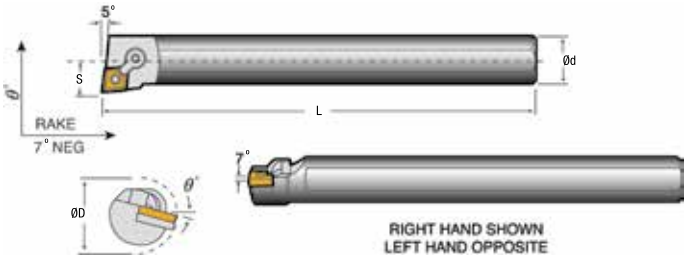
Boring Bar Index

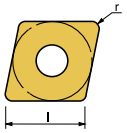
Cutting Shape		Cat. No.	Facing	Copying	Through Hole Machining	Blind Hole Machining	Copying and Relief	Back Copying	Available Inserts
PTFNR/L **Lever Lock System** ➤ P. E69		**S16T-PTFNR/L 2** **S20S-PTFNR/L 2** **S16T-PTFNR/L 2** **S16T-PTFNR/L 3** **S20U-PTFNR/L 3** **S24V-PTFNR/L 3** **A16R-PTFNR/L 3** **A20S-PTFNR/L 3**	●		●	●			TN□□ 32 □ 33 □ ➤ P. E24-27, E38, E41
SCLCR/L **Screw On System** ➤ P. E69		**S05K-SCLCR/L 2** **S06M-SCLCR/L 2** **S08M-SCLCR/L 2** **S08M-SCLCR/L 3** **S10R-SCLCR/L 3** **S12S-SCLCR/L 3** **S16T-SCLCR/L 3** **S16T-SCLCR/L 4** **S20U-SCLCR/L 4** **S24V-SCLCR/L 4** **A05F-SCLCR/L 2** **A06H-SCLCR/L 2** **A08K-SCLCR/L 2** **A08K-SCLCR/L 3** **A10M-SCLCR/L 3** **A12Q-SCLCR/L 3** **A16R-SCLCR/L 3** **A16R-SCLCR/L 4** **A20S-SCLCR/L 4** **C06-SCLCR/L 2** **C08-SCLCR/L 2** **C10-SCLCR/L 3** **C12-SCLCR/L-3**	●		●	●			CC□T 21.5 □ 32.5 □ 43 □ ➤ P. E8-9
SDQCR/L ➤ P. E70		**S16M-SDQCR/L 2** **S08M-SDQCR/L 2** **S10R-SDQCR/L 2** **S12S-SDQCR/L 2** **S10R-SDQCR/L 2** **S16T-SDQCR/L 2** **A06H-SDQCR/L 2** **A08K-SDQCR/L 2** **A10M-SDQCR/L 2** **A12Q-SDQCR/L 2** **A16R-SDQCR/L 2**		●	●	●			DC□T 21.5 □ 32.5 □ ➤ P. E14
SDUCR ➤ P. E70		**S06M-SDUCR/L 2** **S08M-SDUCR/L 2** **S10R-SDUCR/L 3** **S12S-SDUCR/L 3** **S16T-SDUCR/L 3** **S20U-SDUCR/L 3** **A06H-SDUCR/L 2** **A08K-SDUCR/L 2** **A10M-SDUCR/L 2** **A12Q-SDUCR/L 3** **A16R-SDUCR/L 3** **C06 SDUCR/L 2**		●		●			DC□T 21.5 □ 32.5 □ ➤ P. E14
SDZCR/L ➤ P. E71		**S10R-SDZCR/L 2** **S12R-SDZCR/L 2** **S16T-SDZCR/L 3** **S20U-SDZCR/L 3** **S24V-SDZCR/L 3** **A16R-SDZCR/L 3** **A20S-SDZCR/L 3**		●		●			DC□T 43 □ ➤ P. E14
SSKCR/L ➤ P. E71		**S08M-SSKCR 3** **S10R-SSKCR 3** **S12S-SSKCR 3** **S16T-SSKCR 4** **S20U-SSKCR 4** **A08K-SSKCR 3** **A10M-SSKCR 3** **A12Q-SSKCR 3** **A16R-SSKCR 4** **A20S-SSKCR 4**			●				SC□T 32.5 43 □ ➤ P. E19

Boring Bar Index

Cutting Shape		Cat. No.	Facing	Copying	Through Hole Machining	Blind Hole Machining	Copying and Relief	Back Copying	Available Inserts
STFCR/L **Screw On System** ➤ P. E72		**S06M-STFCR/L 1.8** **S08M-STFCR/L 1.8** **S08M-STFCR/L 2** **S10R-STFCR/L 2** **S12S-STFCR/L 2** **S12S-STFCR/L 3** **S16T-STFCR/L 3** **S20U-STFCR/L 3** **S24V-STFCR/L 3** **A06H-STFCR/L 1.8** **A08K-STFCR/L 1.8** **A08K-STFCR/L 2** **A10M-STFCR/L 2** **A12Q-STFCR/L 2** **A16R-STFCR/L 3** **A20S-STFCR/L 3** **C06-STFCR/L 2** **C08-STFCR/L 2** **C10-STFCR/L-3**	●		●	●			TC□T 1.81.5 □ 21.5 □ 32.5 □ ➤ P. E22-24
SVQBR ➤ P. E72		**S20U-SVQBR/L 3** **S24V-SVQBR /L 3** **A20S-SVQBR /L 3**					●		VB□T 33 □ ➤ P. E27
SVUBR/L ➤ P. E73		**S20U-SVUBR/L 3** **S24V-SVUBR/L 3** **A20S-SVUBR/L 3**		●	●		●		VB□T 33 □ ➤ P. E27
SWLCR/L ➤ P. E73		**S16T-SWLCR/L 4** **S20U-SWLCR/L 4** **A16R-SWLCR/L 4** **A20S-SWLCR/L 4**	●		●	●			WCMT 43 □ ➤ P. E30

MCLNR/L



Ref	Holder Style	Application	Inserts	Parts
Comment	L Style, Approach Angle 95°	Facing, Through Hole, Blind Hole Machining		

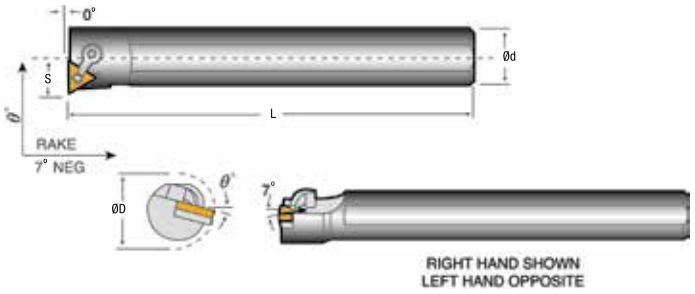
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	S	θ°			Clamp	Clamp Screw	Shim	Pin
S16T-MCLNR/L4	145872	**183.75**	145871	**179.40**	1.280	1.00	12.0	0.640	14°			CL-20	XNS-48	ICSN-432	NL-46
S20U-MCLNR/L4	145874	**260.39**	145873	**266.72**	1.530	1.25	14.0	0.765	14°			**146918**	**146922**	**146908**	**146912**
S24U-MCLNR/L4	145884	**385.51**	145762	**297.57**	1.780	1.50	14.0	0.890	11°			**$ 6.93**	**$ 1.56**	**$ 7.58**	**$ 3.42**
S32V-MCLNR/L4	147270	**415.84**	-	**-**	2.400	2.00	16.0	1.281	11°						
※ **A16T-MCLNR/L4**	148363	**233.56**	148364	**239.24**	1.280	1.00	12.0	0.640				CL-20	XNS-48	ICSN-432	NL-46
※ **A20U-MCLNR/L4**	148365	**260.39**	148367	**450.24**	1.530	1.25	14.0	0.765				**146918**	**146922**	**146908**	**146912**
												$ 6.93	**$ 1.56**	**$ 7.58**	**$ 3.42**

CN□□43□

※ Coolant Hole Boring Bar

➤ P. E10-12, E38-39

MTFNR/L

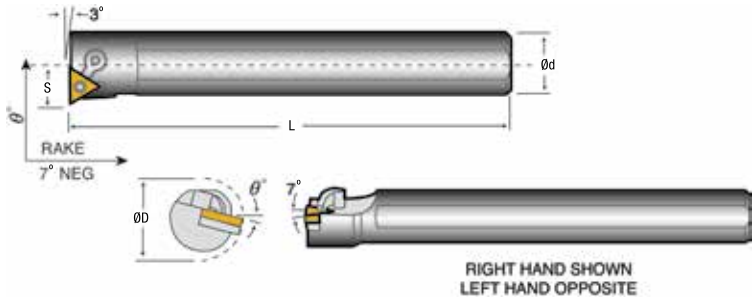


Ref	Holder Style				Application							Inserts	Parts			
Comment	F Style 90° End Cutting Angle				Facing, Through Hole, Blind Hole Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	S	θ°				Clamp	Clamp Screw	Shim	Pin
S20U-MTFNR-4	147271	**221.83**			1.470	1.25	14.0	0.765	10°			TNM□□43□	CL-20	XNS-48	ITSN-432	NL-46
S32U-MTFNR-4	145882	**453.51**			2.562	2.00	16.0	1.281	11°				**146918**	**146922**	**146901**	**146912**
													$ 6.93	**$ 1.56**	**$ 8.18**	**$ 3.42**
※ A16T-MTFNR/L-4			148371	**93.50**	1.280	1.00	12.0	0.641	10°				CL-9	XNS-59	ITSN-432	NL-46
													146916	**146921**	**146901**	**146912**
													$ 6.62	**$ 1.65**	**$ 8.18**	**$ 3.42**

※ Coolant Hole Boring Bar

➤ P. E24-27, E41

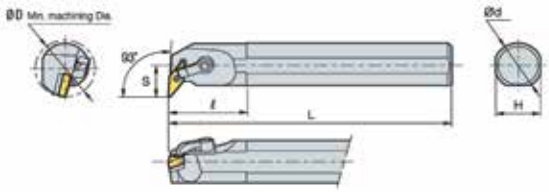
MTUNR



Ref	Holder Style				Application							Inserts	Parts			
Comment	Neg. 3° Edge Cutting Edge Angle				Facing, Through Hole, Blind Hole Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	S	θ°				Clamp	Clamp Screw	Shim	Pin
S24U-MTUNR-4	145772	**346.43**			2.000	1.50	14.0	1.125	11°			TNM□□43□	CL-20	XNS-48	ITSN-432	NL-46
													146918	**146922**	**146901**	**146912**
													$ 6.93	**$ 1.56**	**$ 8.18**	**$ 3.42**
S32U-MTUNR-4	145883	**799.93**			2.562	2.00	14.0	1.281	11°				CL-9	XNS-59	ITSN-432	NL-46
													146916	**146921**	**146901**	**146912**
													$ 6.62	**$ 1.65**	**$ 8.18**	**$ 3.42**

➤ P. E24-27, E41

MVUNR/L

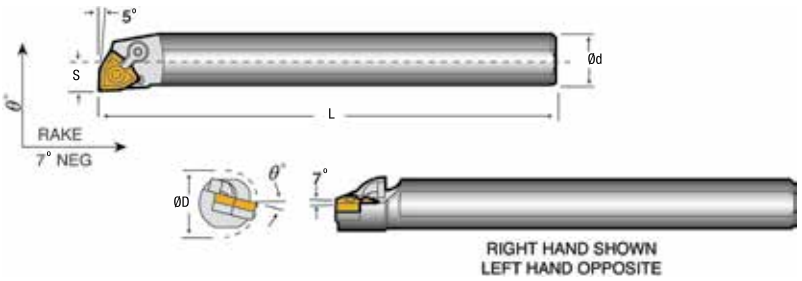


Ref	Holder Style		Application								Inserts	Parts			
Comment	U Style, Approach Angle 93°		Copying, Through Hole, Blind Hole Machining												
Designation	Code # Right	Code # Price $	Code # Left	Code # Price $	ØD	Ød	L	S	H	ℓ		Clamp	Clamp Screw	Shim	Pin
※ A16T-MVUNR/L-4	148361	**419.21**			1.200	1	8.0	0.640	0.921	1.417	VN□□43□	CL-30 **147214** **$ 12.24**	XNS-59 **146921** **$ 1.65**	IVSN-433 **148287** **$ 7.84**	NL-46 **146912** **$ 3.42**

※ Coolant Hole Boring Bar

➤ P. E29

MWLNR/L

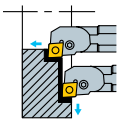


Ref	Holder Style		Application									Inserts	Parts			
Comment	L Style, Approach Angle 95°		Facing, Through Hole, Blind Hole Machining													
Designation	Code # Right	Code # Price $	Code # Left	Code # Price $	ØD	Ød	L	S	θ°				Clamp	Clamp Screw	Shim	Pin
S16T-MWLNR/L-4	145881	**179.40**	145879	**222.45**	1.280	1.00	12.0	0.640	14°			WNM□43□	CL-20 **146918** **$ 6.93**	XNS-48 **146922** **$ 1.56**	- **$ 3.71**	NL-44 **146985**
S20U-MWLNR/L-4	145877	**240.52**	145878	**246.36**	1.530	1.25	14.0	0.765	14°				CL-20 **146918** **$ 6.93**	XNS-48 **146922** **$ 1.56**	IWSN-432 **146906** **$ 10.30**	NL-46 **146912** **$ 3.42**
S24U-MWLNR/L-4	145865	**276.00**	145880	**276.00**	1.780	1.50	14.0	0.890	11°							
※ **A16T-MWLNR/L-4**	148353	**217.18**	148354	**222.45**	1.280	1.00	12.0	0.640					CL-20 **146918** **$ 6.93**	XNS-48 **146922** **$ 1.56**	IWSN-432 **146906** **$ 10.30**	NL-46 **146912** **$ 3.42**
※ **A20U-MWLNR/L-4**	148355	**316.38**	148356	**246.36**	1.530	1.25	14.0	0.765								

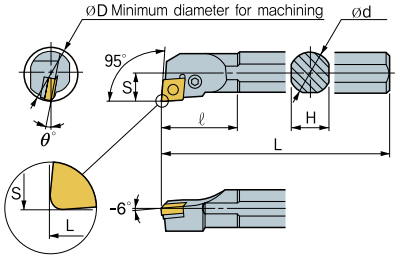
※ Coolant Hole Boring Bar

➤ P. E31-33

PCLNR/L



Feed direction

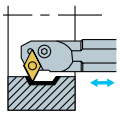


Right-hand shown

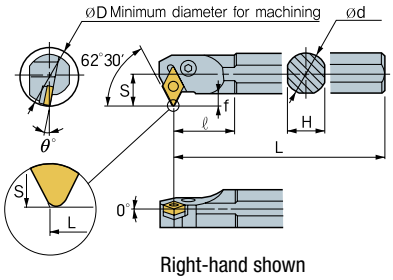
Ref	Holder Style				Application							Inserts	Parts				
Comment	L Style, Approach Angle 95°				Facing, Through Hole, Blind Hole Machining												
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S16T-PCLNR/L-4	145903	**133.59**	145904	**149.59**	1.200	1.000	0.921	12.0	0.640	-12°	1.575	CN□□43□	VHX0613A **146941** **$ 13.07**	HW25L **146956** **$ 2.21**	LV4A **146942** **$ 17.84**	- -	-
S20U-PCLNR/L-4	145905	**189.83**	-	-	1.470	1.250	1.171	14.0	0.765	-11°	1.969		VHX0821 **146925** **$ 9.94**	HW30L **146953** **$ 2.74**	LV4 **146924** **$ 16.57**	SC42B **146943** **$ 10.02**	SP4 **146928** **$ 4.43**
S24V-PCLNR/L-4	145907	**239.35**	145908	**213.75**	1.760	1.500	1.382	16.0	0.890	-10°	2.165						

➤ P. E10-12. E38-39

PDSNR



Feed direction

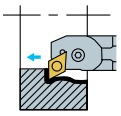


Right-hand shown

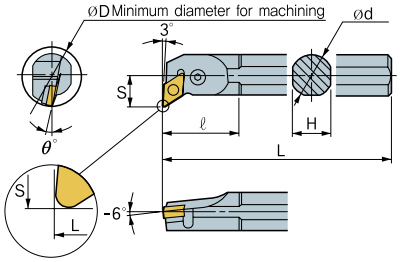
Ref	Holder Style				Application							Inserts	Parts				
Comment	S Style, Approach Angle 62° 30'				Copying, Through Hole Machining												
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S20U-PDSNR-4	145909	**189.83**			1.705	1.250	1.171	14.0	1.000	-11°	1.772	DN□□44□	VHX0821 **146925** **$ 9.94**	HW30L **146953** **$ 2.74**	LV4 **146924** **$ 16.57**	SD42 **146927** **$ 12.41**	SP4 **146928** **$ 4.43**
S24V-PDSNR-4	145910	**239.35**			2.000	1.500	1.382	16.0	1.125	-11°	1.693						

➤ P. E14-16, E39-40

PDUNR



Feed direction

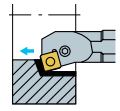


Right-hand shown

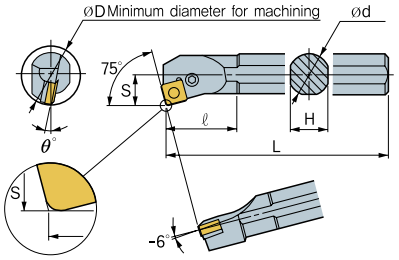
Ref	Holder Style		Application								Inserts	Parts				
Comment	U Style, Approach Angle 93°		Copying, Through Hole, Blind Hole Machining													
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S20U-PDUNR-4	145911	**189.83**			1.705	1.250	1.171	14.0	1.000	-16°	1.969	DN□□43□	VHX0821	HW30L	LV4B	SD42	SP4
S24V-PDUNR-4	145912	**239.35**			2.000	1.500	1.382	16.0	1.125	-11°	1.969		**146925**	**146953**	**145558**	**146927**	**146928**
													$ 9.94	**$ 2.74**	**$ 17.99**	**$ 12.41**	**$ 4.43**

➤ P. E14-16, E39-40

PSKNR/L



Feed direction

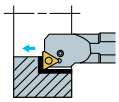


Right-hand shown

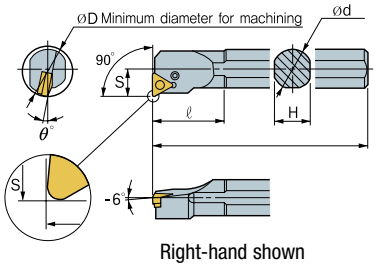
Ref	Holder Style		Application								Inserts	Parts				
Comment	K Style, Approach Angle 75°		Through Hole Machining													
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S16T-PSKNR/L 4	145913	**133.59**	145914	**133.59**	1.200	1.000	0.921	12.0	0.640	-12°	1.654	SN□□43□	VHX0613A	HW25L	LV4A		
													146941	**146956**	**146942**	-	-
													$ 13.07	**$ 2.21**	**$ 17.84**		
S20U-PSKNR/L 4	145915	**169.51**	145916	**169.51**	1.470	1.250	1.171	14.0	0.765	-10°	1.969		VHX0821	HW30L	LV4	SS42B	SP4
S24V-PSKNR/L 4	145917	**277.90**	145918	**213.75**	1.760	1.500	1.382	16.0	0.890	-10°	2.165		**146925**	**146953**	**146924**	**146973**	**146928**
													$ 9.94	**$ 2.74**	**$ 16.57**	**$ 10.02**	**$ 4.43**

➤ P. E19-22, E38, E40

PTFNR/L



Feed direction

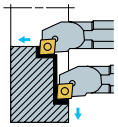


Right-hand shown

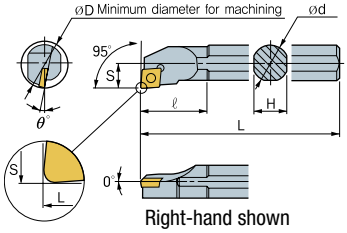
Ref	Holder Style				Application							Inserts	Parts				
Comment	F Style, Approach Angle 90°				Copying, Through Hole, Blind Hole Machining												
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S16T-PTFNR/L 3	145919	**133.59**	145920	**149.59**	1.200	1.000	0.921	12.0	0.640	-12°	1.575	TN□□33□	VHX0512B **146976** **$ 16.93**	HW20L **146954** **$ 2.21**	LV3 **146923** **$ 15.44**	-	-
S20U-PTFNR 3	145921	**189.83**			1.470	1.250	1.171	14.0	0.765	-10°	1.969		VHX0617 **146926** **$ 8.93**	HW25L **146956** **$ 2.21**	LV3 **146923** **$ 15.44**	ST317B **146974** **$ 9.93**	SP3 **146929** **$ 4.43**
S24V-PTFNR 3	145923	**239.35**			1.760	1.500	1.382	16.0	0.890	-10°	2.165		VHX0617 **146926** **$ 8.93**	HW20L **146954** **$ 2.21**	LV3 **146923** **$ 15.44**	-	-

➤ P. E24-27, E38, E41

SCLCR/L



Feed direction



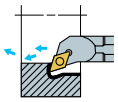
Right-hand shown

Ref	Holder Style				Application							Inserts	Parts			
Comment	L Style, Approach Angle 95°				Copying, Through Hole, Blind Hole Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Shim	Shim Screw
S06M-SCLCR 2	147978	**137.38**			0.480	0.375	0.336	6.0	0.250	-13°		CC□T 21.5□	FTKA02565 **146930** **$ 10.72**	TW07P **146939** **$ 11.19**	-	-
S08M-SCLCR 2	147979	**66.53**			0.600	0.500	0.461	6.0	0.312	-10°						
S08M-SCLCR 3	147203	**72.99**			0.600	0.500	0.461	6.0	0.312	-10°		CC□T 32.5□	FTGA03508 **146931** **$ 9.94**	TW15P **146940** **$ 11.66**		
S10R-SCLCR/L 3	145925	**88.48**	145928	**86.38**	0.770	0.625	0.586	8.0	0.406	-12°	1.280					
S12S-SCLCR/L 3	145926	**108.31**	145929	**105.75**	0.930	0.750	0.671	10.0	0.500	-8°	1.496		FTGA03510 **146957** **$ 9.27**		-	-
S16T-SCLCR/L 3	145927	**133.59**	145930	**176.27**	1.200	1.000	0.921	12.0	0.640	-6°	1.772					
S16T-SCLCR/L 4	145931	**101.35**	145934	**136.07**	1.200	1.000	0.921	12.0	0.640	-6°	1.772	CC□T 43□	FTGA0411F **146944** **$ 9.13**	TW15P **146940** **$ 11.66**	SC42S **146936** **$ 9.93**	SHXN0610F **145998** **$ 15.44**
S20U-SCLCR/L 4	145932	**123.24**	145935	**165.49**	1.470	1.250	1.171	14.0	0.765	-10°	1.969					
S24V-SCLCR/L 4	145933	**157.32**	145936	**197.52**	1.760	1.500	1.382	16.0	0.890	-8°	2.362					
※ A05F-SCLCR 2	146589	**107.13**			0.415	0.3125	0.293	3.0	0.219	-5°		CC□T 21.5□	FTKA02565 **146930** **$ 10.72**	TW07P **146939** **$ 11.19**	-	-
※ A06H-SCLCR 2	146590	**98.09**			0.480	0.375	0.355	4.0	0.250	-13°						
※ A08K-SCLCR 2	146591	**106.15**			0.600	0.500	0.480	5.0	0.312	-10°						
※ A10M-SCLCR 2	147348	**113.66**			0.770	0.625	0.605	6.0	0.406	-10°		CC□T 21.5□	FTGA03508 **146931** **$ 9.94**	TW15P **146940** **$ 11.66**	-	-
Carbide Shank																
C06-SCLCR 2	147297	**436.00**			0.480	0.375	0.355	4.0	0.250	13°		CC□T 21.5□	FTKA02565 **146930** **$ 10.72**	TW07P **146939** **$ 11.19**		
C08-SCLCR 2	147298	**570.17**			0.600	0.500	0.480	5.0	0.312	10°			FTGA03508 **146931** **$ 9.94**	TW15P **146940** **$ 11.66**	-	-
C10-SCLCR 3	147299	**833.05**			0.770	0.625	0.605	6.0	0.406	12°	1.280	CC□T 32.5□	FTGA03508 **146931** **$ 9.94**	TW15P **146940** **$ 11.66**	-	-
C12-SCLCR/L 3	147300	**888.22**	147347	**793.96**	0.930	0.750	0.711	7.0	0.500	-8°	1.496					

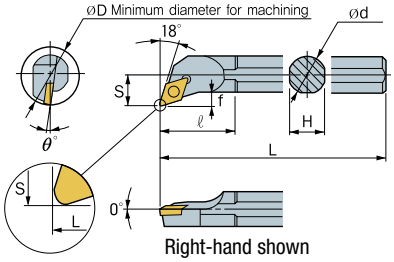
※ Coolant Hole Boring Bar

➤ P. E8-9

SDQCR



Feed direction

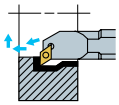


Right-hand shown

Ref	Holder Style				Application								Inserts	Parts	
Comment	Q Style, Approach Angle 108°				Facing, Through Hole, Blind Hole Machining										
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	f		Screw	Wrench
S12S-SDQCR 3	145937	**105.75**			0.980	0.750	0.671	10.0	0.562	-6°	1.260	0.177	DC□ T 32.5□	FTGA03508 **146931** **$ 9.94**	TW15P
S16T-SDQCR 3	145938	**136.07**			1.300	1.000	0.921	12.0	0.750	-6°	1.260	0.276		FTGA03510 **146957** **$ 9.27**	**146940** **$ 11.66**

➤ P. E14

SDUCR



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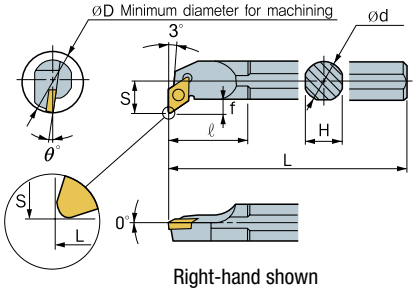
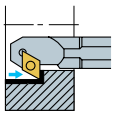


Right-hand shown

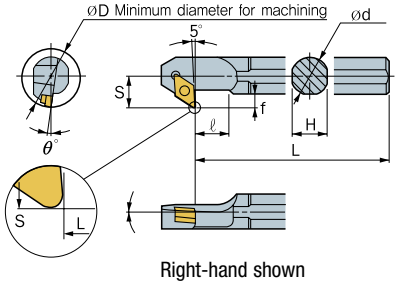
Ref	Holder Style				Application								Inserts	Parts	
Comment	U Style, Approach Angle 93°				Facing, Through Hole, Blind Hole Machining										
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	f		Screw	Wrench
S06M-SDUCR 2	145939	**65.74**			0.600	0.375	0.336	6.0	0.375	-8°		0.098	DC□ T 21.5□	FTKA02565 **146930** **$ 10.72**	TW07P **146939** **$ 11.19**
S08M-SDUCR 2	145940	**71.27**			0.730	0.500	0.461	6.0	0.437	-8°	0.866	0.138			
S10R-SDUCR 2	145941	**86.38**			0.850	0.625	0.586	8.0	0.500	-6°	1.063	0.157			
S12S-SDUCR 3	145942	**105.75**			0.980	0.750	0.671	10.0	0.562	-6°	1.575	0.169	DC□ T 32.5□	FTGA03508 **146931** **$ 9.94**	TW15P
S16T-SDUCR 3	145943	**203.71**			1.300	1.000	0.921	12.0	0.750	-6°	1.811	0.268		FTGA03510 **146957** **$ 9.27**	**146940** **$ 11.66**
Carbide Shank C06-SDUCR-2	147301	**482.80**			0.600	0.375	0.336	6.0	0.375	-8°		0.098	DC□ T 21.5□	FTKA02565 **146930** **$ 10.72**	TW07P **146939** **$ 11.19**

➤ P. E14

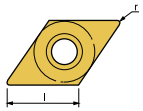
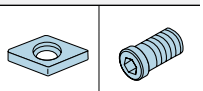
SDZCR/L



Feed direction

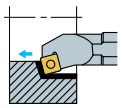


Right-hand shown

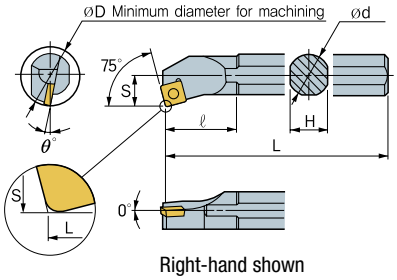
Ref	Holder Style				Application								Inserts	Parts			
Comment	Z Style, Approach Angle 85°				Copying, Blind Hole Machining												
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	f		Screw	Wrench	Shim	Shim Screw
S16T-SDZCR/L 3	145944	**133.59**			1.200	1.000	0.921	12.0	0.640	-6°	1.181	0.272	DC☐T 32.5☐	FTGA03510 **146957** **$ 9.27**	TW15P **146940** **$ 11.66**	-	-
S20U-SDZCR/L 3	145946	**181.95**	145947	**154.75**	1.470	1.250	1.171	14.0	0.765	-6°	1.535	0.331	DC☐T 32.5☐	FTGA03512 **146933** **$ 9.94**	TW15P **146940** **$ 11.66**	SD32S **146937** **$ 10.02**	SHXN0509F **146935** **$ 15.20**

➤ P. E14

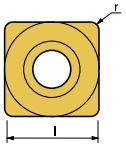
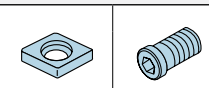
SSKCR/L



Feed direction

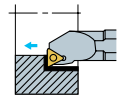


Right-hand shown

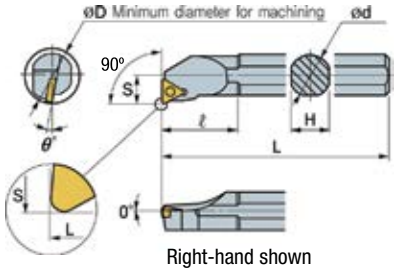
Ref	Holder Style				Application							Inserts	Parts			
Comment	K Style, Approach Angle 75°				Through Hole Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Shim	Shim Screw
S08M-SSKCR 3	145948	**72.99**			0.600	0.500	0.461	6.0	0.312	-10°	1.024	SC☐T 32.5☐	FTGA03508 **146931** **$ 9.94**	TW15P **146940** **$ 11.66**	-	-
S12S-SSKCR 3	145949	**108.31**			0.930	0.750	0.671	10.0	0.500	-8°	1.358					
S16T-SSKCR 4	145950	**136.07**			1.200	1.000	0.921	12.0	0.640	-8°	1.429	SC☐T 43☐	FTGA0411F **146944** **$ 9.13**	TW15P **146940** **$ 11.66**	SS42S **145997** **$ 10.02**	SHXN0610F **145998** **$ 15.44**

➤ P. E19

STFCR/L



Feed direction

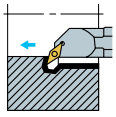


Right-hand shown

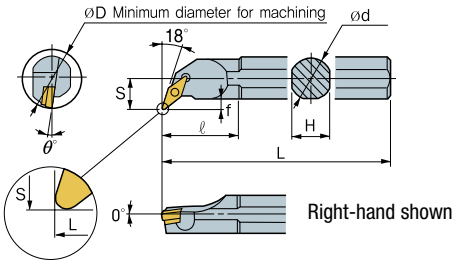
Ref	Holder Style				Application							Inserts	Parts			
Comment	F Style, Approach Angle 90°				Facing, Through Hole, Blind Hole Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Shim	Shim Screw
S06M-STFCR 2	146001	**45.37**			0.480	0.375	0.336	6.0	0.250	-13°	0.906	TC□T 21.5□	FTKA02565	TW07P		
S08M-STFCR 2	146022	**72.99**			0.600	0.500	0.461	6.0	0.312	-10°	1.181		**146930**	**146939**	-	-
S10R-STFCR/L 2	145954	**86.38**	147275	**97.26**	0.770	0.625	0.586	8.0	0.406	-6°	1.378		**$ 10.72**	**$ 11.19**		
S12S-STFCR/L 2	145955	**108.31**			0.930	0.750	0.671	10.0	0.500	-3°	1.417					
S16T-STFCR 3	146042	**157.44**			1.200	1.000	0.921	12.0	0.640	-6°	1.929	TC□T 32.5□	FTGA03510 **146957** **$ 9.27**	TW15P **146940** **$ 11.66**	-	-
S20U-STFCR 3	146818	**181.95**			1.470	1.250	1.171	14.0	0.765	-10°	1.969		FTGA03512 **146933** **$ 9.94**	TW15P **146940** **$ 11.66**	ST32S **145999** **$ 13.08**	SHXN0509F **146935** **$ 15.20**
Carbide Shank																
C06-STFCR 2	147302	**414.21**			0.480	0.375	0.461	6.0	0.312	-10°	1.102	TC□T 21.5□	FTKA02565	TW07P		
C08-STFCR 2	147303	**449.74**			0.600	0.500	0.461	6.0	0.312	-10°	1.181		**146930**	**146939**	-	-
C10-STFCR 2	147304	**643.21**			0.770	0.625	0.586	8.0	0.406	-6°	1.378		**$ 10.72**	**$ 11.19**		

➤ P. E22-24

SVQBR



Feed direction

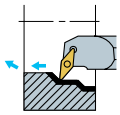


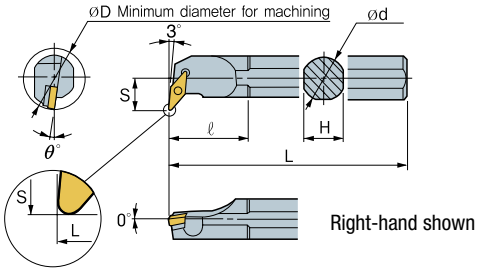
Right-hand shown

Ref	Holder Style				Application							Inserts	Parts			
Comment	Q Style, Approach Angle 108°				Copying, Relief Machining											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Shim	Shim Screw
S20U-SVQBR 3	145977	**181.95**			1.705	1.250	1.171	14.0	1.000	-8°	2.205	VB□T 33□	FTGA03512 **146933** **$ 9.94**	TW15P **146940** **$ 11.66**	SV32S **146950** **$ 12.72**	SHXN0509F **146935** **$ 15.20**
S24V-SVQBR 3	145978	**232.25**			2.000	1.500	1.382	16.0	1.125	-8°	2.520					

➤ P. E27

SVUBR/L

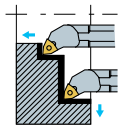


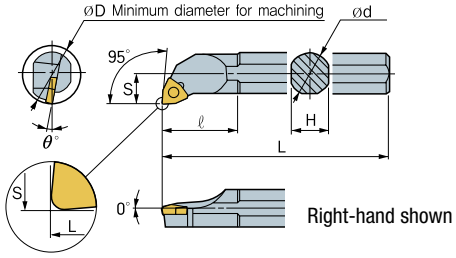


Ref	Holder Style				Application							Inserts	Parts			
Comment	U Style, Approach Angle 93°				Copying											
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench	Shim	Shim Screw
S20U-SVUBR 3	145979	**181.95**			1.705	1.250	1.171	14.0	1.000	-8°	1.929	VB□T 33□	FTGA03512	TW15P	SV32S	SHXN0509F
S24V-SVUBR/L 3	145980	**232.25**	146529	**197.52**	2.000	1.500	1.382	16.0	1.125	-8°	1.224		**146933**	**146940**	**146950**	**146935**
													$ 9.94	**$ 11.66**	**$ 12.72**	**$ 15.20**

➤ P. E27

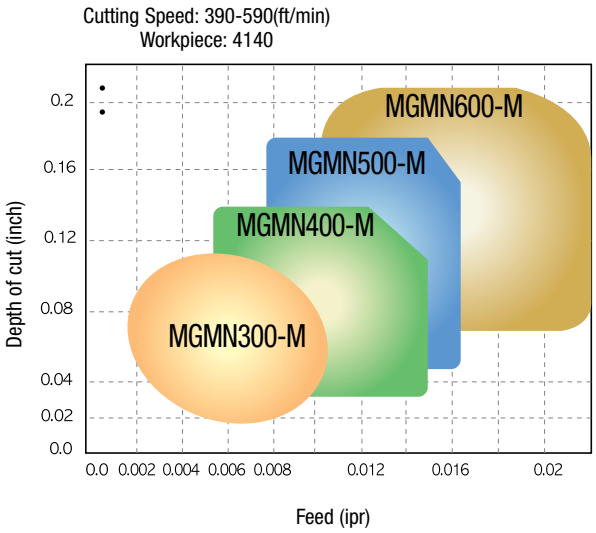
SWLCR/L





Ref	Holder Style				Application							Inserts	Parts	
Comment	L Style, Approach Angle 95°				Facing, Through Hole, Blind Hole Machining									
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ		Screw	Wrench
S16T-SWLCR/L 4	145981	**136.07**	145901	**123.07**	1.200	1.000	0.921	12.0	0.640	-7°	1.835	WCMT 43□	FTGA0411F	TW15P
S20U-SWLCR/L 4	145900	**202.77**	145902	**161.26**	1.470	1.250	1.171	14.0	0.765	-5°	2.031		**146944**	**146940**
													$ 9.13	**$ 11.66**

➤ P. E30



Depth of Cut, Feed and Width of Cutting Edge

- If the depth of cut and feed are greater than the width of cutting edge, the insert may break due to the increased cutting resistance of the insert
- If the depth of cut and feed are smaller than the width of cutting edge, it may lead to vibration or unstable machining due to no formation of the sub-cutting edge relief angle against no direct influence of tool deflection

Depth of Cut in Grooving Operation

- It can be performed as deep as Tmax of the holder

The Basis of Selection for Grades

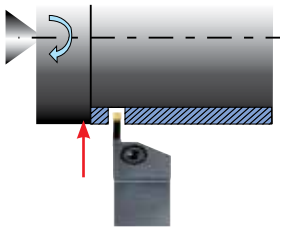
Workpiece			The Basis of Selection for Grades (Grooving, Turning)				
ISO	Material	Grade	Wear Resistance ◄——► Toughness				
			01	10	20	30	40
P	Carbon Steel Alloy Steel	CVD	PT10C	PT25C		PT30C	
		PVD	PM30P				
		Cermet	PT10S		PM20S		
M	Stainless Steel	CVD	PT22C		PT30C		
		PVD	PM30P				
K	Cast Iron	CVD			KM20C		
		PVD		PC215K			
	Aluminum	Uncoated	KTM10U				

: Primary Recommendation

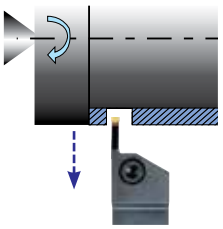
Insert	Steel					Stainless Steel		Cast Iron		Aluminum
	CVD		PVD	Cermet		CVD	PVD	CVD	Carbide	Carbide
	PT20C	PT30C	PM30P	PM20S	PT10S	PT30C	PM30P	KM20C	G10	KTM10U
MGMN200-G	●	△	△	-	-	△	△	△	△	-
MGMN300-G	△	△	△	-	-	△	△	△	△	-
MGMN400-G	△	△	△	-	-	△	△	△	△	-
MGMN500-G	△	△	△	-	-	△	△	△	△	-
MGMN300-M	●	●	●	-	-	●	●	●	△	-
MGMN400-M	●	●	●	-	-	●	●	●	△	-
MGMN500-M	●	△	●	-	-	△	●	△	△	-
MGMN600-M	●	△	△	-	-	△	△	△	△	-
MGMN800-M	△	△	△	-	-	△	△	△	△	-
MGGN300-00-M	-	-	-	△	△	-	-	-	-	-
MGGN400-00-M	-	-	-	△	△	-	-	-	-	-
MGGN500-00-M	-	-	-	△	△	-	-	-	-	-
MGGN600-00-M	-	-	-	△	△	-	-	-	-	-
MRMN300-M	●	△	△	-	-	△	△	△	△	-
MRMN400-M	●	△	△	-	-	△	△	△	△	-
MRMN500-M	●	△	△	-	-	△	△	△	△	-
MRMN600-M	●	△	△	-	-	△	△	△	△	-
MRMN800-M	△	△	△	-	-	△	△	△	△	-
MRGN600-A	-	-	-	-	-	-	-	-	-	●
MRGN800-A	-	-	-	-	-	-	-	-	-	●

Note / ● : Stock △ : Order Made

M.T.G. Applications



Grooving

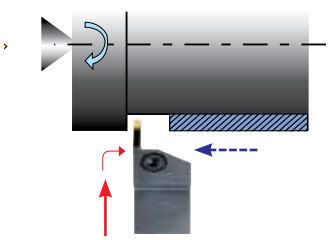


Grooving

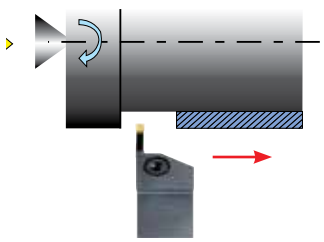
Feed by Cat. No.		Recommended Cutting Speed by Workpiece v(sfm)											
Cat. No.	Feed (ipr)	Carbon Steel			High Hardened Alloy Steel			Hardened Steel			STS	Cast Iron	Al
		PT25C	PT30C	PM20S PT10S	PT25C	PT30C PM30P	PM20S CT10	PT25C	PT30C	PM20S PT10S	PM30P	PC215K	KTM10U
MGMN200-G	0.002	490											
	0.004	425											
	0.006	330											
MGMN300-M(G) MGGN300-00-M MRMN300-M	0.003	625	525	525	525	425	425	400	300	300	525	650	
	0.006	550	450	450	450	350	350	325	225	225	450	600	
	0.01	450	350	350	400	300	300	200	125	125	400	500	
MGMN400-M(G) MGGN400-00-M MRMN400-M	0.005	650	550	550	600	500	500	425	325	325	525	700	
	0.01	550	450	450	525	425	425	350	250	250	450	600	
	0.014	400	325	325	425	325	325	225	175	175	400	425	
MGMN500-M(G) MGGN500-00-M MRMN500-M	0.006-0.008	600	500	500	525	425	425	400	300	300	500	600	
	0.012	500	400	400	425	325	325	225	175	175	400	425	
	0.016	400	325	325	325	250	250	200	125	125	325	400	
MGMN600-M(G) MGGN600-00-M MRMN600-M	0.01	625	525	525	525	425	425	325	225	225	525	625	
	0.014	500	400	400	325	250	250	225	175	175	350	500	
	0.02	400	300	300	250	175	175	175	100	100	250	400	
MRMN800-M	0.01	625	525	525	525	425	425	325	225	225	525	625	
	0.014	500	400	400	325	250	250	225	175	175	350	500	
	0.016	400	300	300	250	175	175	175	100	100	250	400	
MRGN 300-A 400-A 500-A 600-A	0.004												825~3275
	0.01												825~2625
	0.016												825~2300
MRGN800-A	0.004												825~3275
	0.01												825~2625
	0.016												825~2300

• Recommendations written above are subject to change as per machine, workpiece, etc.

M.T.G. Applications



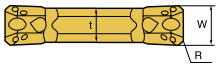
Cornering

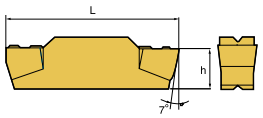


Turning

MGMN-G(M) For Grooving & Turning

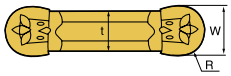
Note:
G - Grooving only
M - Grooving & Turning



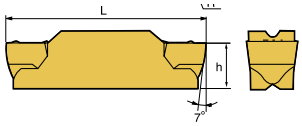


	Coated Carbide										Cermet		Uncoated Carbide	(inch)					Applicable Holders	
Designation	PT20C	PT22C	PT25C	PT30C	PM30P	PTM50P	MT15C	MT20C	MT30C	KT15P	PT10S	PT20S	KTM10U	W	R	L	t	h	Holder	Page No.
MGMN 200-G			149245 $ 16.91	147365 $ 16.91										0.079	0.008	0.629	0.063	0.138	MGEHR/L MGEVR/L	E78 E79
MGMN 300-G										148314 $ 18.01				0.118	1/64	0.827	0.093	0.189	MGIVR/L	E80
MGMN 300-M			149225 $ 17.74	147363 $ 17.74		148837 $ 14.57	149264 $ 18.01		148782 $ 17.74					0.118	1/64	0.827	0.093	0.189		
MGMN 400-G										148315 $ 19.45				0.157	1/64	0.827	0.130	0.189		
MGMN 400-M			149237 $ 19.12	147364 $ 19.12	146211 $ 15.72	148843 $ 19.12								0.157	1/64	0.827	0.130	0.189		
MGMN 600-M			149291 $ 27.02											0.236	1/32	1.024	0.197	0.228		

MRMN-M For Relief, Copying

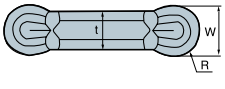


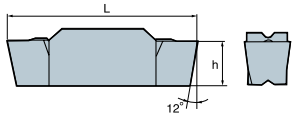
W =± 0.05



	Coated Carbide									Cermet		Uncoated Carbide	(inch)					Applicable Holders	
Designation	PT10C	PT20C	PT30C	PM30P	PM30.1P	MT20C	MT30P	KT05C	KT15P	PT10S	PT20S	KTM10U	W	R	L	t	h	Holder	Page No.
MRMN-300-M					146106 $ 17.74								0.118	0.059	0.827	0.093	0.189	MGEHR/L MGEUR/L	E78 E79
MRMN 500-M			147245 $ 24.47										0.197	0.098	1.024	0.161	0.228	MGEVR/L MGIUR/L	E79 E80
MRMN 800-M				147041 $ 42.79									0.315	0.157	1.220	0.236	0.256	MGIVR/L	E80

MRGN-A For Aluminum Machining





* -AH : Relief Angle 17°

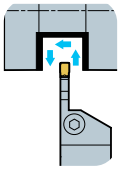
W =± 0.03

	Coated Carbide									Cermet		Uncoated Carbide	(inch)					Applicable Holders	
Designation	PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PT20S	KT10U	W	R	L	t	h	Holder	Page No.
MRGN 300-A												148428 $ 30.97	0.118	0.059	0.827	0.093	0.189	MGEUR/L MGIUR/L	E79 E80
MRGN 400-A												148153 $ 32.25	0.157	0.078	0.827	0.130	0.189		
MRGN 500-A												148154 $ 34.37	0.197	0.098	1.024	0.161	0.228		
MRGN 600-A												148155 $ 37.07	0.236	0.118	1.024	0.197	0.228		

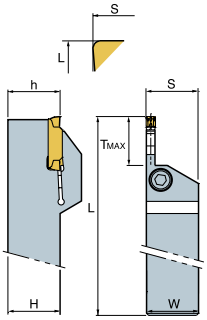
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

MGEHR/L



Feed direction



Right-hand shown

Ref	Holder Style				Application					Inserts	Parts	
Comment					External Grooving, Turning							
									(inch)			
MGEHR/L	Code #		Code #		H(h)	W	L	S	TMAX		Screw	Wrench
	Right	Price $	Left	Price $								
12-2	148244	**152.33**			0.750	0.750	4.921	0.760	0.47	MGMN200-G/M	MHA 0512	HW 40L
16-2	148245	**163.80**	148587	**163.80**	1.000	1.000	5.906	1.010	0.47		**147984**	**148290**
											$ 10.16	**$ 2.74**
12-3	148062	**152.33**	148064	**152.33**	0.750	0.750	4.921	0.764	0.70			
12-3-T03	148063	**152.33**	148065	**152.33**	0.750	0.750	4.921	0.764	0.39	MGMN300-M		
16-3	148066	**163.80**	148067	**163.80**	1.000	1.000	5.906	1.014	0.70			
16-3-T03	148068	**163.80**	148069	**163.80**	1.000	1.000	5.906	1.014	0.39	MRMN300-M		
20-3	148070	**177.08**	148071	**177.08**	1.250	1.250	6.693	1.264	0.70			
20-3-T03	148072	**177.08**	148073	**177.08**	1.250	1.250	6.693	1.264	0.39			
16-4	148074	**163.80**	148075	**163.80**	1.000	1.000	5.906	1.016	0.70	MGMN400-M		
16-4-T03	148076	**163.80**	148077	**163.80**	1.000	1.000	5.906	1.016	0.39	MRMN400-M	BHA0616	HW 50L
20-4	148078	**177.08**	148079	**177.08**	1.250	1.250	6.693	1.264	0.70		**146958**	**148186**
20-4-T03	148082	**177.08**	148083	**177.08**	1.250	1.250	6.693	1.264	0.39		**$ 8.15**	**$ 6.14**
16-5	148080	**163.80**	148081	**163.80**	1.000	1.000	5.906	1.020	0.90	MRMN500-M		
20-5	148084	**177.08**	148085	**177.08**	1.250	1.250	6.693	1.270	0.90			
16-6	148086	**163.80**	148087	**163.80**	1.000	1.000	5.906	1.024	0.90	MGMN600-M		
20-6	148088	**177.08**	148089	**177.08**	1.250	1.250	6.693	1.274	0.90	MRMN600-M		
16-8	148090	**163.80**	148091	**163.80**	1.000	1.000	5.906	1.043	1.10	MGMN800-M		
20-8	148092	**177.08**			1.250	1.250	6.693	1.293	1.10	MRMN800-M		

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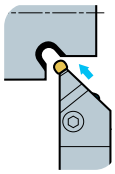
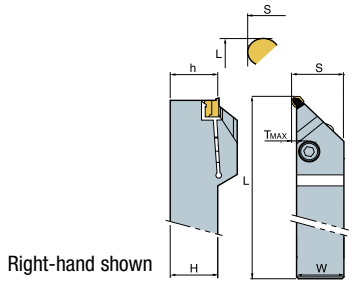
Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

MGEUR/L



Feed direction



Right-hand shown

Ref	Holder Style				Application					Inserts	Parts	
Comment					External Relief Grooving							
									(inch)			
MGEUR/L	Code # Right	Price $	Code # Left	Price $	H(h)	W	L	S	TMAX		Screw	Wrench
12-3	148105	**142.86**	148106	**142.86**	0.750	0.750	4.921	0.967	0.21	MRMN300-M		
16-3	148107	**154.88**	148108	**154.88**	1.000	1.000	5.906	1.217	0.21			
20-3	148109	**166.88**	148110	**166.88**	1.250	1.250	6.693	1.467	0.21			
16-4	148111	**154.88**	148112	**154.88**	1.000	1.000	5.906	1.217	0.21	MRMN400-M		
20-4	148113	**166.88**	148114	**166.88**	1.250	1.250	6.693	1.467	0.21			
16-5	148115	**154.88**	148116	**154.88**	1.000	1.000	5.906	1.276	0.27	MRMN500-M	BHA0616	HW 50L
20-5	148117	**166.88**	148118	**166.88**	1.250	1.250	6.693	1.526	0.27		**146958**	**148186**
16-6	148119	**154.88**	148120	**154.88**	1.000	1.000	5.906	1.276	0.27	MRMN600-M	**$ 8.15**	**$ 6.14**
20-6	148121	**166.88**	148122	**166.88**	1.250	1.250	6.693	1.526	0.27			
16-8	148123	**154.88**	148124	**154.88**	1.000	1.000	5.906	1.354	0.35	MRMN800-M		
20-8	148125	**166.88**	148126	**166.88**	1.250	1.250	6.693	1.604	0.35			
16-6A	148127	**154.88**	148128	**154.88**	1.000	1.000	5.906	1.276	0.27	MRGN600-A		
16-8A	148129	**154.88**	148130	**154.88**	1.000	1.000	5.906	1.354	0.35	MRGN800-A		

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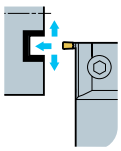
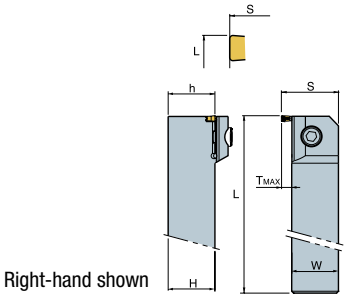
MGEVR/L



Feed direction



Right-hand shown

Ref	Holder Style				Application					Inserts	Parts	
Comment					Facial Grooving, Turning							
									(inch)			
MGEVR/L	Code # Right	Price $	Code # Left	Price $	H(h)	W	L	S	TMAX		Screw	Wrench
12-2	148266	**142.86**	148267	**142.86**	0.750	0.750	4.921	0.868	0.11	MGMN200-G		
16-2	148268	**154.88**	148269	**154.88**	1.000	1.000	5.906	1.118	0.11		BHA0616	HW 50L
12-3	148270	**142.86**	148271	**142.86**	0.750	0.750	4.921	0.967	0.21	MGMN300-M	**146958**	**148186**
16-3	148272	**154.88**	148273	**154.88**	1.000	1.000	5.906	1.217	0.21		**$ 8.15**	**$ 6.14**
20-3	148274	**166.88**	148275	**166.88**	1.250	1.250	6.693	1.467	0.21	MRMN300-M		

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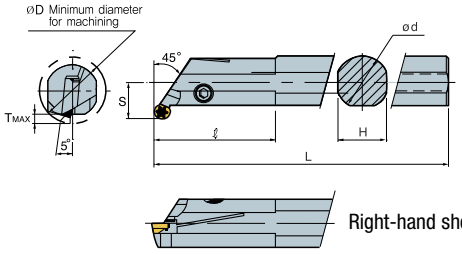
MGIUR/L

Feed direction



Right-hand shown

Ref	Holder Style				Application							Inserts	Parts	
Comment					Internal Relief Grooving									
(inch)														
MGIUR/L	Code #		Code #		øD	ød	L	ℓ	TMAX	H	S		Screw	Wrench
	Right	Price $	Left	Price $										
2312-3	148131	**159.38**			1.437	0.750	5.906	1.772	0.13	0.670	0.512	MRMN300-M	MHA0512	HW 40L
2616-3	148133	**160.69**			1.625	1.000	7.874	1.772	0.13	0.920	0.610			
3220-3	148135	**213.43**			2.000	1.250	9.843	2.559	0.13	1.170	0.748		**147984**	**148290**
3220-4	148139	**213.43**			2.000	1.250	9.843	2.559	0.13	1.170	0.748	MRMN400-M	**$ 10.16**	**$ 2.74**

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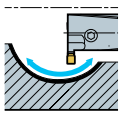
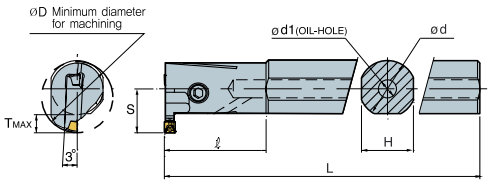
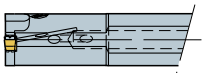
MGIVR/L

Coolant through



Feed box





Right-hand shown

Ref	Holder Style				Application								Inserts	Parts	
Comment					Internal Grooving, Turning										
(inch)															
MGIVR/L	Code #		Code #		øD	ød	L	l	TMAX	ød1	H	S		Screw	Wrench
	Right	Price $	Left	Price $											
1210-2	148233	**155.64**			0.750	0.625	4.921	1.378	0.15	0.236	0.630	0.476	MGMN200-G	MHB0310 **148671** **$ 8.15**	HW25L **146956** **$ 2.21**
1612-2	148234	**183.07**			1.000	0.750	5.906	1.772	0.15	0.315	0.630	0.585			
1612-3	148235	**183.07**			1.000	0.750	5.906	1.772	0.23	0.236	0.670	0.614	MGMN300-M		
2016-3	148236	**213.22**	148237	**213.22**	1.250	1.000	7.874	1.772	0.23	0.315	0.920	0.744		MHA0512	HW 40L
2420-3	148238	**250.69**			1.500	1.250	9.843	2.559	0.23	0.315	1.170	0.846		**147984**	**148290**
1612-4	148239	**183.07**			1.000	0.750	5.906	1.772	0.23	0.315	0.670	0.614	MGMN400-M	**$ 10.16**	**$ 2.74**
2016-4	148240	**213.22**	148241	**213.22**	1.250	1.000	7.874	1.772	0.23	0.315	0.920	0.744			
2420-4	148242	**250.69**			1.500	1.250	9.843	2.559	0.23	0.315	1.170	0.846			

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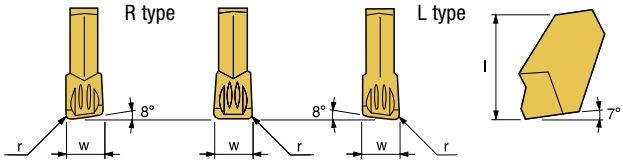
Pro Part Inserts

SP Inserts (For Parting Off)



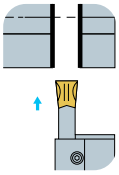
	Coated Carbide									Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	PT10C	PT20C	PT22C	PT30C	MT15C	MT20C	MT30P	KT05C	KT15P	PT10S	PM30S	PTM30U	w	l	r	Holder	Page No.
SP 200				146450 $ 15.78									0.087	0.366	0.008	PP-B PP-INT	E82 E81
SP 200R				146533 $ 15.78			146233 $ 15.78						0.087	0.366	0.008		
SP 300				146452 $ 15.94	149246 $ 15.20		145617 $ 15.94					146451 $ 12.75	0.122	0.445	0.008		
SP 300R				146446 $ 15.94									0.122	0.445	0.008		
SP 300L				146447 $ 15.94									0.122	0.445	0.008		
SP 400				146454 $ 16.46								146453 $ 13.12	0.161	0.445	0.009		
SP 400R				146455 $ 16.46									0.161	0.445	0.009		
SP 400L				146057 $ 16.46									0.161	0.445	0.009		
SP 500				146456 $ 17.29									0.201	0.449	0.011		
SP 500R				147373 $ 17.29									0.201	0.449	0.011		
SP 500L				146058 $ 17.29									0.201	0.449	0.011		
SP 600				146458 $ 18.59									0.252	0.449	0.014		

Quick Choice Grade Selection

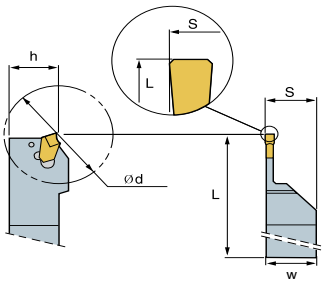
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

Pro Part-Off Integral Shank Holder

PP-INT



Feed direction

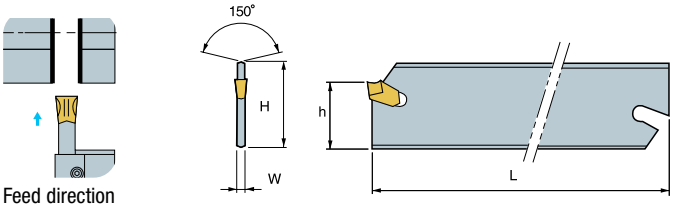


Ref	Holder Style		Application					Inserts	Parts
Comment			Parting Off						
							(inch)		
PP-INT	Code #	Price $	h	w	L	ød	S		Wrench
075-3	147433	134.79	0.750	0.750	4.724	1.575	0.750	SP300, 300R/L	
100-3	148231	134.79	1.000	1.000	5.906	2.362	1.000	SP300, 300R/L	SW 50L
100-4	148232	134.79	1.000	1.000	5.906	2.756	1.000	SP400, 400R/L	146960 $ 2.62

➤ P. E81

Pro Part-Off Blades

PP-B Pro Part-Off Blades

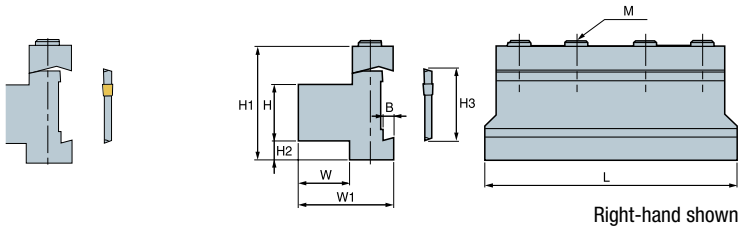


Ref	Holder Style	Application					Inserts	Parts
Comment		Parting Off						* Purchase separately
						(inch)		
PP-B	Code #	Price $	H	W	L	h		Wrench
226S	146532	138.16	1.023	0.063	4.331	0.827	SP200, 200R/L	
326S	146232	132.85	1.023	0.094	4.331	0.827	SP300, 300R/L	
232S	146717	138.16	1.259	0.063	5.906	0.984	SP200, 200R/L	SW 15S
332S	146898	125.93	1.259	0.094	5.906	0.984	SP300, 300R/L	146771
432S	146899	125.93	1.259	0.126	5.906	0.984	SP400, 400R/L	$ 27.01
532S	146962	138.16	1.259	0.157	5.906	0.984	SP500, 500R/L	
632S	148538	138.16	1.259	0.205	5.906	0.984	SP600, 600R/L	

➤ P. E81

Pro Part-Off Blocks

P.O.B. Block For Pro Part-Off Blades



Ref	Holder Style	Application										Inserts	Parts
Comment		Saw-Man Blade Block											
											(inch)		
P.O.B.	Code #	Price $	H(h)	W	H3	L	H1	H2	W1	B	M		Wrench
19-5	146510	173.66	0.750	0.750	1.023	3.50	2.10	0.354	1.375	0.209	3-M6	PPB 226 & 326	SW 50L
25;4-6	145895	151.17	1.000	0.875	1.259	4.50	2.125	0.157	1.500	0.209	4-M6	PPB 232 - 532	146960 $ 2.62

➤ P. E82

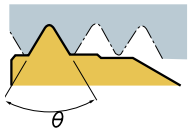
Threading Insert

Ref	for External	Pitch	for Internal	Pitch
Metric Thread 60°	**3000type**		**2000type**	
	ECTR3100~3300	1.0~3.0mm	ICTR2050~2200	0.5~2.0mm
	ECTR3150F	0.5~1.5mm	ICTR2150F	0.5~1.5mm
	ECTR3300F	1.5~3.0mm	**3000type**	
	4000type		ICTR3100~3300	1.0~3.0mm
	ECTR4350~4500	3.5~5.0mm	ICTR3150F	0.5~1.5mm
	ECTR4500F	3.5~5.0mm	ICTR3300F	1.5~3.0mm
			4000type	
			ICTR4350~4500	3.5~5.0mm
			ICTR4500F	3.5~5.0mm
Unified Thread 60°	**3000type**		**2000type**	
	ECTR3028UN~3008UN	28~08 pitch/Inch	ICTR2032UN~2014UN	24~14 pitch/Inch
	ECTR3028UNF	28~14 pitch/Inch	ICTR2048UNF	48~16 pitch/Inch
	ECTR3014UNF	14~08 pitch/Inch	**3000type**	
	4000type		ICTR3028UN~3008UN	28~08 pitch/Inch
	ECTR4007UN~4005UN	07~05 pitch/Inch	ICTR3028UNF	28~14 pitch/Inch
	ECTR4007UNF	07~05 pitch/Inch	ICTR3014UNF	14~08 pitch/Inch
			4000type	
			ICTR4007UN~4005UN	07~05 pitch/Inch
			ICTR4007UN	07~05 pitch/Inch
Whitworth Thread 55°	**3000type**		**2000type**	
	ECTR3028W~3008W	28~08 pitch/Inch	ICTR2020W~2014W	20~14 pitch/Inch
	ECTR3028WF	28~14 pitch/Inch	ICTR2048UNF	48~16 pitch/Inch
	ECTR3014WF	14~08 pitch/Inch	**3000type**	
	4000type		ICTR3028W~3008W	28~08 pitch/Inch
	ECTR4007W~4005W	07~05 pitch/Inch	ICTR3028WF	28~14 pitch/Inch
	ECTR4007WF	07~05 pitch/Inch	ICTR3014WF	14~08 pitch/Inch
			4000type	
			ICTR4007W~4005W	07~05 pitch/Inch
			CTR4007WF	07~05 pitch/Inch

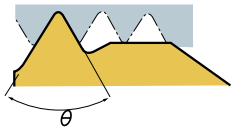
Workpiece	Recommended Grade & Cutting Speed(sfm)			
	Coated Grade	Uncoated		Cermet
	PM30P	ST10	PTM30U	PM20S
Carbon Steel	400(250-500)	325(300-400)	300(250-325)	450(400-550)
Alloy Steel	325(250-425)	300(250-375)	250(225-325)	375(325-425)
Hardened Steel	100(25-175)	75(25-100)		
Heating Resistant Alloys	125(75-200)	100(25-100)		
Stainless Steel	300(225-375)	125(100-175)	225(200-300)	325(300-400)
Cast Iron	400(325-425)	250(225-300)		
Non-ferrous Metal (Copper Alloy Plastic)	975(325-1975)	825(325-1650)		

Cutting Edge Type

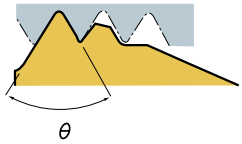
A type



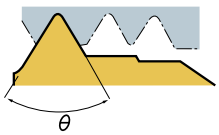
B type



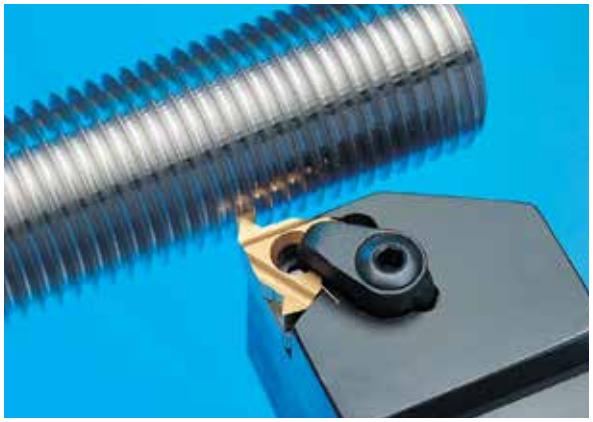
C type



D type



Effective Inclination and Relief Angle of Threading



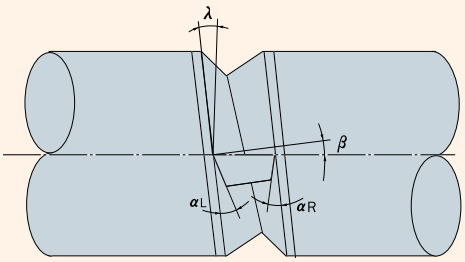
Inclination angle of the Thread (β) in the figure is decided by effective diameter (d) and lead (ℓ) of thread

The angle of inclination of the Thread (β) is calculated by using the formula.

$$\tan\beta = \frac{\ell}{\pi d}$$

ℓ: lead

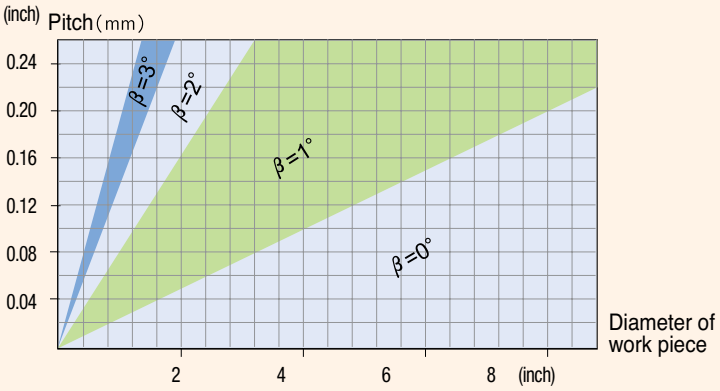
n:No.of Pitch, p:Pitch, d:Effective Diameter of Thread



α - Side Relief Angle ($\alpha L = \alpha R$)

λ - Helix Angle

β - Angle of Inclination

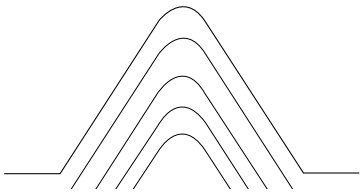
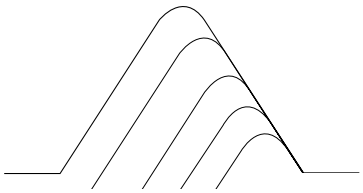
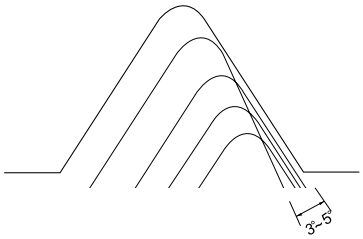
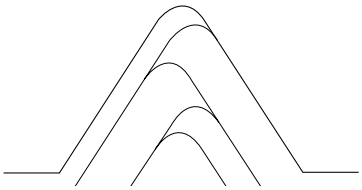


Effective Angle of Inclination of Each Cutting Condition

Revision Method of Effective Inclination Angle

Threading holders (ETH, ITH) are drawn with revision of inclination angle, 1°~ 2° to be used for detailed threading.
But, shims are produced without revision of inclination angle (ST32C1, ST42C1).
If pitch of thread is bigger or diameter of thread is smaller, inclination angle of thread will be bigger and bigger inclination angle will make Insert relief angle (L, R) smaller.
This effects the shape of thread crest and tool life but revising inclination angle can solve it.

Choosing Type of Infeed for Threading Operation

Type of Infeed	Features
 Radial infeed	• Most commonly used • Suitable for relatively small pitch threading on soft material • Chattering may occur easily because of longer chip touch length and bigger load on nose of the insert • Bad chip control due to V type chip being produced
 Flank infeed	• Suitable for bigger pitch thread or mild material, it can reduce chattering • Bigger wear may occur on right cutting edge • Good chip control either direction
 Modified flank infeed	• Modified type of flank infeed • Suitable for bigger pitch thread or mild material, this method can reduce chattering • Good chip control with either way of chip flow • Wear can be reduced with infeeding right cutting edge • Recommended for 2 pitches thread
 Incremental infeed	• Suitable for bigger pitch thread or mild material, it can reduce chattering • This method gives the insert even wear and longer tool life with using both side of cutting edge by turns • Coiling of chip from right and left may be occurred due to the chip flow in turn

Cutting Depth and Passes — Metric

ISO Metric 60° External

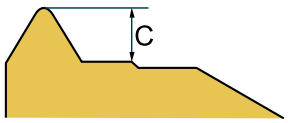
Pitch		6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.5
Infeed Value(mm)		3.83	3.52	3.19	2.87	2.53	2.23	1.92	1.60	1.25	1.13	0.93	0.81	0.65	0.48	0.33
Pass	1	0.46	0.43	0.41	0.37	0.34	0.34	0.28	0.27	0.24	0.22	0.22	0.21	0.18	0.16	0.11
	2	0.43	0.40	0.39	0.34	0.32	0.31	0.26	0.24	0.22	0.20	0.20	0.17	0.16	0.14	0.09
	3	0.35	0.32	0.32	0.28	0.25	0.25	0.21	0.20	0.18	0.17	0.17	0.14	0.12	0.11	0.07
	4	0.30	0.28	0.27	0.24	0.22	0.21	0.18	0.17	0.16	0.14	0.14	0.11	0.11	0.07	0.06
	5	0.29	0.26	0.24	0.22	0.20	0.18	0.16	0.15	0.14	0.12	0.12	0.10	0.08		
	6	0.26	0.24	0.24	0.22	0.18	0.18	0.15	0.15	0.12	0.10	0.08	0.08			
	7	0.24	0.21	0.22	0.20	0.17	0.16	0.14	0.12	0.11	0.10					
	8	0.23	0.20	0.20	0.18	0.15	0.15	0.13	0.11	0.08	0.08					
	9	0.22	0.19	0.19	0.17	0.14	0.14	0.12	0.11							
	10	0.19	0.18	0.18	0.16	0.13	0.12	0.11	0.08							
	11	0.18	0.17	0.16	0.14	0.12	0.11	0.10								
	12	0.16	0.15	0.15	0.13	0.12	0.08	0.08								
	13	0.15	0.14	0.12	0.12	0.11										
	14	0.14	0.13	0.10	0.10	0.08										
	15	0.13	0.12													
	16	0.10	0.10													

ISO Metric 60° Internal

Pitch		6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.5
Infeed Value(mm)		3.54	3.25	2.96	2.65	2.33	2.05	1.78	1.48	1.17	1.05	0.85	0.75	0.60	0.46	0.31
Pass	1	0.46	0.43	0.42	0.37	0.34	0.32	0.28	0.26	0.23	0.22	0.20	0.17	0.17	0.16	0.10
	2	0.43	0.40	0.40	0.34	0.31	0.30	0.26	0.25	0.21	0.20	0.18	0.17	0.15	0.13	0.08
	3	0.35	0.33	0.32	0.28	0.24	0.24	0.21	0.18	0.17	0.15	0.15	0.14	0.11	0.10	0.07
	4	0.30	0.26	0.26	0.23	0.21	0.19	0.16	0.15	0.15	0.13	0.13	0.10	0.09	0.07	0.06
	5	0.26	0.22	0.22	0.21	0.18	0.17	0.14	0.13	0.12	0.11	0.11	0.09	0.08		
	6	0.22	0.20	0.20	0.19	0.15	0.15	0.13	0.12	0.11	0.09	0.08	0.08			
	7	0.20	0.18	0.17	0.16	0.14	0.14	0.12	0.11	0.10	0.08					
	8	0.19	0.17	0.16	0.15	0.13	0.13	0.11	0.10	0.08	0.08					
	9	0.18	0.16	0.16	0.14	0.12	0.12	0.10	0.10							
	10	0.16	0.15	0.15	0.12	0.13	0.11	0.10	0.08							
	11	0.15	0.14	0.14	0.12	0.11	0.10	0.09								
	12	0.15	0.14	0.14	0.12	0.10	0.08	0.08								
	13	0.14	0.13	0.12	0.11	0.10										
	14	0.13	0.12	0.10	0.10	0.08										
	15	0.12	0.12													
	16	0.10	0.10													

Note

1) Above conditions are calculated upon using PM30P and PM20S grade.
2) Total D.O.C is based on C+ 0.05 ~ +0.08mm and no more excess is necessary.
3) D.O.C, 0.05 ~ 0.1mm is recommended for pass
4) To avoid breakage of the insert at the first pass, make chamfer of 0.3~0.5 on the corner of workpiece.
5) Using coolant helps improve insert tool life and surface finish.



Cutting Depth and Passes — Unified

Unified 60° External

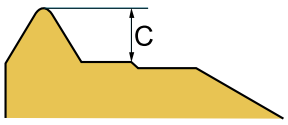
Pitch		5	6	7	8	9	10	11	12	14	16	18	19	20	24	28	32
Infeed Value(mm)		0.130	0.107	0.092	0.082	0.072	0.065	0.060	0.055	0.051	0.047	0.041	0.037	0.033	0.028	0.024	0.021
Pass	1	0.017	0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.010	0.00	0.009	0.009	0.008	0.007	0.007	0.007
	2	0.016	0.013	0.013	0.011	0.010	0.010	0.010	0.010	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006
	3	0.014	0.011	0.010	0.010	0.008	0.008	0.008	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.004	0.005
	4	0.012	0.009	0.009	0.008	0.008	0.007	0.007	0.007	0.007	0.0066	0.006	0.006	0.005	0.005	0.004	0.003
	5	0.010	0.009	0.008	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	
	6	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.003	0.003			
	7	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	0.003	0.003					
	8	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.003	0.003	0.003						
	9	0.007	0.006	0.006	0.005	0.005	0.004	0.003									
	10	0.007	0.006	0.005	0.005	0.004	0.003										
	11	0.007	0.005	0.004	0.004	0.003											
	12	0.006	0.005	0.003	0.003												
	13	0.005	0.004														
	14	0.004	0.004														

Unified 60° Internal

Pitch		5	6	7	8	9	10	11	12	14	16	18	19	20	24	28	32
Infeed Value(mm)		0.118	0.097	0.084	0.074	0.065	0.059	0.054	0.049	0.045	0.042	0.037	0.033	0.030	0.025	0.022	0.019
Pass	1	0.017	0.014	0.013	0.012	0.011	0.011	0.011	0.011	0.010	0.009	0.009	0.009	0.008	0.007	0.007	0.007
	2	0.015	0.013	0.013	0.011	0.010	0.010	0.009	0.009	0.008	0.007	0.007	0.007	0.006	0.006	0.006	0.006
	3	0.013	0.010	0.009	0.009	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.004
	4	0.011	0.008	0.008	0.007	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.004	0.004	0.003	0.003
	5	0.009	0.007	0.007	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.003	
	6	0.008	0.006	0.006	0.005	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.003	0.003			
	7	0.007	0.006	0.006	0.005	0.005	0.004	0.004	0.004	0.004	0.004	0.006					
	8	0.007	0.006	0.005	0.004	0.004	0.004	0.004	0.003	0.003	0.003						
	9	0.006	0.005	0.005	0.004	0.004	0.004	0.006									
	10	0.006	0.005	0.005	0.004	0.004	0.003										
	11	0.006	0.005	0.004	0.004	0.003											
	12	0.006	0.004	0.003	0.003												
	13	0.005	0.004														
	14	0.004	0.004														

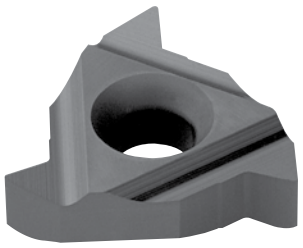
Note

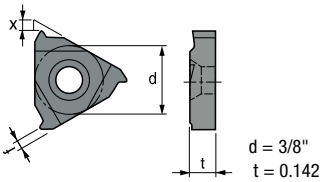
1) Above conditions are calculated upon using PM30P and PM20S grade.
2) Total D.O.C is based on C+ 0.05 ~ +0.08mm and no more excess is necessary.
3) D.O.C, 0.05 ~ 0.1mm is recommended for pass
4) To avoid breakage of the insert at the first pass, make chamfer of 0.3~0.5 on the corner of workpiece.
5) Using coolant helps improve insert tool life and surface finish.



External Threading Inserts

ECTR

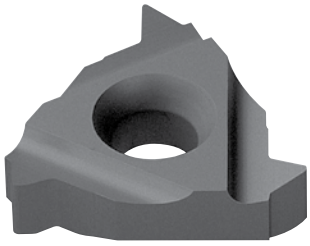


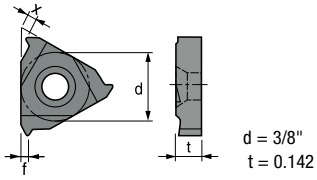


	Coated Carbide									Uncoated Carbide			(inch)						Applicable Holders	
Designation	PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PTM30U	KTM10U	Pitch	f	θ	x	Cutting Edge	Holder	Page No.
ECTR 20UN					146524 $ 37.73								20	0.039	60°	0.051	A	ETH3---	E89
ECTR 16UN					146489 $ 30.51								16	0.039	60°	0.051	A		
ECTR 12UN					146250 $ 30.51								12	0.047	60°	0.051	A		
ECTR 10UN					146249 $ 37.73								10	0.059	60°	0.059	A		
ECTR 08UN					146248 $ 37.73								08	0.059	60°	0.059	A		
ECTR 300 8-28					146597 $ 37.73								28~8	0.039	60°	0.051	D		

Internal Threading Inserts

ICTR





	Coated Carbide									Uncoated Carbide			(inch)						Applicable Holders	
Designation	PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PTM30U	KTM10U	Pitch	f	θ	x	Cutting Edge	Holder	Page No.
ICTR 16UN					146514 $ 31.42								16	0.039	60°	0.051	A	ITH3---	E89
ICTR 12UN					146253 $ 47.27								12	0.047	60°	0.051	A		
ICTR 10UN					146252 $ 37.73								10	0.059	60°	0.059	A		
ICTR 300 8-28					146610 $ 37.73								28~8	0.039	60°	0.051	D		

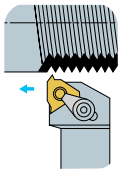
Cutting Edge Type

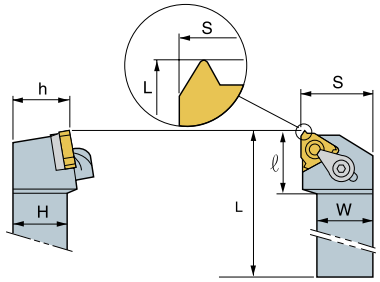
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

External Threading Holders

ETH3



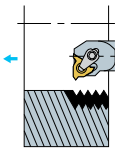


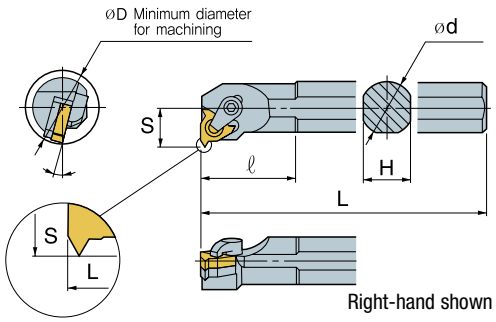
Ref	Holder Style	Application	Inserts	Parts					
Comment		External Threading							
		(inch)							
ETH3	Code #	Price $	H=(h)	W	L	S	ℓ		Clamp	Clamp Screw	Shim	Screw	C Ring	Wrench
3/4	146708	**90.25**	0.750	0.750	6.000	1.205	1.100	ECTR	CH5R3	CHX0513	ST32C1	SHX0310	CR04	HW20L
1"	146290	**100.55**	1.000	1.000	6.000	1.205	1.100		**146474**	**146475**	**146476**	**146155**	**146477**	**146954**
									$ 29.18	**$ 16.39**	**$ 13.00**	**$ 7.88**	**$ 2.74**	**$ 2.21**

➤ P. E88

Internal Threading Holders

ITH3





Ref	Holder Style	Application	Inserts	Parts					
Comment		Internal Threading							
		(inch)							
ITH3	Code #	Price $	øD	ød	H	L	ℓ	S	Clamp	Clamp Screw	Shim	Screw	C Ring	Wrench
3/4	146255	**136.91**	0.950	0.750	0.625	7.00	2.00	0.520	ICTR	CH5R3	CHX0513	ST32C1	SHX0310	CR04	HW20L
1"	146254	**162.72**	1.150	1.000	0.750	8.00	2.50	0.650		**146474**	**146475**	**146476**	**146155**	**146477**	**146954**
1.25"	146256	**215.98**	1.460	1.250	1.250	10.00	2.50	0.780		**$ 29.18**	**$ 16.39**	**$ 13.00**	**$ 7.88**	**$ 2.74**	**$ 2.21**

➤ P. E88

Milling Insert Code System

1 Insert Shape

C	D	H	L
O	R	S	T
V	W		

2 Clearance Angle

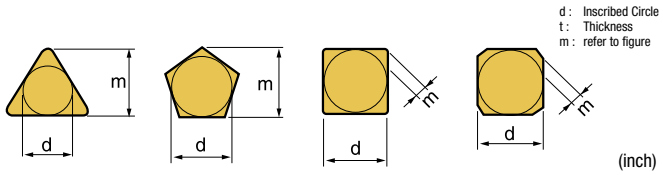
A	B	C
D	E	F
G	N	P

S P K R 4

1 2 3 4 5

3 Tolerance

(mm)



(inch)

class	d	m	t
A	+_ 0.0010	+_ 0.0002	+_ 0.0010
C	+_ 0.0010	+_ 0.0005	+_ 0.0010
H	+_ 0.0005	+_ 0.0005	+_ 0.0010
E	+_ 0.0010	+_ 0.0010	+_ 0.0010
G	+_ 0.0010	+_ 0.0010	+_ 0.005
J	+_ 0.002 - +_ 0.006	+_ 0.0002	+_ 0.0010
K	+_ 0.002 - +_ 0.006	+_ 0.0005	+_ 0.0010
L	+_ 0.002 - +_ 0.006	+_ 0.0010	+_ 0.0010
M	+_ 0.002 - +_ 0.006	+_ 0.003 - 0.008	+_ 0.005
U	+_ 0.003 - +_ 0.01	+_ 0.005 - 0.015	+_ 0.005

Tolerance on C, H, R, T, W class (exceptional)

d	Tolerance on d		Tolerance on m	
	J, K, L, M, N	U	M, N	U
1/4	+_ 0.002	+_ 0.003	+_ 0.003	+_ 0.005
3/8	+_ 0.002	+_ 0.003	+_ 0.003	+_ 0.005
1/2	+_ 0.003	+_ 0.005	+_ 0.005	+_ 0.008
5/8	+_ 0.004	+_ 0.007	+_ 0.06	+_ 0.01
3/4	+_ 0.004	+_ 0.007	+_ 0.06	+_ 0.011
1	+_ 0.005	+_ 0.01	+_ 0.07	+_ 0.015

Tolerance on D class (exceptional)

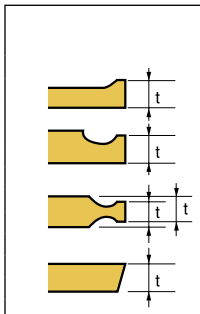
d	Tolerance on d	Tolerance on m
1/4	+_ 0.002	+_ 0.0043
3/8	+_ 0.002	+_ 0.0043
1/2	+_ 0.003	+_ 0.006
5/8	+_ 0.004	+_ 0.007
3/4	+_ 0.004	+_ 0.007

4 Cross Section Type

	C'Sink 70° - 90°
A	B
C'Sink 70° - 90°	
C	F
	C'Sink 70° - 90°
G	H
C'Sink 70° - 90°	
J	M
	C'Sink 40° - 60°
N	Q
	C'Sink 40° - 60°
R	T
C'Sink 40° - 60°	C'Sink 40° - 60°
U	W
Special Type	
X	

Milling Insert Code System

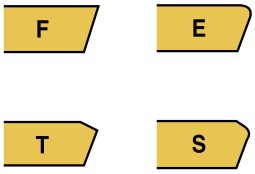
6 Height of Cutting Edge



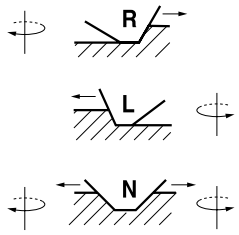
Symbol		Height of Cutting Edge (t)	
Metric	Inch	mm	Inch
-	0.5(1)	0.79	1/32
T0	0.6	1.00	0.040
01	1(2)	1.59	1/16
T1	1.2	1.98	5.64
02	1.5(3)	2.38	3/32
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

* ( ) Symbol for small size insert

8 Edge Preparation

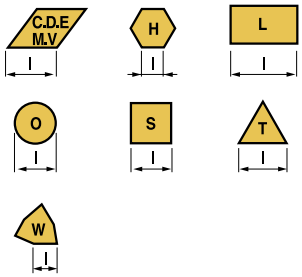


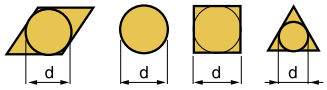
9 Hand of Tool



3	ED 2	S	R	F3
6	7	8	9	10

5 Cutting Edge Length, Diameter of Inscribed Circle





Use 1/32" unit for an insert having smaller I.C under 1/4"

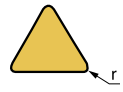
Use 1/8" unit for an insert having larger I.C. over 1/4"

✻ Indicate cutting edge length in case of tetragon & rhombus

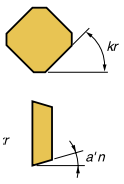
■Cross over chart for Metric and Inch system

	06	09	11	16	22	27	33	44
	03	05	06	09	12	15	19	25
55°	04	06	07	11	15	19	23	31
80°	03	05	06	09	12	16	19	25
Inscribed Circle	5/32"	7/32"	1/4"	3/8"	1/2"	5/8"	3/4"	1"
Inch System	5	7	2(8)	3	4	5	6	8

7 Nose Corner Radius (Nose R)

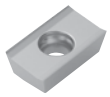
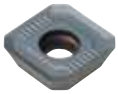


r		Symbol		r		Symbol	
mm	inch	mm	inch	mm	inch	mm	inch
00	0	0.0		12	3	1.2	3/64
02		0.2		15		1.5	
04	1	0.4	1/64	16	4	1.6	4/64
05		0.5		24	6	2.4	6/64
08	2	0.8	2/64	32	8	3.2	8/64
10		1.0		40		4.0	



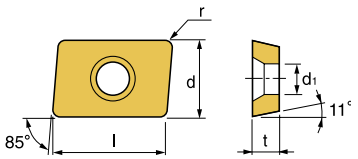
Parallel Land	Relief Angle	
kr	a'n	
A-45°	A-3°	F-25°
D-60°	B-5°	G-30°
E-75°	C-7°	N-0°
F-85°	D-15°	P-11°
P-90°	E-20°	
Z-Special		

10 Chip Breaker for Milling

			
A	F2	M	F3
			
F2	M	R8	A
C20	C21		

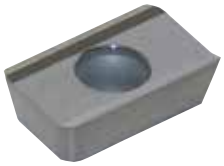
APKT

Features
Strong edge geometry

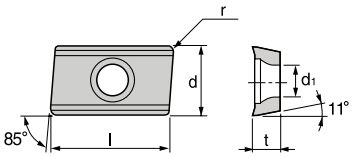


	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM25P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APKT 160416R PDR-A		**146010 $ 22.97**											0.646	3/8	3/16	1/32	0.173	APFM16	E131
APKT 160432R PDR-A			**146087 $ 23.37**										0.646	3/8	3/16	1/32	0.173		

APKT-A (For Aluminum & Plastic)



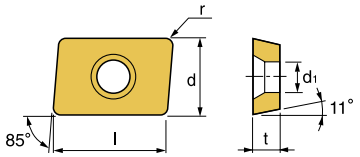
Features
Excellent cutting geometry
for aluminum and plastics



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APKT 160416R PDR-A												**146548 $ 18.41**	0.646	3/8	3/16	1/16	0.173	APFM16	E131
APKT 160432R PDR-A												**146547 $ 18.73**	0.646	3/8	3/16	1/8	0.173		
APKT 1604 PDR-A												**146006 $ 18.41**	0.646	3/8	3/16	0.008	0.173		
APKT 1604 PDFR-AH (Helical)												**148496 $ 18.41**	0.646	3/8	3/16	0.031	0.173		

APKT-X24

Features
Free cutting geometry

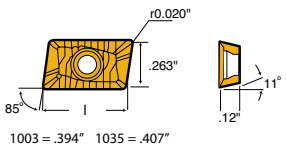


	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APKT 1604 PDR-X24		**147181 $ 23.37**										**146007 $ 18.73**	0.646	3/8	3/16	3/64	0.173	APFM16	E131

APKT 1003 - ADKT 1505

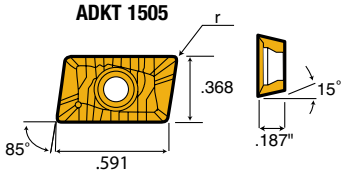
Features
Excellent general purpose geometry
for a variety of applications

APKT 1003/1035



1003 = .394" 1035 = .407"

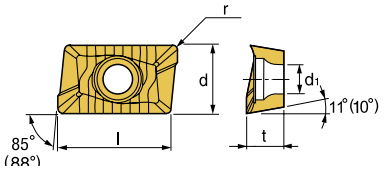
ADKT 1505



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APKT 1003 PDSR											**147877 $ 13.71**		0.394	0.263	0.120	0.020	0.173	AP 10	E125
ADKT 1505 PDFR-A												**147980 $ 17.18**	0.591	0.368	0.187	0.020	0.177	AD 15	E125
ADKT 1505 PDSR		**148358 $ 21.22**									**147879 $ 17.45**		0.591	0.368	0.187	0.020	0.177		

APKT 1604

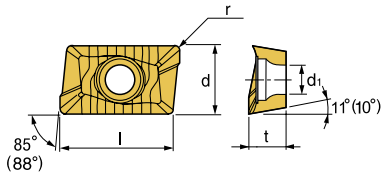
Features
Excellent free cutting geometries
for a variety of applications



	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM30.1P**	**KM10P**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APKT 1604 PDSR-M		146530 $ 22.97				145637 $ 22.97	147339 $ 22.97			146755 $ 18.41		0.650	0.376	0.227	1/32	0.175	AP 16	E130
APKT 160416R-M							148397 $ 24.54					0.650	0.376	0.227	1/16	0.175		
APKT 160424R-M					146105 $ 23.37							0.650	0.376	0.227	3/32	0.175		
APKT 160432R-M		146149 $ 22.97					148401 $ 22.97					0.650	0.376	0.227	1/8	0.175		
APKT 160464R-M							148403 $ 23.37			146168 $ 18.72		0.650	0.376	0.227	1/4	0.175		

APMT

Features
Excellent free cutting geometries
for a variety of applications



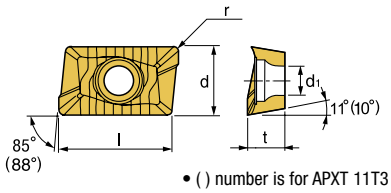
	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM10P**	**PM30P**	**PM35P**	**PTM50P**	**KM10P**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APMT0602PDFR-A												148528 $ 14.40	0.236	0.167	0.102	0.016	0.079	APFM06M AP06M	E128 E122
APMT0602PDSR-M						147103 $ 16.37		147104 $ 16.37					0.236	0.167	0.102	0.016	0.079		
APMT11T3PDER-F2		148556 $ 16.86											0.441	0.255	0.142	0.020	0.112		
APMT11T3PDER-M		148547 $ 16.86				148544 $ 16.86		148555 $ 16.86					0.441	0.255	0.142	0.020	0.112	APFM11M AP11M	E129 E124
APMT11T3PDFR-A												148543 $ 14.78	0.441	0.255	0.142	0.047	0.112		
APMT1604PDFR-A												148584 $ 18.41	0.646	0.370	0.227	0.031	0.177		
APMT1604PDFR-M						148588 $ 20.90							0.646	0.370	0.227	0.031	0.177		
APMT1604PDSR-F2		148597 $ 17.17				148602 $ 20.90							0.646	0.370	0.227	0.031	0.177		
APMT1604PDSR-M		148589 $ 20.90				149009 $ 20.90	148595 $ 20.90						0.646	0.370	0.227	0.031	0.177	APFM16M AP16M	E129 E124
APMT160416PDSR-M		148603 $ 21.23											0.646	0.370	0.227	0.063	0.177		
APMT160432PDSR-M		148605 $ 20.90											0.646	0.370	0.227	0.126	0.177		
APMT1806PDER-M						148610 $ 28.03							0.685	0.432	0.250	0.047	0.177		
APMT1806PDSR-M		147105 $ 28.45				145641 $ 28.03		147106 $ 28.03					0.685	0.432	0.250	0.047	0.177	APFM18M AP18M	E132 E127

Quick Choice Grade Selection

P	M	K	S
Steel	Stainless Steel	Cast Iron - Alum	Heat Resistant Alloy

APXT 11T3 & 1604

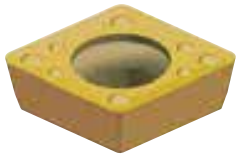
Features
Excellent free cutting geometries
for a variety of applications



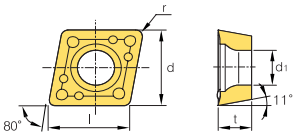
• ( ) number is for APXT 11T3

	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30.1P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
APXT 11T3 PDSR-F2		146796 $ 17.14					148485 $ 16.86					0.445	0.260	0.142	0.020	0.112	AP 11 APFM 11	E122-123 E130-132
APXT 11T3 PDSR-M		146356 $ 16.86		146110 $ 17.13			147340 $ 16.86			146357 $ 13.74		0.445	0.260	0.142	0.020	0.112		
APXT 11T312R-M		146359 $ 17.14										0.445	0.260	0.142	3/64	0.112		
APXT 11T316R-M					147379 $ 17.14							0.445	0.260	0.142	1/16	0.112		
APXT 11T3 PDR-A											146358 $ 13.77	0.445	0.260	0.142	0.020	0.112		
APXT 1604 PDSR-F2						147408 $ 23.34			148502 $ 17.20			0.650	0.376	0.227	1/32	0.175	AP 16 APFM 16	E127-123 E130-132
APXT 1604 PDSR-M		148178 $ 20.90	148521 $ 23.37				147338 $ 20.90					0.650	0.376	0.227	1/32	0.175		
APXT 160416R-M			147156 $ 23.37							146167 $ 18.72		0.650	0.376	0.227	1/16	0.175		
APXT 160416R PDSR-M		146553 $ 20.90				147468 $ 23.34						0.650	0.376	0.227	1/16	0.175		
APXT 160432R-M		147720 $ 20.90										0.650	0.376	0.227	1/8	0.175		

CPMT-M



Features
Stronger geometry for roughing
applications in a variety of steels



	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PTM50P**	**PM10P**	**PM25C**	**PM30P**	**PM40P**	**PC210F**	**KM20C**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
CPMT09T308-M				147111 $ 11.66									0.381	3/8	0.156	1/32	0.173	TSC	E144

LNEX-F2/M

Features
Stronger geometry for roughing
applications in a variety of steels

	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PTM50P**	**PT30P**	**PM25C**	**PM30P**	**PM35P**	**PM40P**	**KM10P**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
LNEX100605PNR-F2							148594 $ 26.78						0.391	0.258	0.258	3/128	0.318	**End Mill** DS4	E128
LNEX100605PNR-M							148612 $ 26.78						0.391	0.258	0.258	3/128	0.318	**Face Mill** DS4	E135
LNEX151008PNR-F2							148619 $ 33.19						0.594	0.391	0.391	1/32	0.177		

Quick Choice Grade Selection

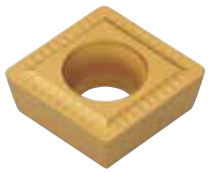
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

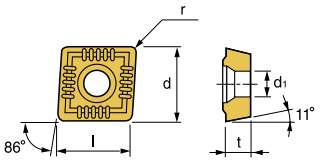
LNMX-F2/M

Features
Stronger geometry for roughing applications in a variety of steels

	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PTM50P**	**PT30P**	**PM25C**	**PM30P**	**PM40P**	**PM45P**	**KM10P**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KTM10U**	**ℓ**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
LNMX100605PNR-F2							146277 $ 22.76			146278 $ 18.70			0.391	0.258	0.258	3/128	0.318	**End Mill**	
LNMX100605PNR-M							146281 $ 22.76	146284 $ 22.76					0.391	0.258	0.258	3/128	0.318	DS4 **Face Mill**	E128
LNMX151008PNR-F2			145604 $ 31.59				148903 $ 28.21			145602 $ 25.35			0.594	0.391	0.391	1/32	0.177	DS4	E135
LNMX151008PNR-M			145603 $ 28.21		149351 $ 28.21								0.594	0.391	0.391	1/32	0.177		

MPMT

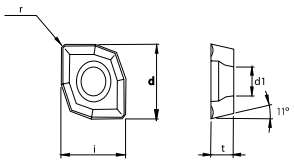




		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**ISO**	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**SM20P**	**PTM30U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
MPMT 322	090308									147761 $ 15.91		146075 $ 12.52		0.374	3/8	1/8	1/32	0.173		
MPMT 432	120408									147762 $ 18.61				0.500	1/2	3/16	1/32	0.216		

NPET-AD Drilling Insert

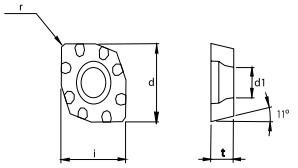
Features
Excellent geometry for non-ferrous materials



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PTM50P**	**PM10P**	**PM25C**	**PM30P**	**PM40P**	**PC210F**	**KM20C**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
NPET222408-AD												147937 $ 16.42	0.327	0.323	0.098	0.031	0.110	PRO-NP Drill	E148
NPET252808-AD												147938 $ 21.29	0.366	0.362	0.130	0.031	0.134		
NPET293208-AD												147939 $ 17.50	0.413	0.409	0.130	0.031	0.134		
NPET334008-AD												147940 $ 18.53	0.512	0.508	0.156	0.031	0.157		
NPET415508-AD												147941 $ 26.24	0.602	0.598	0.187	0.031	0.177		

NPET-RD Drilling Insert

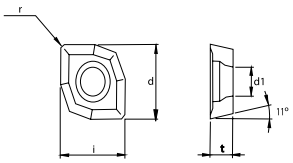
Features
Stronger geometry for roughing applications in a variety of steels



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PTM50P**	**PM10P**	**PM25C**	**PM30P**	**PM40P**	**PC210F**	**KM20C**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
NPMT33400-RD				148337 $ 18.74									0.602	0.598	0.187	0.031	0.177	PRO-NP Drill	E148

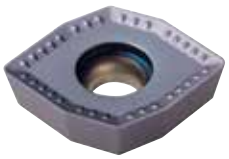
NPMT-MD Drilling Insert

Features
Excellent geometry for a variety of steels and cast iron

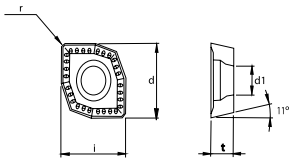


	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
NPMT252808-MD			147928 $ 16.40										0.366	0.362	0.130	0.031	0.134	PRO-NP Drill	E148
NPMT293208-MD			147929 $ 16.38										0.413	0.409	0.130	0.031	0.134		

NPMT-SD Drilling Insert



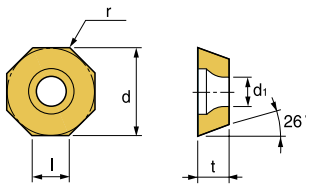
Features
Excellent geometry for stainless steel



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
NPMT252808-SD								147933 $ 16.40					0.366	0.362	0.130	0.031	0.134	PRO-NP Drill	E148
NPMT293208-SD								147934 $ 16.38					0.413	0.409	0.130	0.031	0.134		
NPMT334008-SD								147935 $ 17.01					0.512	0.508	0.156	0.031	0.157		
NPMT415508-SD								147936 $ 20.03					0.602	0.598	0.187	0.031	0.177		

OFCW

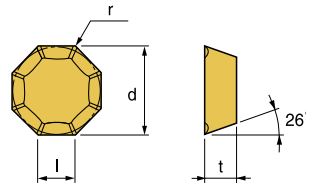
Features
Flat top geometry for more difficult applications



	Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r	d1	Cutter	Page No.
OFCW 05T3SN		146841 $ 22.56											0.205	1/2	5/32	0.020	0.173	OKT MAX	E134

OFKR-F2, M, A

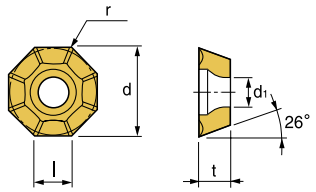
Features
Excellent geometries for a variety of materials



	Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r	Cutter	Page No.
OFKR 0704SN-F2							147974 $ 23.95						0.291	0.709	3/16	0.020		
OFKR 070408SN-M		146417 $ 26.21						147759 $ 26.21					0.291	0.709	3/16	0.031		
OFKR 0704N-A												146303 $ 20.88	0.291	0.709	3/16	0.020		

OFKT-F2, M, A

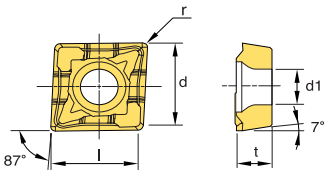
Features
Excellent geometries for
a variety of materials



	Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM40P**	**KM20C**	**MM30P**	**MT30P**	**PT30S**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
OFKT 05T3SN-F2							**147760 $ 20.58**						0.205	1/2	5/32	0.020	0.173	OKT MAX	E134
OFKT 05T3SN-M		**146843 $ 20.29**									**146676 $ 16.30**		0.205	1/2	5/32	0.020	0.173		
OFKT 05T3FN-A												**146559 $ 16.30**	0.205	1/2	5/32	0.020	0.173		

QCMT

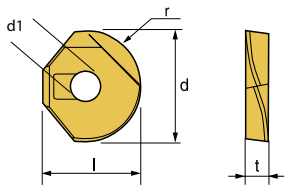
Features
Excellent free cutting geometries
for a variety of applications



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PT10C**	**PT20C**	**PT22C**	**PT30C**	**PM10P**	**PTM50P**	**KM20C**	**MM30P**	**PC9530**	**SM20P**	**PM20U**	**KT10C**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
QCMT-050204-CM						**147241 $ 20.86**							0.197	0.213	0.038	0.016	0.091	CTD	E149
QCMT-060204-CM						**147436 $ 20.86**							0.236	0.252	0.094	0.016	0.098		
QCMT-070304-CM						**146364 $ 20.86**							0.276	0.291	0.125	0.016	0.110		
QCMT-080304-CM						**147044 $ 21.28**							0.315	0.331	0.125	0.016	0.134		
QCMT-10T304-CM						**147472 $ 25.06**							0.394	0.409	0.156	0.016	0.157		

RC

Features
Excellent for contour milling
in a variety of materials



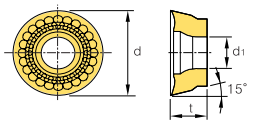
	Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	**PM10C**	**PM25C**	**PM30C**	**PM30P**	**PM35P**	**PM10P**	**KM20C**	**MM30P**	**MT30P**	**PT30S**	**PM20U**	**KTM10U**	**l**	**d**	**t**	**r**	**d1**	**Cutter**	**Page No.**
RC 5/8						**147858 $ 84.32**							0.622	0.625	0.138	0.315	0.228	Mold Mill	E140
RC 3/4						**147859 $ 97.99**							0.701	0.750	0.157	0.394	0.228		
RC 1						**147860 $ 121.55**							0.866	1.000	0.197	0.492	0.268		
RC 1-1/8						**147861 $ 159.45**							1.055	1.125	0.236	0.591	0.346		
RC 1-1/4						**147862 $ 159.45**							1.094	1.250	0.236	0.630	0.346		

Quick Choice Grade Selection

P	M	K	S
Steel	Stainless Steel	Cast Iron - Alum	Heat Resistant Alloy

RDKT-F2/M

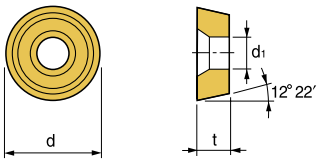
Features
Excellent geometries for
a variety of materials



	Coated Carbide										Uncoated Carbide		(inch)			Applicable Cutter	
Designation	PTM50P	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	d	t	d1	Cutter	Page No.
RDKT10T3MO-F2				148340 $ 13.48				146896 $ 13.12					25/64	0.156	0.152	End Mill	
RDKT1204MO-F2								146998 $ 16.78					15/32	0.187	0.177	BMSS Face Mill	E133
RDKT10T3MO-M			147130 $ 13.48					146961 $ 13.12		146946 $ 13.48			25/64	0.156	0.152	BMSC	E133
RDKT1204MO-M	146552 $ 16.78	145614 $ 14.45						147072 $ 16.78		147070 $ 17.22			15/32	0.187	0.177		

RPMM

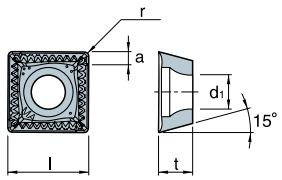
Features
Excellent geometries for
a variety of applications



	Coated Carbide										Uncoated Carbide		(inch)			Applicable Cutter	
Designation	PT20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	d	t	d1	Cutter	Page No.
RPMM 1204 ENN		147779 $ 18.25	146127 $ 18.25										1/2	3/16	0.216	Mold Max	E142
RPMM 1204 X165		146147 $ 18.55											1/2	3/16	0.216		

SDXT-A

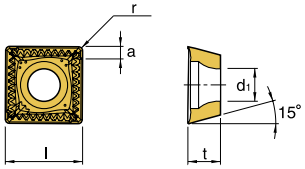
Features
Aluminum geometry



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	r	a	d1	Cutter	Page No.
SDXT 09M405R-A												146803 $ 11.29	0.375	0.157	0.011	0.047	0.157	MM90°FM	E135

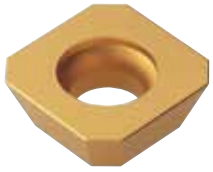
SDXT-F2, M

Features
General purpose geometries
for a variety of materials



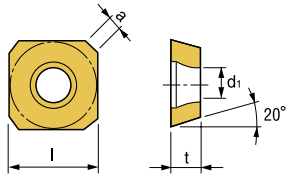
	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	r	a	d1	Cutter	Page No.
SDXT 09M405R-F2		147085 $ 14.32					147410 $ 11.58						0.375	0.157	0.011	0.047	0.157	MM90°FM	E135
SDXT 130508R-F2		146810 $ 17.01											0.531	0.219	0.031	0.087	0.219		
SDXT 09M405R-M		147089 $ 14.32	146802 $ 14.09				147718 $ 14.32	147719 $ 14.09					0.375	0.157	0.011	0.047	0.157		
SDXT 130508R-M		146812 $ 17.01	146813 $ 17.01				148319 $ 17.25	147721 $ 17.01			146815 $ 13.66		0.531	0.219	0.031	0.087	0.219		

SECA/SEHT



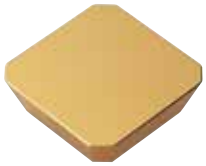
SECA

Features
Flat top geometry for more difficult applications

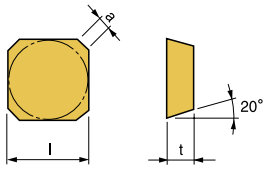


		Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	ISO	PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SECA 43 AFTN	1204		146749 $ 19.99						147780 $ 19.99		146750 $ 16.00	146751 $ 16.26		1/2	3/16	0.105	0.219		
SECA 43 AFFN	1204												146036 $ 16.00	1/2	3/16	0.105	0.219		
SEHT 43 AFN-A	1204												146747 $ 18.25	1/2	3/16	0.105	0.219		
SEHT 43 AFTN X45	1204		146130 $ 22.04											1/2	3/16	0.105	0.219		

SECN



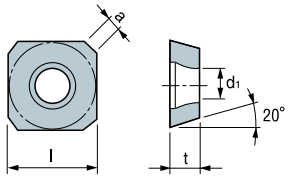
Features
Flat top geometry for a variety of applications



		Coated Carbide										Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	a	Cutter	Page No.
SECN 43 AFFN	1203												146666 $ 14.96	1/2	1/8	0.091		
SECN 53 AFTN	1504		146661 $ 26.33											5/8	3/16	0.094		

SEET-A

Features
Excellent geometry for softer materials such as aluminum

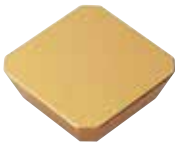


	Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SEET 0903AGFN-A												147727 $ 13.88	3/8	1/8	0.083	0.134	MM45°FM	E137
SEET 14M4AGFN-A												147732 $ 16.86	0.551	0.157	0.104	0.173		

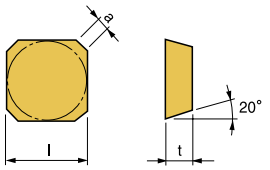
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

SEK(T)

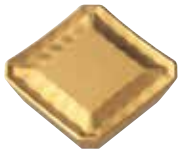


Features
Excellent general purpose geometry

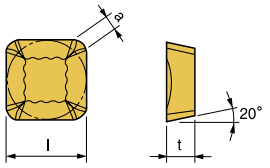


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PM20S	PM30S	S300	PM20U	PTM30U	l	t	a	Cutter	Page No.
SEK 42 AFTN	1203		146340 $ 18.59	146318 $ 18.86				147733 $ 18.86		146322 $ 13.43	149556 $ 24.85	146317 $ 15.22	146320 $ 15.22	1/2	1/8	0.091		
SEK 42 AFEN	1203						147734 $ 15.29							1/2	1/8	0.091		
SEK 43 AFTN	1204		146380 $ 20.97										146360 $ 18.55	1/2	3/16	0.094		
SEK 53 AFTN	1504		146385 $ 23.95					147735 $ 26.33				146386 $ 21.19		5/8	3/16	0.094		
SEKT 13T3AGSN-M			148586 $ 22.48											0.531	0.156	0.060		
SEKT 13T3AGSN-R8			148585 $ 22.48											0.531	0.156	0.060		

SEKR-F3



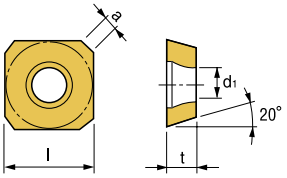
Features
Excellent geometry for a variety of steels including stainless



		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	Cutter	Page No.
SEKR 42 AFSN-F3	1203		146347 $ 18.59	145674 $ 18.86				147770 $18.59				146348 $ 14.96		1/2	1/8	0.091		
SEKR 42 AFTN-F3	1203		146346 $ 19.80											1/2	1/8	0.091		
SEKR 43 AFSN-F3	1204		146351 $ 19.71					147989 $ 19.71						1/2	3/16	0.094		

SEXT-F2

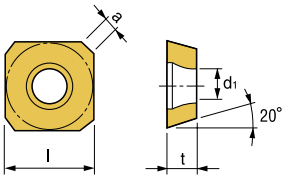
Features
Excellent general purpose geometry



	Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM20C	PM25C	PM30C	PM30P	PM35P	PT30P	KM20C	MM30P	SM20P	PT30S	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SEXT 0903AGSN-F2			148183 $ 15.08				147724 $ 15.06						3/8	1/8	0.083	0.134	MM45°FM	E137
SEXT 14M4AGSN-F2		147728 $ 17.77	148184 $ 18.06					148506 $ 17.77	148500 $ 18.06				0.551	0.157	0.104	0.173		

SEXT-M

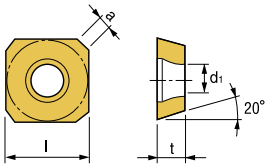
Features
Excellent general purpose geometry



	Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	SM20P	PT30S	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SEXT 0903AGSN-M		147725 $ 14.85											3/8	1/8	0.083	0.134	MM45°FM	E137
SEXT 14M4AGSN-M		147730 $ 17.77					148307 $ 17.77	148507 $ 17.77					0.551	0.157	0.104	0.173		

SEXT-R8

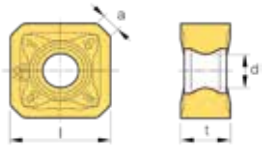
Features
Geometry designed for medium to roughing applications



	Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	KM10P	KM20C	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	d1	Cutter	Page No.
SEXT 14M4AGSN-R8		147731 $ 17.77				148926 $ 17.77	148308 $ 18.06						0.551	0.157	0.104	0.173	MM45°FM	E137

SNEX-A

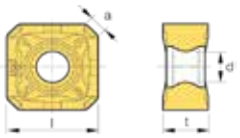
Features
Aluminum geometry



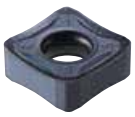
	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	a	d1	Cutter	Page No.
SNEX1206ANN-A												148969 $ 19.96	1/2	1/4	0.093	0.177	Face Mill DS8	E136

SNEX-F2/M

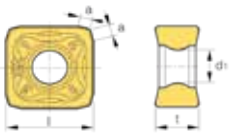
SNEX-F2



Features
Excellent geometries for a variety of materials



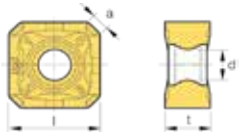
SNEX-M



	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	a	d1	Cutter	Page No.
SNEX1206ANN-F2								148835 $ 24.95					1/2	1/4	0.093	0.177	Face Mill DS8	E136

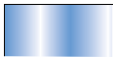
SNMX-M

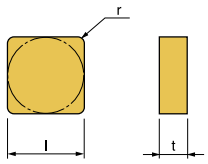
Features
General purpose geometries for a variety of materials



	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PC9530	SM20P	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SNMX1206ANN-M	145673 $ 21.21		148796 $ 21.21				148791 $ 21.21	148904 $ 21.21					1/2	1/4	0.093	0.177	Face Mill DS8	E136

SNU



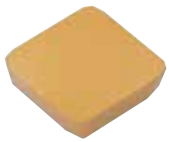


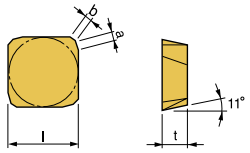
	Coated Carbide									Cermet	Uncoated Carbide			(inch)			
Designation	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	PTM30U	KTM10U	l	t	r	
SNU 433											146457 $ 12.44	146449 $ 12.25		1/2	3/16	3/64	

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

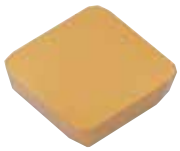
SPC

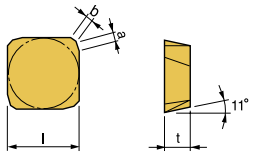




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	b
SPC 42 EDTR	1203		147731 $ 17.77											1/2	1/8	0.055	0.039

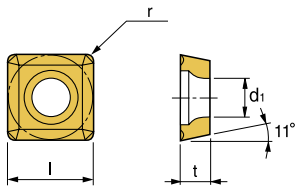
SPK





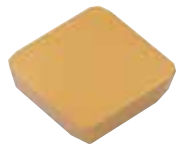
		Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	PTM30U	l	t	a	b	Cutter	Page No.
SPK 42 EDR	1203		146480 $ 17.82											1/2	1/8	0.055	0.039		
SPK 43 EDR	1204												146485 $ 15.85	1/2	3/16	0.055	0.039		

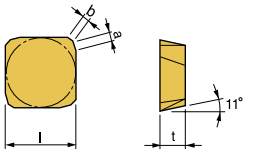
SPMT



		Coated Carbide								Cermet	Uncoated Carbide			(inch)			
Designation	ISO	PM20C	PM25C	PM30C	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	PTM30U	KTM10U	l	t	r	d1
SPMT 432	120408		146145 $ 17.46								146143 $ 14.18			1/2	3/16	1/32	0.220

SPU



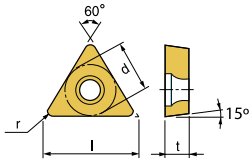


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	b
SPU 422	120308												146493 $ 9.41	1/2	1/8	0.055	0.039
SPU 633	190412												146495 $ 16.11	3/4	3/16	0.079	0.039

Quick Choice Grade Selection

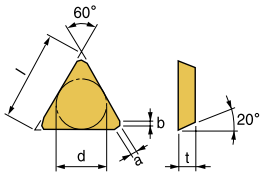
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

TDGW



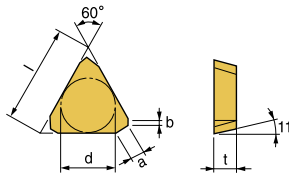
		Coated Carbide									Cermet	Uncoated Carbide		(inch)			
Designation	ISO	PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r
TDGW 21.51	110204		147177 $ 15.65											0.433	1/4	3/32	1/64
TDGW 321	160304		147178 $ 13.30											0.650	3/8	1/8	1/64
TDGW 432	220408		147179 $ 21.85											0.866	1/2	3/16	1/32

TEC(E)(K)N



		Coated Carbide							Cermet	Uncoated Carbide			(inch)					
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT30S	ST30A	PM20U	PTM30U	l	d	t	a	b	r	sharp
TECN 32TR												146071 $ 14.32	0.649	3/8	1/8	0.039	-	1/32	R
TEEN 43TR									146561 $ 19.55				0.866	1/2	0.187	0.059	-	1/32	-
TEKN 43TR												146564 $ 19.88	0.866	1/2	0.187	0.020	0.075	1/32	R

TPK

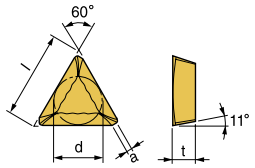


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	d	t	a	b
TPK 32 PPR	1603												146724 $ 10.65	0.650	3/8	1/8	0.047	0.039~ 0.047
TPK 32 PDR	1603		146680 $ 15.08											0.650	3/8	1/8	0.047	0.039~ 0.047
TPK 43 PDR	2204		146720 $ 21.50									146695 $ 15.91	146700 $ 15.91	0.866	1/2	3/16	0.05~ 0.055	0.28~ 0.05

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

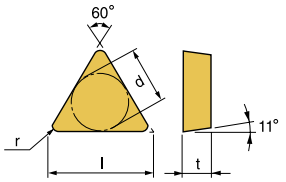
Images are representational only and may not reflect actual product.

TPKR-F3



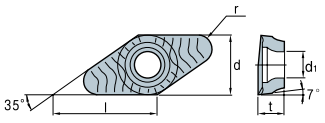
		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	d	t	r	a
TPKR 43 PDSR-F3	2204											146129 $ 17.23		0.866	1/2	3/16	0.039	0.055
TPKR 43 PDR-F3	2204		146128 $ 21.50											0.866	1/2	3/16	0.039	0.055

TPU



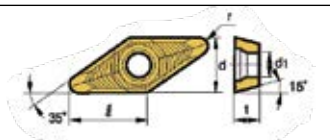
		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	d	t	r	Cutter	Page No.
TPU 212	110208												146631 $ 6.09	0.433	1/4	3/32	1/32	STM Cutters	E147
TPU 221	110304												146740 $ 7.03	0.433	1/4	1/8	1/64		
TPU 222	110308		147267 $ 8.95										146741 $ 7.03	0.433	1/4	1/8	1/32		
TPU 321	160304												146760 $ 7.73	0.650	3/8	1/8	1/64		
TPU 322	160308		146709 $ 9.62										146780 $ 7.73	0.650	3/8	1/8	1/32		
TPU 323	160312		145545 $ 9.79									146421 $ 7.87		0.650	3/8	1/8	3/64		
TPU 431	220404												146800 $ 10.91	0.866	1/2	3/16	1/64		
TPU 432	220408		146711 $ 13.86										146820 $ 10.91	0.866	1/2	3/16	1/32		
TPU 433	220412		146712 $ 13.86										146840 $ 10.91	0.866	1/2	3/16	3/64		
TPU 434	220416												146845 $ 11.09	0.866	1/2	3/16	1/16		

VCKT-A



		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Holder	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	KT10U	l	d	t	r	d1	Cutter	Page No.
VCKT 43.57.5N-A	220530												147425 $ 36.51	0.790	1/2	7/32	0.118	0.220	Alumi Mill	
																			AME	E144
																			AMFM	E145

VDKT-MA

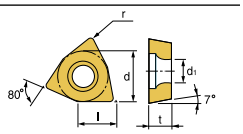


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Holder	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	KT10U	l	d	t	r	d1	Cutter	Page No.
VDKT11T210N-MA													148936 $ 26.90	0.346	1/4	0.113	0.039	0.110	Alumi Mill	
																			AME	E144

Quick Choice Grade Selection

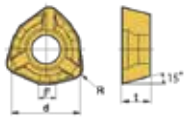
P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

WCMT-C20/C21 Drilling Insert



		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
WCMT 1.81.52-C20	030208		146242 $ 15.08										146537 $ 12.07	0.149	7/32	3/32	1/32	0.110	MAX DRILL	E150-154
WCMT 21.52-C20	040208		146237 $ 15.13											0.169	1/4	3/32	1/32	0.118		
WCMT 2.522-C20	050308		146236 $ 16.11											0.212	5/16	5/16	1/32	0.134		
WCMT 32.52-C20	06T308		146235 $ 16.11										146539 $ 12.88	0.256	3/8	5/32	1/32	0.157		
WCMT 432-C20	080408		146855 $ 19.71											0.342	1/2	3/16	1/32	0.169		
WCMT 433-C20	080412		146000 $ 19.71										146563 $ 15.78	0.342	1/2	3/16	3/64	0.169		

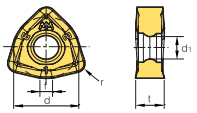
WDKT



	Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				Applicable Cutter	
Designation	PM10C	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	d	t	F	r	Cutter	Page No.
WDKT 080316 ZDSR-MH						146261 $ 13.91	146267 $ 13.91						0.315	1/8	3/64	1/16	HFPA HFPC	E118 E118
WDKT 10T320 ZDSR-MH						146271 $ 19.71	146274 $ 19.71						0.394	3/32	0.059	0.079		
WDKT 130520 ZDSR-MH						146275 $ 27.60	148623 $ 27.60						0.531	7/32	0.083	0.079		

WNMX

Features
Excellent geometries for
a variety of materials

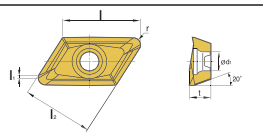


	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PTM50P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	r	d1	f	Cutter	Page No.
WNMX09T316ZNN-M	145640 $ 21.12						146891 $ 21.12					0.375	0.156	0.063	0.142	0.067	HFNA	E120
WNMX130520ZNN-M	145675 $ 33.10								147080 $ 27.20			0.500	0.219	0.079	0.185	0.098	HFNC	E121

XEKT-MA

Top

Bottom



		Coated Carbide								Uncoated Carbide		(inch)						Applicable Cutter	
Designation		PT10C	PT20C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT20U	KTM10U	l	l2	l1	t	r	d1	Cutter	Page No.
XEKT 19M504FR-MA	A										145610 $ 35.38	0.709	0.646	0.055	0.197	1/64	0.173	End Mill AME-X	E146
XEKT 19M508FR-MA	A										145611 $ 35.38	0.709	0.646	0.039	0.197	1/32	0.173	Face Mill AMFM-X	E146
XEKT 19M512FR-MA	A										146367 $ 35.38	0.709	0.646	0.024	0.197	3/64	0.173		
XEKT 19M516FR-MA	A										145612 $ 35.38	0.689	0.646	0.020	0.197	1/16	0.173		
XEKT 19M520FR-MA	A										146368 $ 35.38	0.689	0.646	0.020	0.197	0.079	0.173		
XEKT 19M530FR-MA	A										146369 $ 35.38	0.689	0.646	0.028	0.197	0.118	0.173		
XEKT 19M532FR-MA	A										145613 $ 35.38	0.689	0.646	0.020	0.197	1/8	0.173		
XEKT 19M540FR-MA	B										146370 $ 35.38	0.650	0.646	0.020	0.197	0.157	0.173		
XEKT 19M550FR-MA	B										146375 $ 35.38	0.630	0.646	0.016	0.197	0.197	0.173		

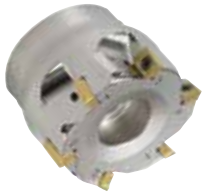
Cutter Index

Shape	Features	Cutter Diameter	Available Inserts
High Feed Mills			
HFPA & HFPC High Feed Mills ➤ P. E118	• Powerful and economic milling tool with double clamping and 3 corner-use insert • Longer tool life with various insert grades • Shortened machining cycle time • Long tool life by low cutting resistant chip breaker • Decrease cutting resistance and realization of high feed cutting (Max. fz=3.5 mm/tooth, 0.14 ipt)	0.750 ~ 3.0	**WDKT 080316 ZDSR-MH** **10T320 ZDSR-MH** **130520 ZDSR-MH** ➤ P. E105, 119
HFNA & HFNC High Feed Mills ➤ P. E120-121	• Powerful and economic milling tool with simple screw on system and double sided insert (6 corners) • Negative geometry designed for rigidity of cutting edge • Symmetrical cutting edge good for R and L type tooling • Long tool life by low cutting resistance chip breaker • High rake angle cutting edge reduces cutting load making this excellent for high feed and multi-functional machining	1.00 ~ 4.00	**WNMX 90T316ZNN-M** **130520ZNN-M** ➤ P. E105, E121
AP / AD Mills			
AP 06 - 90° End Mills ➤ P. E122	• Multi-functional indexable end mill for facing, slotting, square shoulder milling, etc • Excellent performance at large depth of cut due to strong cutting edge and low cutting resistance	0.5 ~ 1.25	**APMT 0602PDSR-M** ➤ P. E93
AP 11/16 - 90 End° Mills ➤ P. E122-123	• Indexable end mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	0.5 ~ 2.0	**APXT 11T3PDSR-F2** **11T3PDSR-M** **11T3PDR-A** **1604PDSR-F2** **1604PDSR-M** **APKT 1604PDFR-A** ➤ P. E94
AP 11M/16M - 90° End Mills ➤ P. E124	• Indexable end mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	0.5 ~ 2.0	**APMT 11T3PDER** **11T3PDER-F2** **11T3PDER-M** **11T3PDFR-A** **11T3PDSR-M** **1604PDFR-A** **1604PDFR-M** **1604PDSR-F2** **1604PDSR-M** **160416PDSR-M** **160432PDSR-M** ➤ P. E93

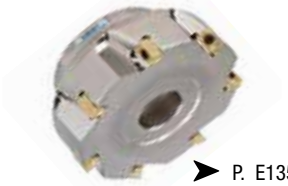
Cutter Index

Shape	Features	Cutter Diameter	Available Inserts
AP 10 & AD 15 - 90° End Mills ➤ P. E125	• Indexable end mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	0.375 ~ 1.25	**APKT 1003** **ADKT 1505** ➤ P. E92
AP 11 - 15° End Mills ➤ P. E125	• Indexable end mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	1.0 ~ 1.5	**APXT 11T3PDSR-F2** **11T3PDSR-M** **11T3PDR-A** ➤ P. E94
AP 16 Chamfer Mills 30° to 60° ➤ P. E126	• Indexable Chamfering • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance	0.5 ~ 1.5	**APLT 347** ➤ P. E126
AP 18 - 90° End Mills ➤ P. E127	• Multi-functional indexable end mill for facing, slotting, square shoulder milling, etc • Excellent performance at large depth of cut due to strong cutting edge and low cutting resistance	1.25 ~ 2.5	**APMT 1806PDSR-M** ➤ P. E93
APCC - Centre Cut ➤ P. E127	• Indexable end mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	1.0 ~ 1.5	**APXT 11T3PDSR-F2** **11T3PDSR-M** **11T3PDR-A** **1604PDSR-F2** **1604PDSR-M** ➤ P. E94
DS4 End Mills ➤ P. E128	• Double sided insert with 4 usable cutting edges • Strong negative insert with high rake angle cutting edges • Multi-functional tool covers facing, side cutting, shouldering, slotting, ramping, and helical cutting	0.625 ~ 2.00	**LNMX 100605PNR-M** ➤ P. E94-95
APFM 06 - 90° ➤ P. E128	• Multi-functional indexable face mill for facing, slotting, square shoulder milling, etc • Excellent performance at large depth of cut due to strong cutting edge and low cutting resistance	1.5 ~ 2.5	**APMT 0602PDSR-M** ➤ P. E93

Cutter Index

Shape	Features	Cutter Diameter	Available Inserts
APFM 11M/16M - 90° Face Mills  ➤ P. E129	• Indexable face mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	1.5 ~ 4.0	**APMT 11T3PDER** **11T3PDER-F2** **11T3PDER-M** **11T3PDFR-A** **11T3PDSR-M** **1604PDFR-A** **1604PDFR-M** **1604PDSR-F2** **1604PDSR-M** **160416PDSR-M** **160432PDSR-M** ➤ P. E93
APFM 11/16 - 90° Face Mills ➤ P. E130-131	• Indexable face mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	2.0 ~ 6.0	**APXT 11T3PDSR-F2** **11T3PDSR-M** **11T3PDR-A** **1604PDSR-F2** **1604PDSR-M** **APKT 1604** ➤ P. E93-94
AP(D)FM 10/15 - 90° Face Mills ➤ P. E131	• Indexable face mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	2.0 ~ 4.0	**APKT 1003** **ADKT 1505** ➤ P. E92
APFM 11/16 - 15° Face Mills ➤ P. E132	• Indexable face mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	2.5 ~ 5.0	**APXT 11T3PDSR-F2** **11T3PDSR-M** **11T3PDR-A** **1604PDSR-F2** **1604PDSR-M** ➤ P. E94
APFM 18 - 90° Face Mills ➤ P. E132	• Indexable face mill for slotting, shoulder milling, and plane milling • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined toughness with wear resistance and designed 3 dimension chip breaker	2.0 ~ 5.0	**APMT 1806PDSR-M** ➤ P. E93
Button Mills ➤ P. E133	• High tensile aluminum body can be used for high speed cutting, tapping centre, and on low power machines • Due to the high rake angle, it provides low cutting loads and good surface finish • Wide chip pocket area provides excellent chip evacuation	0.75 ~ 5.0	**RDKT 10T3M0-F2** **10T3M0-M** **1204M0-A** **1204M0-F2** **1204M0-M** ➤ P. E98
OKT-MAX ➤ P. E134	• High rake angle • 8 corner, economical insert • 45° angle of cut • Good for Steel, Alloy Steel, Cast Iron	1.5 ~ 6.00	**OFCW 05T3SN** **OFKT 05T3SN-F2** **OFKT 05T3SN-M** **OFKT 05T3SN-A** ➤ P. E96-97

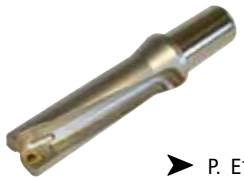
Cutter Index

Shape	Features	Cutter Diameter	Available Inserts
Max Mill Face Mills - 90° ➤ P. E135	• Square shouldering cutter can do square shouldering, slotting and facing with 4 corner insert • Tool life has been increased through 3 dimensional chip breakers and superb coating grades having optimal wear resistance and toughness • Combination of tough cutting edge and low cutting force design provides excellent cutting performance	2.5 ~ 6.0	**SDXT130508R-A** **SDXT130508R-F2** **SDXT130508R-M** ➤ P. E98
DS4 Face Mills  ➤ P. E135	• Double sided insert with 4 usable cutting edges • Strong negative insert with high rake angle cutting edges • Multi-functional tool covers facing, side cutting, shouldering, slotting, ramping, and helical cutting	1.5 ~ 6.0	**LNMX 100605PNR-F2** **100605PNR-M** **151008PNR-F2** **151008PNR-M** ➤ P. E94-95
DS8 Face Mills - 45° ➤ P. E136	• Innovative double-sided, high rake angle insert makes it possible to use 8 cutting edges • Low cutting load due to the positive setting and high rake angle chip breaker • Designed wiper technology in minor cutting edge provides excellent surface finish • Smooth and stable chip control	2.0 ~ 8.0	**SNEX 1206ANN-A** **1206ANN-F2** **1206ANN-M** **1206ANN-W** **SNMX 1206ANN-M** ➤ P. E101
Max Mill Face Mills - 45° ➤ P. E137	• High quality machining with precise design of insert and cutter • Various choice can be offered through variety of combination of insert and cutter • Excellent machining performance with light cutter and smooth chip control	1.5 ~ 8.0	**SEET14M4AGFN-A** **SEET14M4AGSN-F2** **SEET14M4AGSN-M** **SEXT14M4AGSN-F2** **SEXT14M4AGSN-M** **SEXT14M4AGSN-R8** ➤ P. E99-101
Jet Mill ➤ P. E139	• Indexable end mill for mold finishing • Easy clamping with simple screw on system • MQL System provides improved chip control, prolonged tool life, and increased surface quality	0.312 ~ 1.25	**JMCF 5/8 ~ 1** **JMFH 3/8 ~ 1-1/4** **JMBH 3/8 ~ 1-1/4** **JMBS 5/16 ~ 1-1/4**
Mold Mill ➤ P. E140	• Distinguished cutting performance by S type edge and optimal design • High accuracy in finish machining by the cutting edge designed after Solid Ball End Mill • Simple assembly and hard clamping with two screws	0.625 ~ 1.250	**RC 5/8** **RC 3/4** **RC 1"** **RC 1-1/8** **RC 1-1/4** ➤ P. E97
Mold Max **MMEM** ➤ P. E141	• High strength of cutting edge and excellent surface finish by R type inserts • Outstanding efficiency in cutting performance with difficult-to-cut material of high degree of hardness • Suitable to curved surface of moulds • Economical cutter body assembling with screw	1.25 ~ 2.0	**RPMM 120400** ➤ P. E98

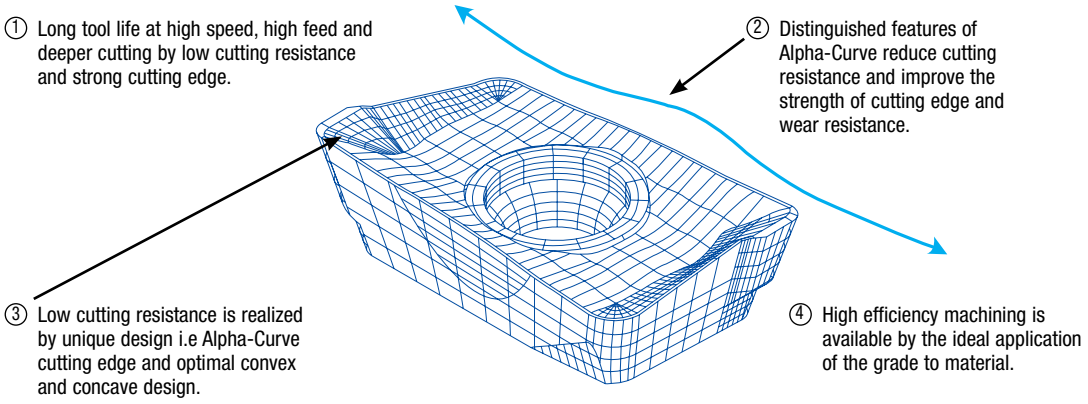
Cutter Index

Shape	Features	Cutter Diameter	Available Inserts
Mold Max **MMFM** ➤ P. E142	• High strength of cutting edge and excellent surface finish by R type inserts • Outstanding efficiency in cutting performance with difficult-to-cut material of high degree of hardness • Suitable to curved surface of moulds • Economical cutter body assembling with screw	1.969 ~ 6.299 (50 ~ 160mm)	**RPMM 120400** ➤ P. E98
Multi-functional 45° Chamfer Tool ➤ P. E143	• For centering, grooving, and chamfering • Up to 1.14" chamfering is available	Ø0 ~ Ø1.14	**TWX 16R-KC** **22R-KC**
Chamfer-Mill 45° ➤ P. E142	• Triangular positive insert provides smooth machining • General milling is available as well	0.125 ~ 1.125	**TC_T 21.5** **32.5** ➤ P. E22-24
Alumi Mills **Alumi-Mills** ➤ P. E144-145	• Buffing treatment on top face of insert provides smooth chip flow and prevention of build-up-edge • Fine surface finish of workpiece due to high rake angle of insert which lead low cutting force • Square shouldering and contouring is possible • High rigidity of cutter allows high speed machining	1.25 ~ 4.0	**VCKT 43.57.5N-MA** ➤ P. 104
Alumi-X Mills ➤ P. E146	• Buffed mirror face provides outstanding chip control and prevents edge build-up • Multi-functional aluminum milling tool for shouldering, slotting, helical ramping, and copying • Multi-dimensional clamping surface prevents micro-vibrations at during high speed machining	1.25 ~ 4.0	**XEKT 19M5-FR-A** **19M5-FR-MA** ➤ P. E105
T-Slot Cutter ➤ P. E144	• Indexable T-Slot cutter	0.83 ~ 1.97	**CPMT 060204-M** **080308-M** **09T308-M** **CPMH 432-M** ➤ P. E94
GP Indexable Drill ➤ P. E148	• GP (Indexable Drill) • Indexable drill using indexable insert • 5~6 times higher machining speed provides higher productivity • Available for turning and milling	0.625 ~ 2.00	**WCMT 030208-C20** **040208-C20** **050308-C20** **06T308-C20** **080408-C20** **080412-C20** ➤ P. E105

Cutter Index

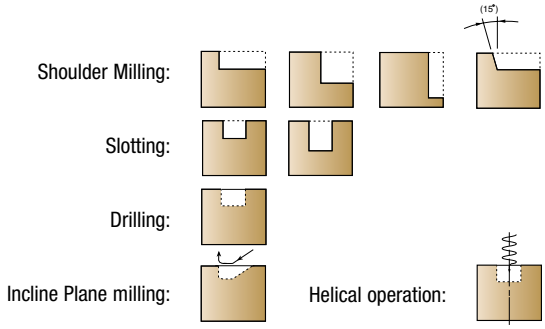
Shape	Features	Cutter Diameter	Available Inserts
Pro SP/NP Drill  ➤ P. E148	• High rigidity drills • Excellent chip evacuation due to the specially designed flute • Strengthened drill body and shank for better performance even in difficult cutting conditions • Available for turning and milling	0.50 ~ 2.0	**NPET-AD** **NPET-RD** **NPMT-MD** **SPMT-MD** ➤ P. E195-96, E102
Combo Turning & Drilling Tool ➤ P. E149	• For external/internal turning, facing, and drilling • Double coolant system provides excellent chip evacuation and extended tool life • Ideal flute design minimizes stress concentrations	0.394 ~ 0.787	**QCMT 050204-CM** **060204-CM** **070204-CM** **070304-CM** **080204-CM** **080304-CM** **10T304-CM** ➤ P. E97
Max Drill Deep Hole Drilling ➤ P. E150-154		1.77 ~ 7.09	**WCMT 030208-C20** **040208-C20** **050308-C20** **06T308-C20** **080408-C20** **080412-C20** ➤ P. 105, E157

AP/AD Multifunctional Insert



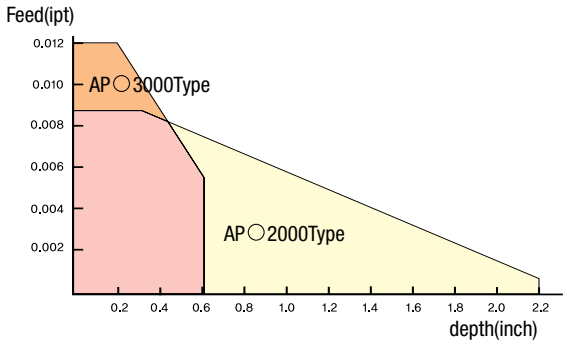
Inserts Feature & Application

- Innovative curve cutting edge and chip-breaker design ensures ideal 90 degree cutting and lower cutting resistance
- Various applications are available with multi-functional cutters (Facing, Slotting, Square Shoulder Milling, etc.)
- Application specific optimization improves insert life
- Excellent performance ensured at large depth of cutting operations due to strong cutting edge and low cutting resistance



Chip Breaker	Cutting Edge Shape		Recommendation C/B and Grades (● : 1st Choice)									
			Low Carbon Steels Soft Steels		High Carbon Steels Alloy Steels		Stainless Steels		Cast Irons		Aluminum Alloys	
			C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
F2		Low Cutting Resistance Type	●	○ PM25C ○ PM30P ● PM30C	-	● PM25C ○ PM30P ○ PM30C	●	○ PM25C ○ PM30P ● PM30C	●	● KM20C	-	-
M		Reinforced Cutting Edge Type	-	○ PM25C ○ PM30P ● PM30C	●	● PM25C ○ PM30P ○ PM30C	●	○ PM25C ○ PM30P ● PM30C	●	● KM20C	-	-
A		Sharp Cutting Edge Type	-	-	-	-	-	-	-	-	●	● KTM10U

AP / AD Mill Application Range

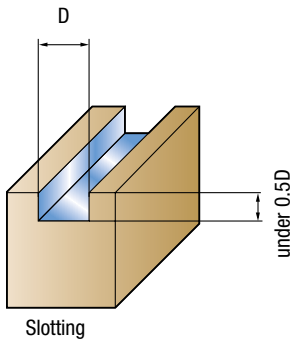


Tips

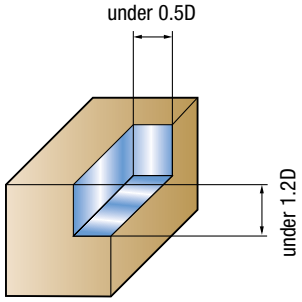
1. The cutting speed and feed can be adjusted in accordance with the machine's power and conditions of workpiece.
2. We recommend you operate them with small radial depth (RD) and large axial depth (AD) at the square shoulder milling applications.
3. We recommend you use compressed air during the slotting and pocket milling applications for better chip removal.
4. When encountering chattering during the operation, decrease the cutting speed.

AP/AD Recommended Depth of Cuts

(D : Cutting Diameter)



Slotting



Square Shoulder Milling

Recommended Cutting Conditions (for Single-Edge Type)

(Standard for side cutting, reduce condition 20~30% for slotting)

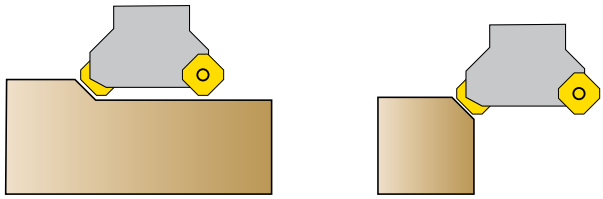
Workpiece Material	Grade	Cutting Diameter							
		~ ø0.625		ø0.625, ø1.000		ø1.25, ø1.50		ø3.000, ø4.000	
		V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)
Low Carbon Steels, Soft Steels	PM25C PM30P	195~395	0.002~0.006	260~590	0.004~0.006	395~820	0.001~0.006	490~820	0.004~0.006
High Carbon Steels, Alloy Steels	PM25C PM30P	165~330	0.002~0.006	260~490	0.002~0.006	330~655	0.004~0.06	330~655	0.004~0.006
Stainless Steel	PM30C MM30P	165~330	0.002~0.006	260~490	0.002~0.006	330~590	0.004~0.006	330~590	0.004~0.006
Cast Iron	KM20C	260~395	0.003~0.008	330~425	0.006~0.008	395~655	0.002~0.008	395~655	0.006~0.008
Aluminum Alloy	KTM10U	855~2955	0.006~0.012	985~3120	0.006~0.012	1310~3280	0.004~0.016	1310~3280	0.004~0.016

Max Mill Technical Information

Comprehensive Milling Cutter with High Productivity

1. Adjustable pitch of cutter by changing the number of inserts for the specific cutter diameter, and several chip breakers offer a wide application range.
2. Light cutter body allows high speed machining without chattering, thus it is possible to use a low horse power machine.
3. Smooth cutting with low cutting force accomplished with high rake angle.

Machining Example



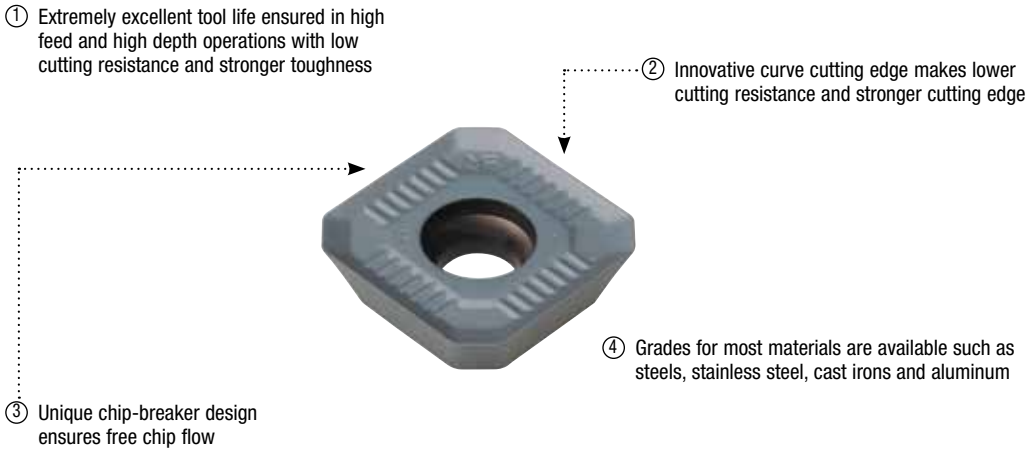
Chip-Breakers

	Chip-Breakers	Cutting Edge Shape	Use and Features of Chip-Breakers
Light Cutting	Non C/B		Superior surface roughness at finishing due to ground-type cermet insert.
	F2		Superior cutting quality for light and difficult-to-cut material cutting through the low-cutting-resistance type of chip breaker.
General Cutting	M		Suitable for wide range of cutting due to special shape design for general cutting.
Roughing	R8		Tough cutting edge provides stable and consistent cutting performance even at severe intermittent cutting.
For Aluminum	A		Superior quality for aluminum cutting resulting from applying proper cutting-edge treatment and buffing of surface.

Recommended Cutting Condition

ISO	Grade	C/B	F2		M		R8		A	
			V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)
P	PM25C		650~1000	0.002~0.008	500~1000	0.004~0.012	500~800	0.004~0.012	-	-
	PM30P		650~1000	0.002~0.008	500~1000	0.004~0.012	330~800	0.004~0.012	-	-
M	MM30P		330~600	0.002~0.006	390~600	0.004~0.012	-	-	-	-
	PM30C		390~650	0.002~0.006	390~650	0.004~0.012	-	-	-	-
K	NCM320K		500~800	0.002~0.008	500~800	0.004~0.012	-	-	-	-
	-		-	-	-	-	-	-	-	-
	-		-	-	-	-	-	-	-	-
Aluminum	KTM10U		-	-	-	-	-	-	1150~3300	0.004~0.014

Features of Max Mill Insert



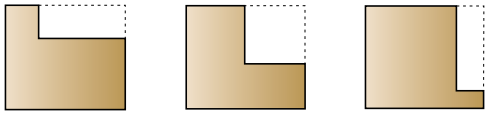
Inserts Feature & Application

- Innovative curve cutting edge and chip-breaker design ensures ideal 90 degree cutting and lower cutting resistance
- Various applications are available with multi-functional cutters (Facing, Slotting, Square Shoulder Milling, etc.)
- Application specific optimization improves insert life
- Excellent performance ensured at large depth of cutting operations due to strong cutting edge and low cutting resistance

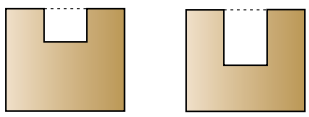
Chip-Breaker	Cutting Edge Sharp		Recommendation C/B and Grades (:1st Choice)									
			Low Carbon Steels Soft Steels		High Carbon Steels Alloy Steels		Stainless Steels		Cast Irons		Aluminum Alloys	
			C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade	C/B	Grade
F2		Low Cutting Resistance Type	●	○ PM25C ○ PM30P ● PM30C	-	● PM25C ○ PM30P ○ PM30C	-	○ PM25C ○ PM30P ● PM30C	●	● KM20C	-	-
M		Reinforced Cutting Edge Type	-	○ PM25C ○ PM30P ● PM30C	●	● PM25C ○ PM30P ○ PM30C	-	○ PM25C ○ PM30P ● PM30C	●	● KM20C	-	-
A		Sharp Cutting Edge Type	-	-	-	-	-	-	-	-	-	● KTM10U

Advice

1. The cutting speed and feed can be adjusted in accordance with the machine's power and conditions of workpiece.
2. We recommend you operate them with small radial depth (RD) and large axial depth (AD) on square shoulder milling applications.
3. We recommend you use compressed air during the slotting and pocket milling applications for the better chip removal.
4. For chattering during the operation, decrease the cutting speed.



Square Shoulder Milling



Slotting

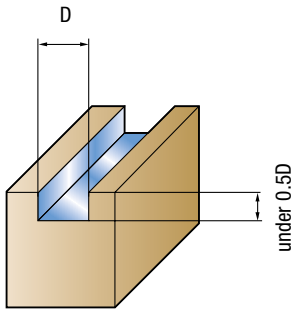
Max Mill Technical Information

Insert Choice(Chip Breaker/Grade)

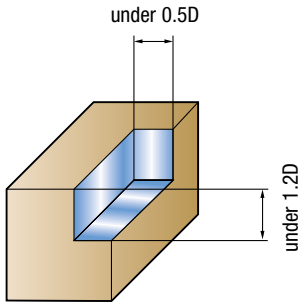
ISO(Workpiece)	Low Cutting Resistance Type	General Type	Stronger Cutting Edge Type
P	F2 / PM25C	M / PM25C	M / PM30P
M	F2 / PM30C	F2 / PM30C	M / PM30C
K	F2 / KM20C	F2 / KM20C	F2 / KM20C
Al	KTM10U	KTM10U	KTM10U

Recommended Cutting Conditions

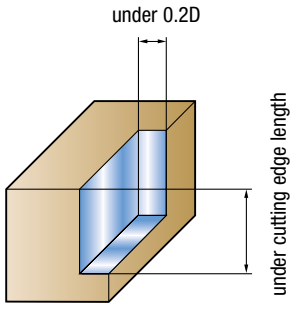
Workpiece	Insert Grade	Cutter Diameter (ø)	ø1.25 ~ 2.50		ø3.150 ~ 4.921	
			V(sfm)	fz(ipt)	V(sfm)	fz(ipt)
P	PM25C		325 ~ 825	0.002 ~ 0.012	400 ~ 825	0.003 ~ 0.012
	PM30C		325 ~ 725	0.002 ~ 0.01	400 ~ 725	0.003 ~ 0.01
	PM30P		325 ~ 725	0.002 ~ 0.01	325 ~ 725	0.004 ~ 0.01
M	PM30C		250 ~ 600	0.002 ~ 0.008	250 ~ 600	0.004 ~ 0.001
K	KM20C		600 ~ 825	0.003 ~ 0.01	600 ~ 825	0.004 ~ 0.001
Aluminum	KTM10U		1300 ~ 3275	0.002 ~ 0.016	1300 ~ 3275	0.004 ~ 0.016



Slotting



Square Shoulder Milling

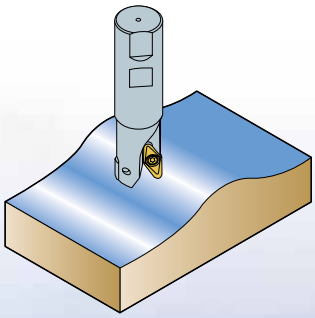


Square Shoulder Milling

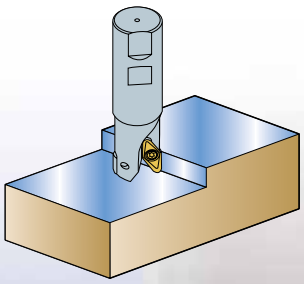
Special Features of Alumi Mill

1. Mirror face of insert top provides smooth chip flow and prevent edge build-up.
2. High rake angle of cutting edge provides high quality surface finish through reduce cutting force.
3. Square shouldering and contouring is available.
4. Rigid cutter allows high speed machining.
5. Suitable for high speed machining which provides high productivity.
6. Precise ground insert and high rake angle reduces cutting force significantly.

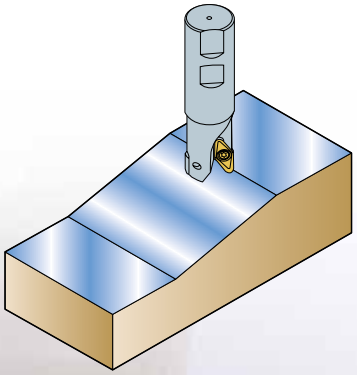
Machining Examples of Alumi Mill



Contouring



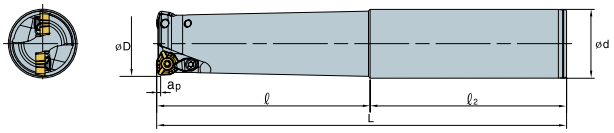
Square Shouldering



Ramping

HFPA High Feed End Mills

Coolant through

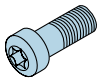
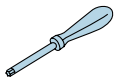


(inch)

Designation		Code No.	Price $	ØD	Ød	l	l2	L	No. of Inserts	Insert
HFPA	3/4	148642	**365.30**	0.750	0.750	1.969	3.150	5.119	2	WDKT 080316 ZDSR-MH
	1	148644	**390.06**	1.000	1.000	2.363	3.150	5.512	2	WDKT 10T320 ZDSR-MH
	1	148645	**403.01**	1.000	1.000	4.725	3.150	7.874	2	WDKT 10T320 ZDSR-MH
	1-1/4	148646	**420.54**	1.250	1.250	2.756	3.150	5.906	2	WDKT 130520 ZDSR-MH
	1-1/4	148647	**433.12**	1.250	1.250	4.725	3.150	7.874	2	WDKT 130520 ZDSR-MH
	1-1/2	148648	**433.12**	1.500	1.500	2.363	3.544	5.906	3	WDKT 130520 ZDSR-MH
	1-1/2	148649	**707.25**	1.500	1.500	5.119	4.725	9.843	3	WDKT 130520 ZDSR-MH

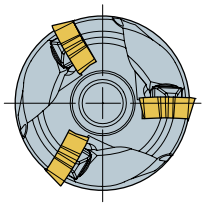
P.E115

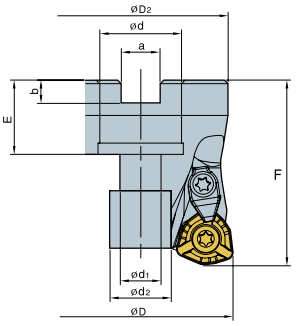
Parts

Cutter	Screw	Clamp	Clamp Screw	C-Ring	Wrench	Wrench
						
3/4	FTNA 0306	-	-	-	TW09P	-
	145548 **$ 6.78**				146951 **$ 11.19**	
1.000	FTKA 0408	CHH3.5R1	CTX03510	CR03	-	TW15S
	146968 **$ 8.64**	145552 **$ 25.71**	145554 **$ 10.17**	145556 **$ 2.76**		146801 **$ 31.83**
1-1/4	FTGA 0510-P	CCH4.541	CTX04513H	CR03	-	TW20
	145549 **$ 9.27**	145553 **$ 25.95**	145555 **$ 10.25**	145556 **$ 2.76**		148291 **$ 15.44**
1-1/2	FTGA 0512-P	CCH4.5R1	CTX04513H	CR03	-	TW20
	145551 **$ 9.94**	145553 **$ 25.95**	145555 **$ 10.25**	145556 **$ 2.76**		148291 **$ 15.44**

HFPC High Feed Face Mills

Coolant through



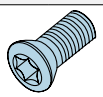
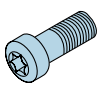
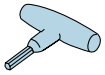


(inch)

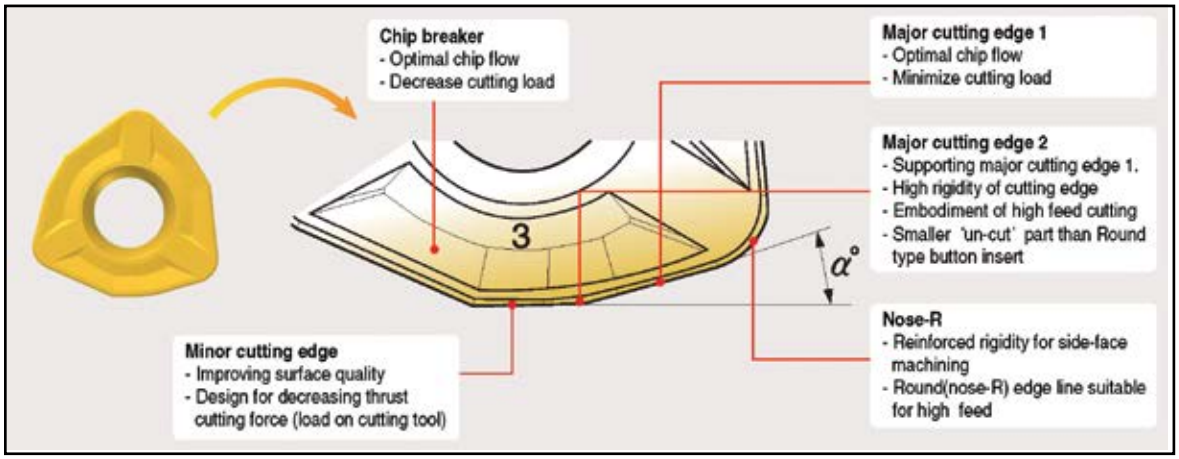
Designation		Code No.	Price $	ØD	Ød	ØD2	Ød2	a	b	E	F	No. of Inserts	Insert
HFPC	13200R-4	148637	**863.86**	2.000	0.750	1.772	0.630	0.321	0.221	0.778	1.969	4	WDKT 130520 ZDSR-MH
	13250R-4	148639	**886.74**	2.500	0.750	1.772	0.630	0.321	0.221	0.778	1.969	4	WDKT 130520 ZDSR-MH
	13300R-5	148641	**1,128.19**	3.000	1.000	2.205	0.827	0.384	0.248	0.985	2.756	5	WDKT 130520 ZDSR-MH

P.E115

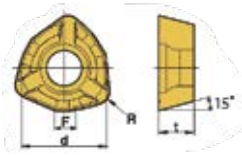
Parts

Cutter	Screw	Clamp	Clamp Screw	C-Ring	Wrench	
						
2, 2-1/2, 3	FTGA0513-P	CCH4.5R1	CTX04513H	CR03	TW20-100	-
	148194 **$ 9.54**	145553 **$ 25.95**	145555 **$ 10.25**	145556 **$ 2.76**	145557 **$ 30.26**	

HIGH FEED MILLING INSERTS



WDKT



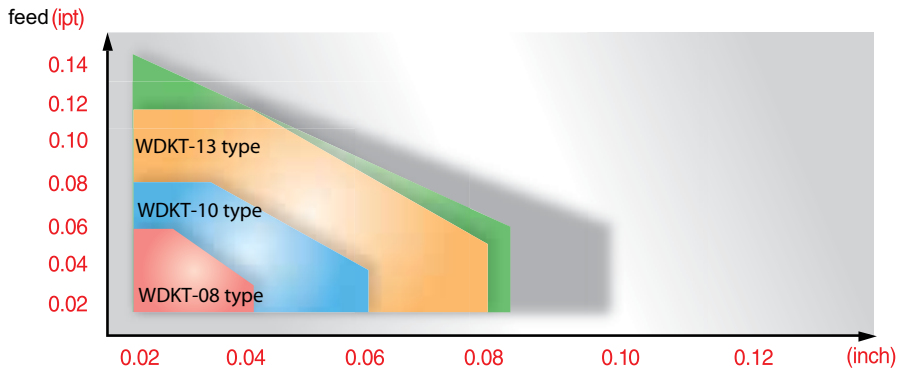
	Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	d	t	F	r	a°	Cutter	Page No.
WDKT 080316 ZDSR-MH					148563 $ 13.91								0.315	1/8	3/64	1/16	15	HFPA HFPC	E128 E128
WDKT 130520 ZDSR-MH							148623 $ 27.60						0.531	7/32	0.083	0.079	15		

Application

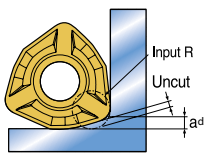
S.F.M.

PM10C - Die Steels 300-500 sfm
(P05-P15) - Alloy Steels 400-650 sfm

PM35P - Die Steels 300-400 sfm
(P05-P15) - Alloy Steel 350-500 sfm
- Stainless Steel 300-400 sfm



- Information for uncut part by using Input.R for CAM program.
- Uncut can be changed by poor machine condition or weak clamp of workpiece, etc.

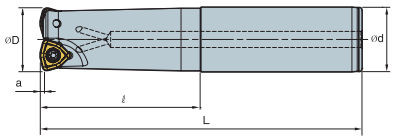
Designation	Condition		Approx. R(inch)		Configuration
	Max ad (inch)	Max fz (ipt)	Input.R	Uncut	
WDKT080316ZDSR-MH	0.048	0.08	0.08	0.0152	
WDKT10T320ZDSR-MH	0.06	0.08	0.1	0.0188	
WDKT130520ZDSR-MH	0.08	0.12	0.12	0.0288	
WDKT150625ZDSR-MH	0.1	0.12	0.12	0.0352	

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

HFNA High Feed End Mills

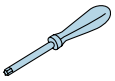
Coolant through



(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
HFNA	09100HR-2S100	148930	390.06	1.0000	1.00	0.06	2.362	5.512	2	
	09100HR-2M100	148946	403.01	1.0000	1.00	0.06	4.724	7.874	2	
	09118HR-3S125	148982	446.87	1.1875	1.25	0.06	2.756	5.906	3	
	09118HR-3M125	149035	460.57	1.1875	1.25	0.06	4.724	7.874	3	
	09125HR-3S125	148983	446.87	1.2500	1.25	0.06	2.756	5.906	3	WNMX09T316ZNN-M
	09125HR-3M125	148984	460.57	1.2500	1.25	0.06	4.724	7.874	3	
	09137HR-4S125	148985	567.54	1.3750	1.25	0.06	1.969	5.906	4	
	09150HR-4S125	148990	574.95	1.5000	1.25	0.06	1.969	5.906	4	
	09150HR-4M125	148991	584.94	1.5000	1.25	0.06	1.969	9.843	4	
	13125HR-2S125	149028	420.54	1.250	1.250	0.08	2.756	5.906	2	
	13125HR-2M125	149029	433.12	1.250	1.250	0.08	4.724	7.874	2	
	13131HR-2L125	145599	517.50	1.313	1.250	0.08	2.756	11.811	2	
	13131HR-2M125	145598	452.94	1.313	1.250	0.08	2.874	7.874	2	
	13131HR-2S125	145597	420.67	1.313	1.250	0.08	2.756	5.906	2	
	13137HR-2L125	146798	534.16	1.375	1.250	0.08	1.969	11.811	2	
	13137HR-2M125	146759	466.81	1.375	1.250	0.08	1.969	7.874	2	
	13137HR-2S125	146630	433.19	1.375	1.250	0.08	1.969	5.906	2	
	13150HR-3M150	149033	707.25	1.500	1.500	0.08	5.118	9.843	3	WNMX130520-ZNN-M
	13150HR-3S150	149032	587.76	1.500	1.500	0.08	2.362	5.906	3	
	13150HR-3L150	146400	707.25	1.500	1.500	0.08	7.087	11.811	3	
	13162HR-3L125	146868	661.91	1.625	1.250	0.08	1.969	11.811	3	
	13162HR-3L150	146871	753.50	1.625	1.500	0.08	1.969	11.811	3	
	13162HR-3M125	146859	630.60	1.625	1.250	0.08	1.969	9.843	3	
	13162HR-3M150	146870	707.25	1.625	1.500	0.08	1.969	9.843	3	
	13162HR-3S125	146856	587.76	1.625	1.250	0.08	1.969	5.906	3	
	13162HR-3S150	146869	686.02	1.625	1.500	0.08	1.969	5.906	3	

Parts

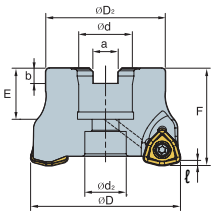
Designation	Insert	Screw			Wrench		
							
HFNA 09xxxHR	WNMX09T316ZNN-M	FTKA0307	148210	$ 10.72	TW09S	146951	$ 11.19
HFNA 13xxxHR	WMNX130520ZNN-M	FTKA0412B	146969	$ 8.64	TW15S	146801	$ 31.83

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

HFNC High Feed Face Mills

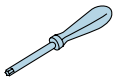
Coolant through



Designation		Code No.	Price $	ØD	Ød	ØD2	Ød2	a	b	E	F	ℓ	No. of Inserts	Insert
HFNC	09250HR-6	148798	**1,022.84**	2.5	0.750	2.205	0.630	0.315	0.220	0.787	1.750	0.06	6	
	09300HR-7	148813	**1,168.23**	3.0	1.000	2.205	0.827	0.374	0.236	0.866	2.000	0.06	7	WNMX09T316ZNN-M
	09400HR-8	148815	**1,312.35**	4.0	1.250	2.874	1.024	0.500	0.315	0.866	2.000	0.06	8	
	13200HR-3	146872	**688.97**	2.0	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	3	
	13200HR-4	146873	**863.86**	2.0	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	4	
	13250HR-4	146881	**886.74**	2.5	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	4	
	13250HR-5	146882	**1,108.41**	2.5	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	5	WNMX130520-ZNN-M
	13300HR-5	146883	**1,128.19**	3.0	1.00	2.205	0.827	0.374	0.236	0.866	2.0	0.08	5	
	13300HR-6	146884	**1,221.45**	3.0	1.00	2.205	0.827	0.374	0.236	0.866	2.0	0.08	6	
	13400HR-6	146885	**1,221.45**	4.0	1.25	2.874	1.024	0.500	0.315	0.866	2.0	0.08	6	
	13400HR-7	146886	**1,404.67**	4.0	1.25	2.874	1.024	0.500	0.315	0.866	2.0	0.08	7	

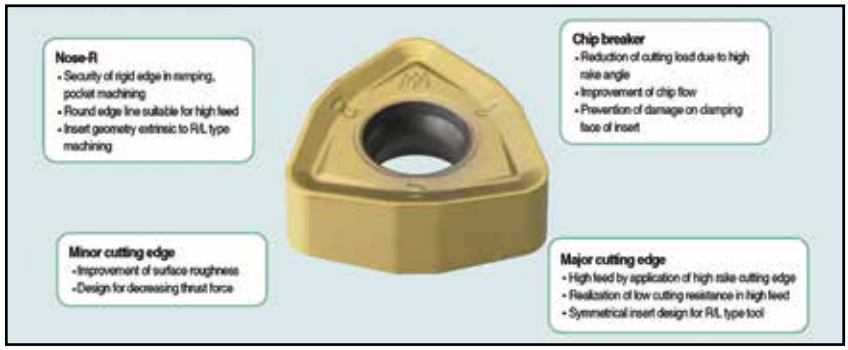
AA:76°, AR:-7°, RR:-12°~ -4°

Parts

Designation	Insert	Screw			Wrench		
							
HFNC 09250 - 09400HR	WNMX09T316ZNN-M	FTKA0307	148210	**$ 10.72**	TW09S	146951	**$ 11.19**
HFNC 13200 - 13400HR	WNMX130520-ZNN-M	FTKA0412B	146969	**$ 8.64**	TW15S	146801	**$ 31.83**

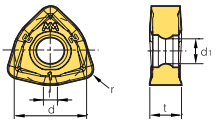
Double Sided High Feed Milling Inserts

- High rake angle cutting edge reduces cutting load making this insert excellent for high feed and multi-functional machining
- Double sided design makes this a very economical insert
- Negative geometry has been designed for rigidity of cutting edge and double sided function
- Symmetrical cutting edge is applicable for both R and L type tools



WNMX

Features
Excellent geometries
for a variety of materials



	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	r	d1	f	Cutter	Page No.
WNMX09T316ZNN-M	145640 $ 21.12							146891 $ 21.12					0.375	0.156	0.063	0.142	0.067	HFNA	E120
WNMX130520ZNN-M	145675 $ 33.10									147080 $ 27.20			0.500	0.219	0.079	0.185	0.098	HFNC	E121

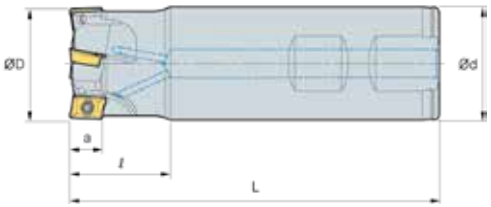
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

AP 06 - 90° End Mills

Coolant through

Features
- Lower cutting resistance
- Better chip control
- Longer tool life

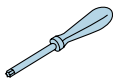


AR: 7.5° ~ 13°

(inch)

Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AP06-90 1050HS-3	145568	**158.58**	0.500	0.500	0.220	0.984	3.150	3	APMT 0602 PDSR-M
AP06-90 1063HS-3	145569	**193.77**	0.625	0.625	0.220	0.984	3.543	3	
AP06-90 1075HS-4	145572	**211.40**	0.750	0.750	0.220	1.181	4.331	4	

Parts

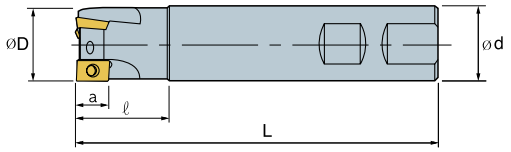
Designation	Insert	Screw			Wrench		
							
AP 06-09	APMT 0602 PDSR-M	FTKA 01842	148717	**$ 10.42**	TW 06S-A	147186	**$31.86**

➤ P. E93

AP 11/16 - 90° End Mill H13 Hardened Bodies 48HRC

H13 HARDENED CUTTER BODIES 48HRC

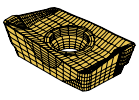
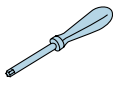
Features
- Longer insert life
- Longer body life
- Higher rigidity
- Better feed rates



(inch)

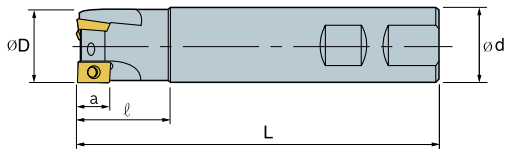
Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 11-90 2075S	148822	**31.86**	0.750	0.750	0.433	1.181	3.937	2	9°	APXT 11T3
3100S	148812	**145.99**	1.000	1.000	0.630	1.378	4.528	2	9°	AP_T 1604
3125S	148814	**183.44**	1.250	1.000	0.630	1.574	4.921	3	9°	
AP 16-90 3125S 1 1/4 SHK	148816	**183.44**	1.250	1.250	0.630	1.575	4.921	3	9°	
3150S	148818	**183.44**	1.500	1.250	0.630	1.575	5.125	3	9°	

Parts

Designation	Insert	Screw			Wrench		
							
AP 11 90°	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
AP 13 90°	AP_T 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E94

AP 11/16 - 90° End Mills

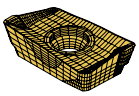
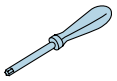


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 11-90	2050S	146371	**115.24**	0.500	0.625	0.433	0.984	3.346	1	5°	
Short Length	2062S	146372	**115.24**	0.625	0.625	0.433	0.984	3.543	2	7°	
	2075S	146373	**115.24**	0.750	0.750	0.433	1.181	3.937	2	9°	APXT 11T3
	2075S 3 Flute	147376	**137.30**	0.750	0.750	0.433	1.181	3.937	3	9°	
	2100S 3/4 Shank	146374	**132.74**	1.000	0.750	0.433	1.378	3.500	3	9°	
	2100S 1" Shank	148414	**132.74**	1.000	1.000	0.433	1.378	4.528	3	9°	
Medium Length	2125M	147131	**154.81**	1.250	1.250	0.433	1.575	4.921	4	9°	
	2150M	147132	**177.04**	1.500	1.250	0.433	1.654	5.118	5	9°	APXT 11T3
	2200M	147133	**247.37**	2.000	1.250	0.433	1.772	5.315	6	9°	
Long Length	2062L	147284	**115.24**	0.625	0.625	0.433	0.984	6.500	2	7°	
	2075L	147285	**115.24**	0.750	0.750	0.433	1.181	6.500	2	9°	APXT 11T3
	2100L	147286	**132.74**	1.000	1.000	0.433	1.378	6.500	3	9°	
AP 16-90	3100S	145705	**132.74**	1.000	1.000	0.630	1.378	4.528	2	9°	
Short Length	3125S	145706	**154.81**	1.250	1.000	0.630	1.574	4.921	3	9°	
	3125S 1 1/4 SHK	146866	**330.47**	1.250	1.250	0.630	1.575	4.921	3	9°	AP_T 1604
	3150S	145707	**177.04**	1.500	1.250	0.630	1.575	5.125	3	9°	
	3200S	145708	**210.07**	2.000	1.250	0.630	1.772	5.315	5	9°	
Medium Length	3100M	147282	**154.81**	1.000	1.000	0.630	1.378	6.500	2	9°	AP_T 1604
	3125M	147283	**154.81**	1.250	1.250	0.630	1.574	6.500	3	9°	
Long Length	3100L	147136	**199.10**	1.000	1.000	0.630	1.378	8.000	2	9°	AP_T 1604
	3125L	147137	**265.33**	1.250	1.250	0.630	1.574	8.500	3	9°	

*AA:0°

Parts

Designation	Insert	Screw			Wrench		
							
AP 11 90°	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
AP 13 90°	AP_T 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

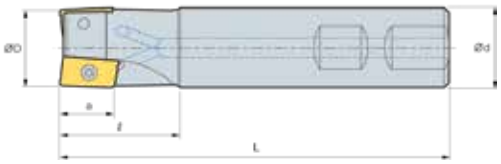
➤ P. E94

Recommended Cutting Condition

Workpiece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	320~980	0.003~0.010	Coated (PM10, 20, 30C) Uncoated (PM20U)
M	160~600	0.002~0.008	Coated (MM30P)
K	Cast Iron 490~820 Alum 500~1000	0.003~0.012	Coated (KM20C) Uncoated (KTM10U)

AP11M/16M-90 End Mills

Coolant through

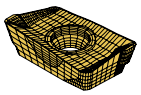
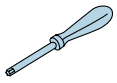


(inch)

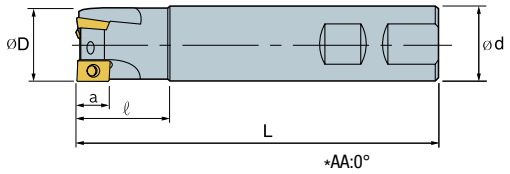
Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP11M-90	2050S	146889	**143.85**	0.500	0.625	0.433	1.181	3.346	1	3°-14°	APMT 11T3
	2062S	147001	**175.75**	0.625	0.625	0.433	0.984	3.543	2	3°-14°	
	2062L	147003	**201.39**	0.625	0.625	0.433	1.181	7.087	2	3°-14°	
	2075S	147005	**191.73**	0.750	0.750	0.433	1.181	3.937	2	3°-14°	
	2075M	147010	**213.22**	0.750	0.750	0.433	1.181	8.268	2	3°-14°	
	2100S	147012	**223.78**	1.000	1.000	0.433	1.378	4.528	3	3°-14°	
	2100L	147014	**248.38**	1.000	1.000	0.433	1.575	7.087	3	3°-14°	
	2125S	147016	**298.28**	1.250	1.250	0.433	1.575	4.921	4	3°-14°	
	2150S	147020	**351.53**	1.500	1.250	0.433	1.654	5.118	5	3°-14°	
	2200S	147022	**493.30**	2.000	1.250	0.433	1.250	5.315	6	3°-14°	
AP16M-90	3100S	147024	**244.27**	1.000	1.000	0.630	1.378	4.528	2	3°-14°	APMT 1604
	3100M	147046	**271.14**	1.000	1.000	0.630	1.378	7.087	2	3°-14°	
	3100L	147050	**261.37**	1.000	1.000	0.630	2.362	8.661	2	3°-14°	
	3125S	147074	**330.79**	1.250	1.250	0.630	1.575	4.921	3	3°-14°	
	3125M	148387	**296.61**	1.250	1.250	0.630	1.575	7.874	2	3°-14°	
	3125L	148388	**414.49**	1.250	1.250	0.630	2.559	10.236	2	3°-14°	
	3150S	148411	**395.89**	1.500	1.250	0.630	1.654	5.118	4	3°-14°	
	3200S	148415	**458.32**	2.000	1.250	0.630	1.772	5.315	5	3°-14°	

AP11M: AA:0°, AR:3°~14°, RR:-25°~-18°
AP16M: AA:0°, AR:3°~14°, RR:-18°~-10°

Parts

Designation	Insert	Screw			Wrench		
							
AP11M-90 2050S	APMT 11T3~	FTKA 02555S	148624	**$ 10.42**	TW 08S	146728	**$ 31.83**
AP11M-90 2062S~2200S		FTKA 02565S	146595	**$ 10.72**			
AP16M-90 3100	APMT 1604	FTKA 0408	146968	**$ 8.64**	TW 15S	146801	**$ 31.83**
AP16M-90 3125~3200		FTKA 0410	146969	**$ 8.64**			

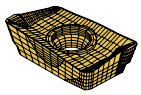
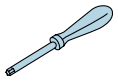
AP 10/AD 15 - 90° End Mills



(inch)

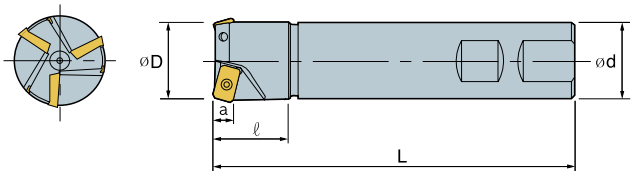
Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 10 90°	3/8	147835	**115.24**	0.375	0.375	0.394	0.984	3.375	1	-	AP_T 1003
	1/2	147836	**115.24**	0.500	0.625	0.394	0.984	3.346	1	5°	AP_T 1003
	5/8	147837	**115.24**	0.625	0.625	0.394	0.984	3.543	2	7°	AP_T 1003
	3/4	147838	**115.24**	0.750	0.750	0.394	1.181	3.937	2	9°	AP_T 1003
	1"	147839	**132.74**	1.000	1.000	0.394	1.378	4.528	3	9°	AP_T 1003
	1 1/2	147841	**177.04**	1.500	1.250	0.394	1.654	5.118	5	9°	AP_T 1003
AD 15 90°	3/4	147845	**115.24**	0.750	0.750	0.591	1.181	3.940	1	9°	ADKT 1505
	1"	147846	**132.74**	1.000	1.000	0.591	1.378	4.528	2	9°	ADKT 1505
	1 1/2	147848	**165.78**	1.500	1.250	0.591	1.575	4.921	4	14°	ADKT 1505

Parts

Designation	Insert	Screw			Wrench		
							
AP 10 90°	APKT / APXT 1003~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
AD 15 90°	ADKT 1505~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E92

AP 11 15° End Mills

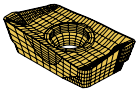
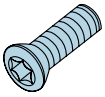
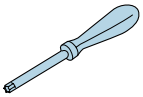


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR
AP11 15°	2100SE	147134	**141.57**	1.000	1.000	0.157	1.181	4.528	2	-1°

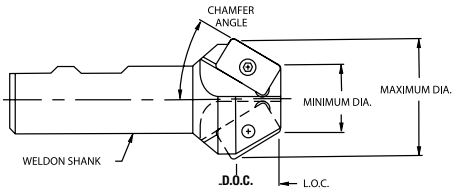
*AA:0°

Parts

Designation	Insert	Screw			Wrench		
							
AP11 15° 2000SE	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**

➤ P. E94

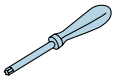
AP 16 Chamfer Mills



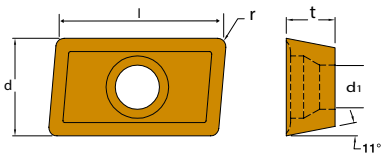
(inch)

Designation		Code No.	Price $	Min. Dia.	Max. Dia.	Weldon Shank	Chamfer Angle	No. of Inserts	Depth of Cut
AP 16 CHM	750-30	147187	207.00	0.750	1.303	3/4"	30°	2	0.479
	688-41	147188	207.00	0.688	1.414	3/4"	41°		0.418
	688-45	147189	207.00	0.688	1.471	3/4"	45°		0.391
	500-60	147190	269.07	0.500	1.458	3/4"	60°		0.277
	1.000-30	147191	226.02	1.000	1.553	1"	30°	3	0.479
	938-41	147192	226.02	0.938	1.664	1"	41°		0.418
	938-45	147193	226.02	0.938	1.721	1"	45°		0.391
	750-60	147194	226.02	0.750	1.708	1"	60°		0.277
	1.250-30	147195	276.70	1.250	1.803	1 1/4"	30°	3	0.479
	1.188-41	147196	274.52	1.188	1.914	1 1/4"	41°		0.418
	1.188-45	147197	276.70	1.188	1.971	1 1/4"	45°		0.391
	1.000-60	147198	276.70	1.000	1.958	1 1/4"	60°		0.277
	1.500-30	147199	354.77	1.500	2.053	1 1/2"	30°		0.479
	1.438-41	147200	354.77	1.438	2.164	1 1/2"	41°		0.418
	1.438-45	147201	351.93	1.438	2.221	1 1/2"	45°		0.391
	1.250-60	147202	351.93	1.250	2.208	1 1/2"	60°		0.277

Parts

Designation	Insert	Screw			Wrench		
							
AP16 CHM	APLT 347	FTKA 0410	146969	$ 8.64	TW 15S	146801	$ 31.83

APLT-347



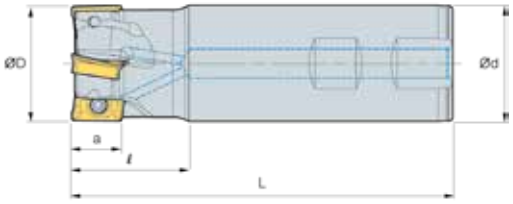
	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM25P	PM35P	PM40P	KM30P	MM30P	MT30P	SM20P	PM20U	KTM20U	l	d	t	r	d1	Cutter	Page No.
APLT 347		149195 $ 30.33	149194 $ 30.98									149196 $ 25.70	0.591	3/8	0.187	0.015	0.173	AP16 CHM	

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

AP 18 - 90° End Mills

Features
- Lower cutting resistance
- Better chip control
- Longer tool life

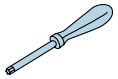


AR: 7° ~ 13°

(inch)

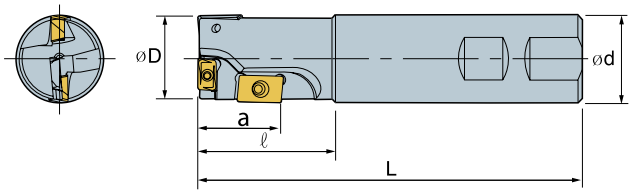
Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AP 18-90	4125HS	145577	**347.32**	1.250	1.250	0.669	1.575	4.921	3	APMT 1806 PDSR-M
AP 18-90	4150HS	145578	**415.86**	1.500	1.250	0.669	1.575	5.118	4	
AP 18-90	4200HS	145579	**481.25**	2.000	1.250	0.669	1.575	5.315	5	
AP 18-90	4250HS	145581	**610.84**	2.500	1.250	0.669	1.575	5.315	9	

Parts

Designation	Insert	Screw			Wrench		
							
AP 18-90	APMT 1806 PDSR-M	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E93

APCC Centre Cut End Mills

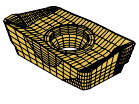
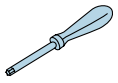


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	APXT11T3~	APXT1604~
APCC	2100MH	148246	**240.37**	1.000	1.000	0.787	1.575	5.118	3	3	-
	2125MH	148247	**296.84**	1.250	1.250	1.181	1.969	5.512	3	1	2
APCC	3150MH	148248	**353.62**	1.500	1.250	1.575	2.362	5.906	4	-	4

*AA:0°, AR:9°~7°, RR-12°~10°

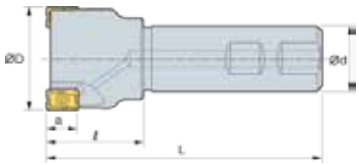
Parts

Designation	Insert	Screw			Wrench		
							
APCC 2100MH	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
2125MH	APXT 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E94

DS4 End Mills

Coolant through

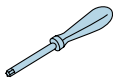


(inch)

Designation		Code No.	Price $	ØD	Ød	ℓ	L	a	No. of Inserts	Insert
DS4	3062HR	148614	**186.27**	0.625	0.625	0.984	3.543	0.354	1	
	3075HR	146379	**265.99**	0.750	0.750	1.181	3.937	0.354	2	
	3075HR	146381	**327.81**	0.750	0.750	1.181	3.937	0.354	3	LNMX 100605
	3100HR	146384	**518.91**	1.000	1.000	1.378	4.528	0.354	2	
	3100HR	146389	**369.31**	1.000	1.000	1.378	4.528	0.354	3	

AR: -6°, RR -39°~ -16°

Parts

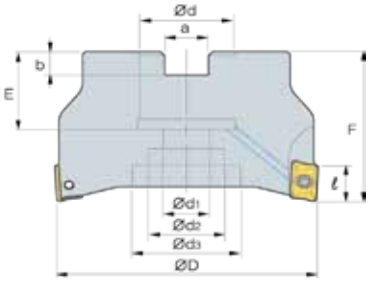
Designation	Insert	Screw			Wrench		
							
LNMX 100605PNR-M	LNEX	FTKA0307	148210	**$ 10.72**	TW09S	148191	**$ 31.83**

➤ P. E94-95

APFM 06 - 90° Face Mills

Coolant through

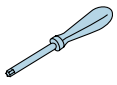
Features:
- Lower cutting resistance
- Better chip control
- Longer tool life



Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 06-90	1150HS	145582	**516.99**	1.50	0.500	0.287	0.433	0.252	0.169	0.630	1.500	0.220	10
	1200HS	145583	**610.24**	2.00	0.750	0.433	0.630	0.321	0.220	0.787	1.750	0.220	12
	1250HS	145584	**780.61**	2.50	0.750	0.433	0.630	0.321	0.220	0.787	1.750	0.220	14

*AA:0°, AR:9º-13º, RR:-14 ~ 5°

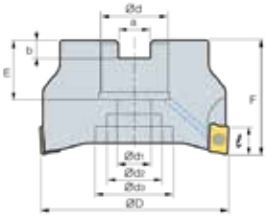
Parts

Designation	Insert	Screw			Wrench		
							
APFM 06 90°	APMT 0602 PDSR-M	FTKA 01842	148717	**$ 10.42**	TW 06S-A	147186	**$ 31.86**

➤ P. E93

APFM 11M/16M - 90° Face Mills

Coolant through

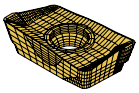
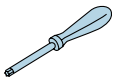


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	Ød3	a	b	E	F	ℓ	No. of Inserts	Insert
APFM 11M-90	**2150**	148416	**451.72**	1.500	0.500	0.287	0.433	-	0.252	0.169	0.630	1.500	0.433	5	
	2200	148434	**533.20**	2.000	0.750	0.433	0.630	-	0.321	0.220	0.787	1.750	0.433	6	
	2250	148445	**682.06**	2.500	1.000	0.433	0.630	-	0.321	0.220	0.787	1.750	0.433	8	APMT 11T3
	2300	148446	**748.44**	3.000	1.000	0.551	1.260	1.378	0.384	0.248	0.866	2.000	0.433	10	
	2400	148469	**930.90**	4.000	1.250	0.709	1.024	1.575	0.510	0.319	0.866	2.000	0.433	12	
APFM 16M-90	**3150**	148510	**451.72**	1.500	0.500	0.287	0.433	-	0.250	0.169	0.630	1.500	0.630	4	
	3200	148513	**531.68**	2.000	0.750	0.413	0.630	-	0.313	0.220	0.787	1.750	0.630	5	
	3250	148514	**626.87**	2.500	1.000	0.551	0.827	-	0.375	0.248	0.787	1.750	0.630	6	APMT 1604
	3300	148517	**722.98**	3.000	1.000	0.551	0.827	-	0.375	0.248	0.866	2.000	0.630	7	
	3400	148518	**835.05**	4.000	1.250	-	1.722	-	0.500	0.319	0.866	2.000	0.630	8	

APFM 11M: AA:0°, AR:9°~13°, RR:-14°~5°
APFM 16M: AA:0°, AR:14°, RR:-12°~8°

Parts

Designation	Insert	Screw			Wrench		
							
APFM 11M 90°	APMT 11T3	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
APFM 16M 90°	APMT 1604	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

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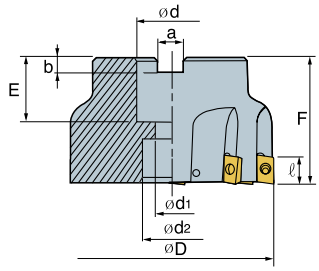
Images are representational only and may not reflect actual product.

APFM 11/16 - 90° Face Mill

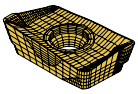
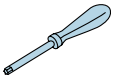


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 11-90	2.00	147138	**254.67**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.433	5
	2.50	148249	**296.84**	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.433	8
	3.00	148250	**372.04**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.433	8
APFM 16-90	2.00C	147009	**254.67**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	4
	2.00	147117	**296.84**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	5
	2.50C	147011	**331.40**	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.630	5
	2.50	147118	**331.40**	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.630	6
	3.00C	147013	**381.77**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	5
	3.00	147119	**381.77**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	7
	4.00C	147000	**463.98**	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	4.00	147120	**463.98**	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	8
	5.00C	147015	**653.84**	5.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	5.00	147121	**1,183.72**	5.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	9
	6.00C	147017	**1,598.00**	6.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	7
	6.00	147122	**1,580.59**	6.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	9

*AA:0°, AR:9°, RR:-10 ~ -5° **C = Coarse Pitch**

Parts

Designation	Insert	Screw			Wrench		
							
APFM 11 90°	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
APFM 16 90°	APKT 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E94

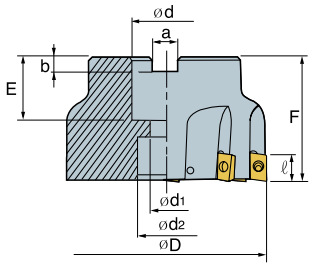
Recommended Cutting Condition

Workpiece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980	0.003~0.010	Coated (PM10, 20, 30C, PM30P) Uncoated (PM20U)
M	320~480	0.003~0.008	Coated (MM30P)
K	Alum 500~1000	0.003~0.012	Coated (KM20C) Uncoated (KTM10U)

APFM 16 - 90° Face Mill H13 Hardened Bodies 48HRC

H13 HARDENED CUTTER BODIES 48HRC

Features:
- Longer insert life
- Longer body life
- Higher rigidity
- Better feed rates

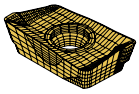
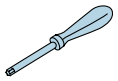


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 16-90	2.00C	148809	**254.21**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	4
	2.00	148805	**254.21**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	5
	3.00C	148804	**382.08**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	5
	3.00	148806	**382.08**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	7
	4.00C	148808	**477.06**	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	4.00	148810	**477.06**	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	8

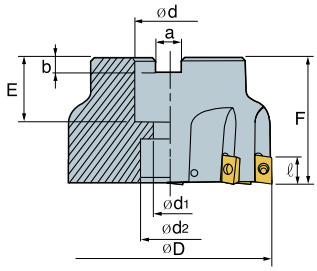
*AA:0°, AR:9°, RR:-10 ~ -5° **C = Coarse Pitch**

Parts

Designation	Insert	Screw			Wrench		
							
APFM 16 90°	APKT 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E93

AP(D)FM 10/15 90° Face Mill

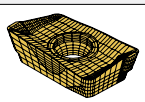
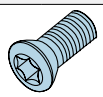
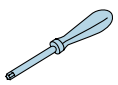


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts	Insert
APFM 10-90	2.00	147842	**254.67**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.394	5	
	2.50	147843	**296.84**	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.394	8	AP_T 1003
	3.00	147844	**379.00**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.394	8	
ADFM 15-90	2.00	147849	**254.67**	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.591	5	
	2.50	147850	**296.84**	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.591	6	ADKT 1505
	3.00	147851	**381.77**	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.591	7	
	4.00	147852	**479.05**	4.000	1.250	-	2.205	0.636	0.394	1.181	2.000	0.591	8	

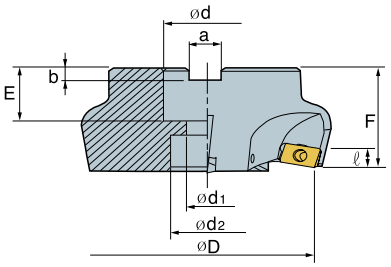
*AA:0°, AR:9°, RR:-10 ~ -5°

Parts

Designation	Insert	Screw			Wrench		
							
APFM 10 90° 1003	APKT / APXT 1003	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
ADFM 15 90° 1505	ADKT 1505	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E92

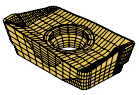
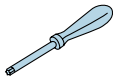
APFM 11/16 - 15° Face Mill



(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 11-15	2.50	147123	**296.84**	2.50	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.157	6
APFM 16-15	3.00	147124	**381.77**	3.00	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.236	5
	4.00	147371	**479.05**	4.00	1.500	-	2.205	0.636	0.394	1.181	2.000	0.236	6
	5.00	147372	**618.49**	5.00	1.500	-	2.205	0.636	0.394	1.181	2.500	0.236	6

Parts

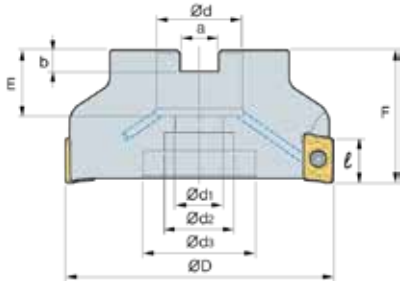
Designation	Insert	Screw			Wrench		
							
APFM 11 15°	APXT 11T3~	FTKA 02565S	146595	**$ 10.72**	TW 08S	146728	**$ 31.83**
APFM 16 15°	APKT 1604~	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E94

APFM 18 - 90° Face Mill

Coolant through

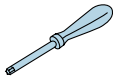
Features:
- Lower cutting resistance
- Better chip control
- Longer tool life



(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 18-90	4200HS	145586	**558.28**	2.00	0.750	0.433	0.630	0.321	0.220	0.827	1.750	0.669	5
APFM 18-90	4250HS	145587	**658.23**	2.50	0.750	0.433	0.630	0.321	0.220	0.827	1.750	0.669	6
APFM 18-90	4300HS	145588	**759.13**	3.00	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.669	7
APFM 18-90	4500HS	145591	**955.34**	5.00	1.500	0.827	1.142	0.636	0.394	1.181	2.000	0.669	9

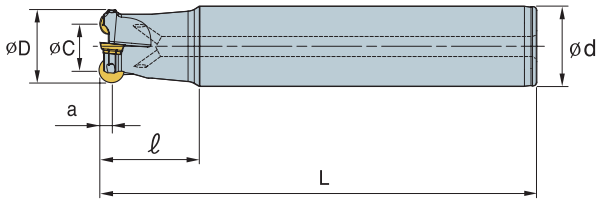
Parts

Designation	Insert	Screw			Wrench		
							
AP 18 90°	APMT 1806 PDSR-M	FTKA 0410	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E93

Button End Mill

Coolant through

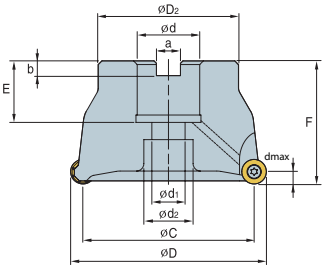


(inch)

Designation		Code No.	Price $	ØD	Ød	ØC	ℓ	L	a	No. of Inserts	Insert
BMSS	3075HRD-M	147028	**134.03**	0.750	0.750	0.358	1.575	5.906	0.197	1	RDKT 10T3M0
BMSS	3100HRD-M	147030	**308.22**	1.000	1.000	0.606	2.756	7.874	0.197	2	
BMSS	3125HRD-M	147032	**376.65**	1.250	1.250	0.858	2.756	7.874	0.197	3	
BMSS	3150HRD-M	147034	**479.36**	1.500	1.250	1.106	2.756	7.874	0.197	4	
BMSS	4125HRD-M	147036	**308.22**	1.250	1.250	0.780	2.756	7.874	0.236	2	RDKT 1204M0
BMSS	4150HRD-M	147038	**383.63**	1.500	1.250	1.028	2.756	7.874	0.236	3	
BMSS	4200HRD-M	147040	**479.36**	2.000	1.500	1.528	1.969	9.843	0.236	4	

Button Face Mill

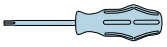
Coolant through



(inch)

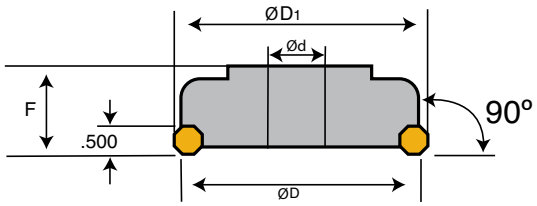
Designation		Code No.	Price $	ØD	Ød	ØC	Ød1	Ød2	a	b	E	F	No. of Inserts	d max	Insert
BMSC	3200HRD	147048	**339.64**	2.0	0.75	1.61	0.433	0.630	0.313	0.220	0.787	1.75	4	0.196	RDKT 10T3
BMSC	3200HRD-H	147052	**376.62**	2.0	0.75	1.61	0.433	0.630	0.313	0.220	0.787	1.75	5	0.196	
BMSC	3300HRD-H	147058	**502.23**	3.0	1.00	2.61	0.551	0.827	0.375	0.248	0.866	2.00	7	0.196	
BMSC	4200HRD	149007	**381.14**	2.0	0.75	1.53	0.433	0.630	0.313	0.220	0.787	1.75	4	0.236	RDKT 1204
BMSC	4300HRD-M	147064	**587.05**	3.0	1.00	2.53	0.551	0.827	0.375	0.248	0.866	2.00	6	0.236	
BMSC	4400HRD-M	147066	**690.52**	4.0	1.25	3.53	0.709	1.024	0.500	0.319	0.827	2.00	7	0.236	
BMSC	4500HRD-M	147068	**816.06**	5.0	1.50	4.53	0.827	1.220	0.626	0.394	1.063	2.50	8	0.236	

Inserts / Parts

Designation	Available Insert	Screw			Wrench		
							
BMSS/C 3000 Series	RDKT 10T3M0	FTGA 03508	146931	**$ 9.94**	TW 15S	146801	**$ 31.83**
BMSS/C 4000 Series	RDKT 1204M0	FTKA 0410	146969	**$ 8.64**			

➤ P. E98

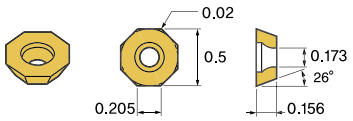
OKT-MAX - 45° Face Mill



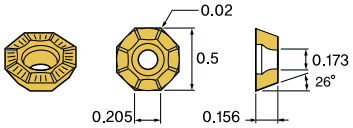
Designation		Code No.	Price $	ØD	Ød	Ød1	F	No. of Inserts
OKT-Max	2"R	147019	**488.42**	2.0	0.750	2.319	1.57	4
	3"R	147021	**674.73**	3.0	1.000	3.315	2.00	6
	4"R	147023	**770.19**	4.0	1.500	4.315	2.00	7
	5"R	147025	**958.02**	5.0	1.500	5.307	2.00	8
	6"R	147027	**1,225.51**	6.0	1.500	6.307	2.00	9

Available Inserts

OFCW



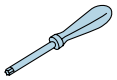
OFKT F2, M, A



Designation	
OFCW	05T3SN
	05T3FN
	05T308FN
OFKT	05T3SN-F2
	05T308SN-F2
	05T3SN-M
	05T308SN-M
	05T3FN-A
	05T3EN-A

➤ P. E96,97

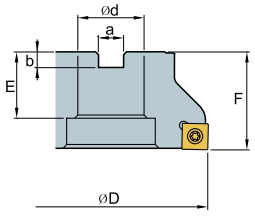
Parts

					
FTKA0408	146968	**$ 8.64**	TW15S	146801	**$ 31.83**

Recommended Cutting Condition

Workpiece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980	0.003~0.010	Coated (PM10, 20, 30C, PM30P) Uncoated (PM20U)
M	320~480	0.003~0.008	Coated (MM30P)
K	Alum 500~1000	0.003~0.012	Coated (KM20C) Uncoated (KTM10U)

Max Mill 90° Face Mill



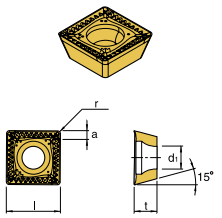
ø3.937 ~ø6.299

(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	a	b	E	F	No. of Inserts	Insert
MM 90°	4250FM	146805	**494.52**	2.500	1.000	0.551	0.370	0.248	0.787	1.575	4	
	4300FM	146806	**593.66**	3.000	1.000	0.551	0.384	0.248	0.866	1.969	5	
	4400FM	146807	**631.50**	4.000	1.250	-	0.510	0.319	0.866	1.969	6	SDXT1305
	4500FM	146808	**841.83**	5.000	1.500	-	0.636	0.394	1.181	2.480	8	
	4600FM	146809	**2,003.46**	6.000	2.000	-	0.758	0.433	1.181	2.480	8	

Available Insert

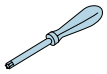
SDXT



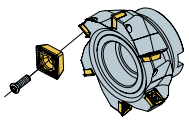
Designation	
SDXT130508R-	F2 M A

➤ P. E98

Parts

Screw			Wrench		
					
FTNC 04511	146424	**$ 5.89**	TW20S	147216	**$ 31.83**

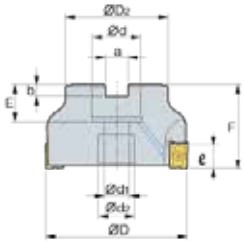
Assembling



See pages E124 through E126 for Cutting Conditions

DS4 Face Mill

Coolant through

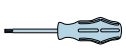


*AR:-6°, RR:-19° ~ 13°

(inch)

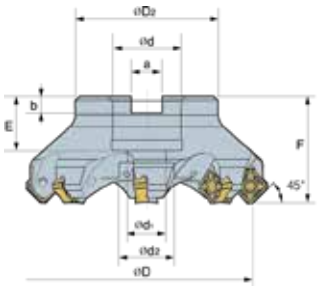
Designation		Code No.	Price $	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of Inserts	ℓ	Insert
DS4	3200HR	148373	**803.70**	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	7	0.354	LNMX100605PNR
	3400HR	148391	**1,541.51**	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	12	0.354	
	4250HR-M	148876	**936.52**	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	6	0.551	LNMX151008PNR
	4300HR	148877	**987.31**	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	5	0.551	

Inserts / Parts

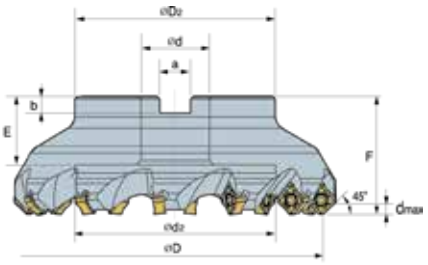
Designation	Available Insert	Screw			Wrench		
							
LNMX100605PNR-F2	LNMX	FTKA 0307	148210	**$ 10.72**	TW09S	148191	**$ 31.83**
LNMX151008PNR-M		FTKA 0421B	146969	**$ 8.64**	TW 15S	146801	**$ 31.83**

➤ P. E94-95

DS8 45° Face Mill



2" - 5" (coolant hole)



6" - 8" (no coolant hole)

Coolant through

Features:

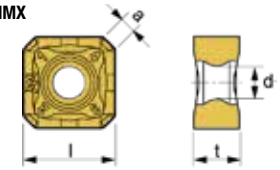
- Innovative double-sided, high rake angle insert makes it possible to use 8 cutting edges
- Low cutting load due to the positive setting and high rake angle chip breaker
- Designed wiper technology in minor cutting edge provides excellent surface finish
- Smooth and stable chip control

(inch)

Designation		Code No.	Price $	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of Inserts	d max
DS8-45	4200HR-M	148979	**607.69**	2.00	1.772	0.750	0.413	0.630	0.313	0.220	0.787	1.75	4	0.236
	4250HR-M	148980	**760.38**	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	6	0.236
	4300HR	148885	**837.25**	3.00									5	
	4300HR-M	148886	**929.33**	3.00	2.205	1.00	0.551	0.827	0.384	0.248	0.866	2.00	7	0.236
	4300HR-H	148887	**1,254.59**	3.00									10	
	4400HR	148888	**991.45**	4.00									6	
	4400HR-M	-	**-**	4.00	2.874	1.25	0.709	1.024	0.510	0.319	0.866	2.00	8	0.236
	4400HR-H	148890	**1,485.72**	4.00									12	
	4500HR	148891	**1,356.38**	5.00									8	
	4500HR-M	148892	**1,464.88**	5.00	3.386	1.50	0.827	1.220	0.636	0.394	1.181	2.50	10	0.236
	4500HR-H	148893	**1,977.65**	5.00									16	
	4600HR	148894	**1,575.57**	6.00									10	
	4600HR-M	148895	**1,575.57**	6.00	4.882	2.00	-	4.213	0.758	0.433	1.181	2.50	12	0.236
	4600HR-H	148896	**2,488.57**	6.00									18	
	4800HR-M	148897	**2,419.58**	8.00	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	14	0.236
	4800HR-H	148898	**3,266.47**	8.00									24	

Available Insert

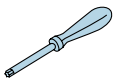
SNEX / SNMX



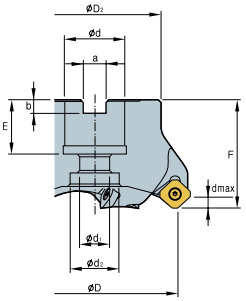
Designation
SNEX 1206ANN-A
SNEX 1206ANN-F2
SNEX 1206ANN-M
SNEX 1206ANN-W
SNMX 1206ANN-M

➤ P. E100-101

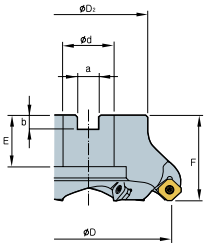
Parts

					
FTKA0410	146969	**$ 8.64**	TW15S	146801	**$ 31.83**

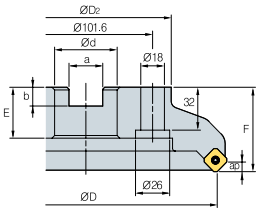
Max Mill 45° Face Mill



Ø2.000 ~ Ø2.500



Ø3.000 ~ Ø6.000



Ø8.000

(inch)

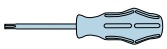
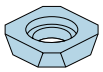
Designation		Code No.	Price $	ØD	Ød	ØD2	Ød1	Ød2	a	b	E	F	No. of Inserts	d max	Insert
MM 45°	Coarse Pitch														
	4200FM	147811	**317.51**	2.000	0.750	1.654	0.413	0.630	0.321	0.220	0.787	1.750	3		
	4250FM	147812	**407.52**	2.500	0.750	1.654	0.413	0.630	0.321	0.220	0.787	1.750	4		
	4300FM	147813	**609.99**	3.000	1.000	1.969	0.551	0.827	0.384	0.248	0.866	2.000	5		
	4400FM	147814	**751.06**	4.000	1.250	2.362	-	1.772	0.510	0.319	0.866	2.000	5		
	4500FM	147815	**926.01**	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	6		
	4600FM	147816	**1,065.29**	6.000	2.000	3.937	-	2.953	0.758	0.433	1.181	2.500	7		
	4800FM	147817	**1,391.38**	8.000	2.500	5.197	-	-	1.012	0.551	1.496	2.500	8		
	Medium Pitch														
	4300M	148276	**670.97**	3.000	1.000	2.244	0.551	0.8271	0.384	0.248	0.866	2.000	6	0.256	SE__ 14M4
	4400M	148277	**826.20**	4.000	1.250	2.638	-	1.772	0.510	0.315	0.866	2.000	7		
	4500M	148278	**1,018.57**	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	8		
	4600M	148279	**1,171.81**	6.000	2.000	4.213	-	2.953	0.758	0.433	1.181	2.500	10		
	4800M	148280	**1,532.02**	8.000	2.500	5.118	-	-	1.012	0.551	1.496	2.500	12		
	Fine Pitch														
	4300H	148281	**835.68**	3.000	1.000	2.244	0.551	0.827	0.384	0.248	0.866	2.000	8		
	4400H	148282	**1,032.77**	4.000	1.250	2.638	-	1.772	0.510	0.315	0.866	2.000	10		
	4500H	148283	**1,273.23**	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	12		
	4600H	148284	**1,464.75**	6.000	2.000	4.213	-	2.953	0.758	0.433	1.181	2.500	16		
	4800H	148285	**1,915.07**	8.000	2.500	5.118	-	-	1.012	0.551	1.496	2.500	18		

Available Insert

SEET / SEXT	Designation
	SEET14M4AGFN-A
	SEET14M4AGSN-F2
	SEET14M4AGSN-M
	SEXT14M4AGSN-FN
	SEXT14M4AGSN-M
	SEXT14M4AGSN-R8

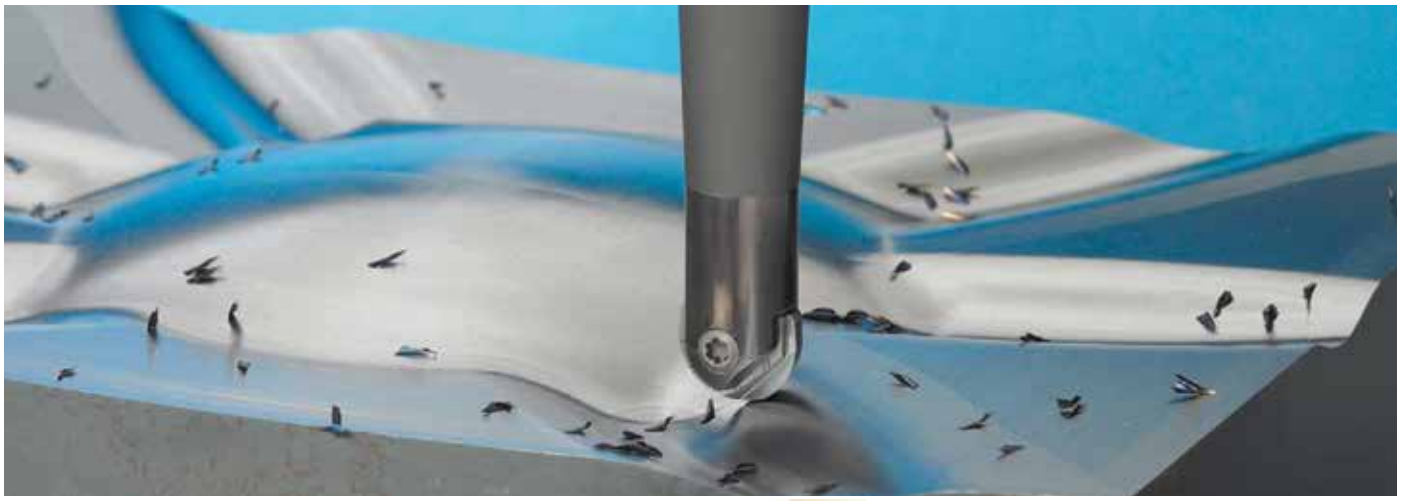
➤ P. E99-100

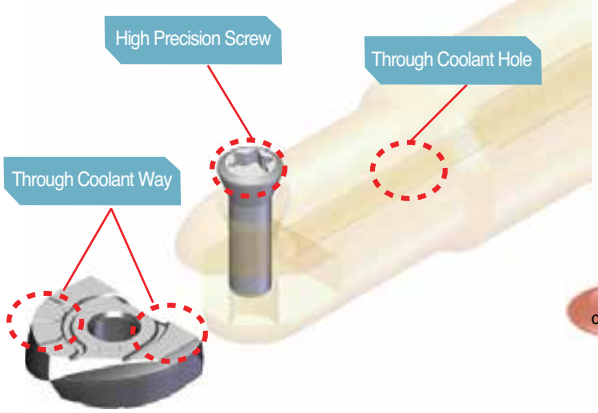
Parts

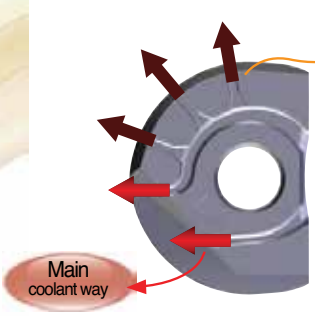
Screw			Wrench			Wrench for Shim			Shim Screw			Shim		
														
FTGA03512	146933	**$ 9.94**	TW15S	146801	**$ 31.83**	HW35L	148192	**$ 2.74**	SHXN0509F	146935	**$ 15.20**	SS42SAF	148193	**$ 10.02**

See pages E124 through E126 for Cutting Conditions

Jet Mill Technical Information





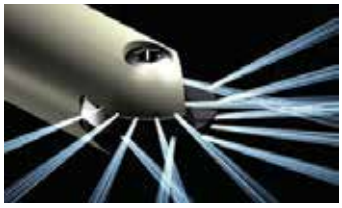


- **High tolerance insert**
  - Run-out of cutting edge : under 0.00079inch
  - Radius form accuracy : under 0.00039inch
- **Through coolant system**

- Four types of inserts are available with one holder
- Single screw for clamping
  : Simple clamping system
- MQL system - Suitable for longer tool life & improving surface quality

Advantages of MQL system

(Minimum quantity lubricant)



- **Environmental friendly system**
- **Decreased coolant cost**
- **Lubrication of cutting edge**
- **Improved chip control**
  (Injection of coolant directly to the cutting edge)
- **Increased tool life & improved surface quality**

JMBE Jet Mill Cutting Conditions

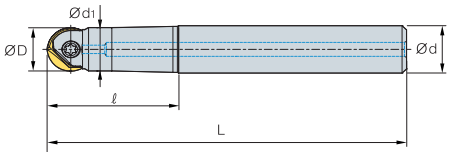
Workpiece	Hardness (HRC)	vc (stm)	fz (ipt)	ap (inch)	ae (inch
Carbon & Alloy Steel	Under 30	350 ~ 800	0.008 ~ 0.01	0.0028D	0.0028D
Carbon & Alloy Steel	30 ~ 40	250 ~ 500	0.004 ~ 0.01	0.0028D	0.0028D
Die Tool Steel, Pre-hardened Steel	30 ~ 40	250 ~ 500	0.004 ~ 0.008	0.002D	0.002D
GC, GCD	-	350 ~ 650	0.01 ~ 0.015	0.0028D	0.0028D
Hardened Steel	50 ~ 60	350 ~ 500	0.004 ~ 0.01	0.0012D	0.0012D
Stainless Steel	-	250 ~ 500	0.004 ~ 0.01	0.002D	0.002D
Aluminum Alloy	-	650 ~ 1000	0.006 ~ 0.020	0.006D	0.006D

Jet Mill

Coolant through

Features:

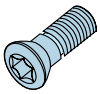
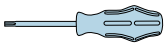
- High accuracy indexable end mill for mold finishing
- Optimum machining of mold has been achieved due to the MQL system
- Easy clamping with simple screw on system



(inch)

Designation	Code No.	Price $	ØD	Ød	ℓ	L	d1	Clamp Screw	Wrench	Insert Size ø
JMBE031138T-S050	148777	**335.03**	5/16	1/2	1.378	3.583	0.283	ETND02506F	TWP07S	5/16
JMBE031217T-S050	147430	**347.10**	5/16	1/2	2.165	4.370	0.283	ETND02506F	TWP07S	5/16
JMBE031295T-S050	147431	**359.21**	5/16	1/2	2.953	5.157	0.283	ETND02506F	TWP07S	5/16
JMBE037138T-S050	147883	**335.03**	3/8	1/2	1.378	3.583	0.335	ETND0307F	TWP08S	3/8
JMBE037217T-S050	147442	**347.10**	3/8	1/2	2.165	4.370	0.335	ETND0307F	TWP08S	3/8
JMBE050217T-S050	147637	**347.10**	1/2	1/2	2.165	4.370	0.433	ETND03509	TWP10S	1/2
JMBE062256T-S062	147638	**371.35**	5/8	5/8	2.559	4.921	0.571	ETND0413	TWP15S	5/8
JMBE062394T-S075	147663	**410.89**	5/8	3/4	3.937	6.693	0.571	ETND0413	TWP15S	5/8
JMBE075453T-S100	147664	**534.43**	3/4	1	4.528	7.677	0.689	ETKD0516	TWP20	3/4
JMBE100354T-S100	147722	**526.33**	1	1	3.543	6.693	0.906	ETKD0620	TWP25	1
JMBE100532T-S125	147723	**570.73**	1	1-1/4	5.315	8.858	0.906	ETKD0620	TWP25	1
JMBE125413T-S125	147776	**544.92**	1-1/4	1-1/4	4.134	7.677	1.142	ETGD0825	TWP40	1-1/4
JMBE125630T-S125	147777	**596.52**	1-1/4	1-1/4	6.299	9.843	1.142	ETGD0825	TWP40	1-1/4

Parts

Clamp Screw							
	ETND02506F	ETND0307F	ETND03509	ETND0413	ETKD0516	ETKD0620	ETGD0825
	147332	147334	147378	147385	147392	147395	147421
	$ 12.14	**$ 12.14**	**$ 10.58**	**$ 12.14**	**$ 14.07**	**$ 14.06**	**$ 14.07**
Wrench							
	TWP07S	TWP08S	TWP10S	TWP15S	TWP20	TWP25	TWP40
	147224	147246	147249	147295	147318	147321	147330
	$ 31.86	**$ 31.86**	**$ 31.86**	**$ 31.86**	**$ 17.41**	**20.98**	**$ 25.21**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Mold Mill

Figure 1

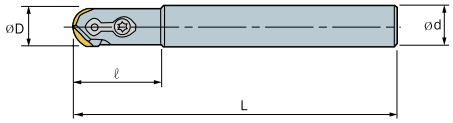
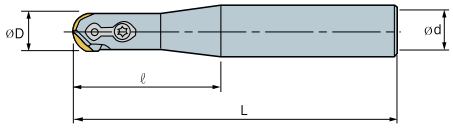


Figure 2

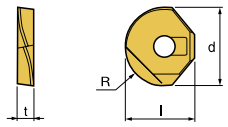


(inch)

Designation		Code No.	Price $	Figure	ØD	Ød	ℓ	L	Available Insert	Parts				
										Screw	Clamp	Clamp Screw	C-Ring	Wrench
MM	5/8"-S	148094	**549.59**	1	0.625	0.625	1.417	5.51						
	5/8"-M	147853	**574.53**	2	0.625	0.625	2.559	6.69	RC 5/8	FTGA0513	CBH4.5R1	CTX04513	ER03	TW20
	5/8"-L	148095	**605.09**	2	0.625	0.625	2.559	7.87						
	3/4"-S	148096	**588.45**	1	0.750	0.750	1.772	6.30						
	3/4"-M	147854	**622.20**	2	0.750	0.750	3.150	7.87	RC 3/4	FTGA0517	CBH4.5R2	CTX04513	ER03	TW20
	3/4"-L	148097	**656.15**	2	0.750	0.750	3.150	9.84						
	1"-S	148098	**633.55**	1	1.000	1.000	1.772	6.30						
	1"-M	147855	**679.50**	2	1.000	1.000	3.543	8.27	RC 1	FTGA0621	CBH5R1	CTX0517	ER04	TW20
	1"-L	148099	**743.29**	2	1.000	1.000	3.543	11.81						
	1-1/8"-S	148100	**656.70**	1	1.125	1.125	2.559	6.89	RC 1-1/8	FTGA0826	CBH6R1	CTX0621	ER05	TW25
	1-1/8"-M	147856	**937.12**	2	1.125	1.125	3.937	9.84						
	1-1/4"-S	148103	**679.72**	1	1.250	1.250	2.205	6.89						
	1-1/4"-M	147857	**741.53**	1	1.250	1.250	3.937	9.84	RC 1-1/4	FTGA0826	CBH6R1	CTX0621	ER05	TW25
	1-1/4"-L	148104	**812.10**	1	1.250	1.250	3.937	13.78						

Available Insert

RC



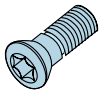
Designation
RC 5/8
RC 3/4
RC 1
RC 1-1/8
RC 1-1/4

➤ P. E97

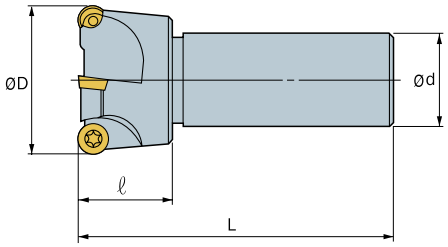
Recommended Cutting Condition

Workpiece	V(sfm)	f(ipt)
Steel HB over 180, Steel (SS41, SM25C)	600~1000	0.004~0.012
Alloy Steel HB under 300, Alloy Steel (SM55C, SCM)	400~800	0.004~0.008
Cast Iron HB under 300 Cast Iron	400~800	0.004~0.012

Parts

Screw		Clamp		Clamp Screw		C-Ring		Wrench	
									
FTGA0513	FTGA0621	CBHR.5R1	CBH5R1	CTX04513	CTX0517	ER03	ER04	TW20	TW25
148194	148196	148198	148214	148217	148218	148220	148221	148291	148223
$ 9.54	**$ 12.11**	**$ 39.68**	**$ 39.68**	**$ 10.17**	**$ 9.54**	**$ 1.70**	**$ 1.70**	**$ 15.44**	**$ 18.60**
FTGA0517	FTGA0826	CBH4.5R2	CBH6R1		CTX0621		ER05		
148195	148197	148213	148215	-	148219	-	148222	-	-
$ 9.45	**$ 10.17**	**$ 39.68**	**$ 39.68**		**$ 11.99**		**$ 1.70**		

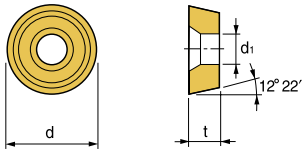
Mold Max



(inch)

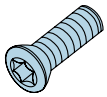
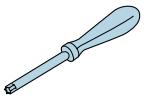
Designation		Code No.	Price $	ØD	Ød	ℓ	L	No. of Inserts	Maximum Depth of Cut	Approach Angle	Axial Rake Angle	Radial Rake Angle
MMEM	4125R	147830	**177.04**	1.250	1.250	1.575	4.724	2	0.197		6°	-3°
	4150R	147831	**221.19**	1.500				3				
	4200R	147832	**265.33**	2.000				4				

Available Insert

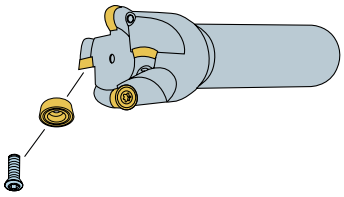
RPMM	Designation
	**RPMM 120400**

➤ P. E98

Parts

Screw			Wrench		
					
FTNC 04511	146424	**$ 5.89**	TW20S	147216	**$ 31.83**

Assembling

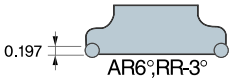


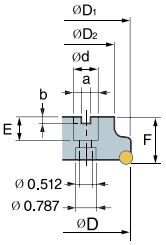
Recommended Cutting Condition

Workpiece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980 230~590	0.003~0.012	Coated (PM25C, PM30P) Uncoated (PM20U)
M			
K			

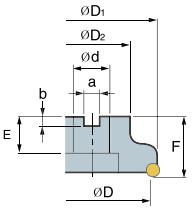
M & K Class grades available, none are stock standard

Mold Max Face Mill





Ø3.150



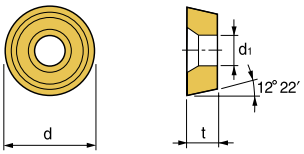
Ø3.937 ~ Ø6.299

(inch)

Designation		Code No. R	Price $	Code No. L	Price $	ØD	Ød	ØD1	ØD2	a	b	E	F	No. of Inserts
MMFM	4050R/L	146997	**257.27**			1.969(50)	0.750	-	1.750	0.321	0.220	0.750	1.620	4
	4080R/L	146125	**432.93**			3.150(80)	1.000	3.646	2.126	0.384	0.248	0.984	1.969	5
	4100R/L	146126	**552.65**			3.937(100)	1.250	4.433	2.756	0.500	0.315	1.260	1.969	6
	4125R/L	148259	**581.41**			4.921(125)	1.500	5.417	2.953	0.626	0.394	1.496	2.480	7
	4160R/L	148260	**753.40**			6.299(160)	2.000	6.795	3.937	0.748	0.433	1.496	2.480	8

Available Insert

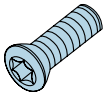
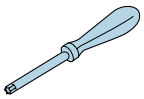
RPMM



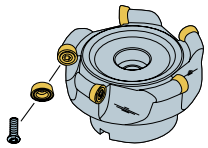
Designation
RPMM 120400

➤ P. E98

Parts

Screw			Wrench		
					
FTNC 04511	146424	**$ 5.89**	TW20S	147216	**$ 31.83**

Assembling



45° Chamfer Mill

Designation	Chamfer Range	Code No.	Price $	Shank	No. of Inserts	Insert
CT 45 - 0.625	0.125" - 0.625" 45°	147113	**284.29**	3/4	1	TC_T 21.5_
CT 45 - 1.125	0.470" - 1.125" 45°	147112	**160.01**	3/4	2	TC_T 32.5_

➤ P. E22-24

Parts

Screw			Wrench		
FTKA02565	146930	**$ 10.72**	TW08P	146596	**$ 11.09**
*FTGA03510	146957	**$ 9.27**	*TW15P	146940	**$ 11.66**

Recommended Cutting Condition

Workpiece	Cutting Condition V(sfm)	Cutting Condition f(ipt)	Grade
P	490~980 230~590	0.003~0.012	Coated (PM25C, PM30P) Uncoated (PM20U)
M			
K			

M & K Class grades available, none are stock standard

Multi-functional 45° Chamfer Tool

Uses
- Centering
- Grooving
- Chamfering

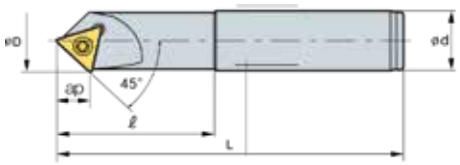


Fig. 1

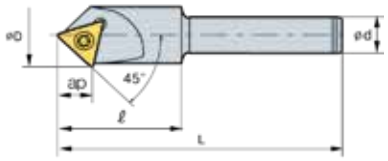


Fig. 2

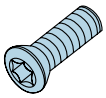
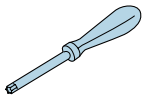
*AR: -12~15° (inch)

Designation	Code No.	Price $	ØD	Ød	ℓ	L	ap	Fig.	Insert
CTP45 1600R-S050	147543	**177.07**	0.87	0.50	1.6	3.5	0.4	2	
CTP45 1600R-S075	147548	**139.04**	0.87	0.75	2.0	4.5	0.4	1	TWX16R-KC
CTP45 1600R-L075	147552	**145.37**	0.87	0.75	2.4	8.0	0.4	1	
CTP45 2200R-S050	147930	**202.38**	1.14	0.50	1.6	3.5	0.6	2	
CTP45 2200R-S100	147931	**154.88**	1.14	1.00	2.0	4.5	0.6	1	TWX22R-KC
CTP45 2200R-L100	147932	**170.71**	1.14	1.00	2.4	8.0	0.6	1	

Available Insert

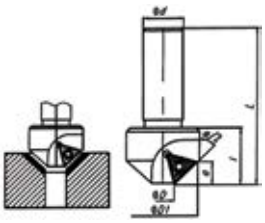
TWX	Designation
	TWX16R-KC **TWX22R-KC**

Parts

Screw			Wrench		
					
FTNA0408	146948	**$ 6.65**	TW15L	148225	**$ 2.49**

Indexable Countersink End Mills

45°, 60°, 82° and 90°,
RH Cut with Weldon Shank

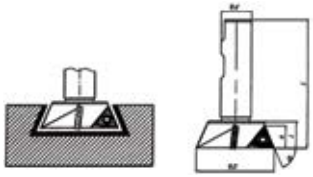


Cutter Body ØD Min.	Cutter Body ØD1 Max.	Shank Dia. Ød	a	l	L	Angle	No. of Inserts	Insert Style	Cutter Code No.	Cutter Price $	Locking Screw Code No.	Locking Screw Price $	Torx Key Code No.	Torx Key Price $
1/2	31/32	1/2	0.559	1	2-1/2	45°	1	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
3/4	1-15/64	3/4	0.559	1-1/4	3-1/2	45°	1	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
1/4	21/32	3/8	0.335	1	2-1/4	60°	1	TDGW-21.51	-	-	143790	**28.27**	143792	**7.86**
1/2	1-1/8	1/2	0.524	1	2-1/2	60°	1	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
3/4	1-3/8	3/4	0.524	1-1/4	3-1/2	60°	3	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
1/4	51/64	3/8	0.291	1	2-1/4	82°	1	TDGW-21.51	-	-	143790	**28.27**	143792	**7.86**
1/2	1-11/32	1/2	0.453	1	2-1/2	82°	1	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
3/4	1-9/16	3/4	0.453	1-1/4	3-1/2	82°	3	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
1/4	53/64	3/8	0.272	1	2-1/4	90°	1	TDGW-21.51	-	-	143790	**28.27**	143792	**7.86**
1/2	1-25/64	1/2	0.425	1	2-1/2	90°	1	TDGW-321	-	-	143762	**1.28**	143752	**7.86**
3/4	1-41/64	3/4	0.425	1-1/4	3-1/2	90°	3	TDGW-321	-	-	143762	**1.28**	143752	**7.86**

➤ P. E103

60° Indexable Dovetail Milling Cutter

RH Cut with Weldon Shank
Note: Cutters are furnished without inserts.



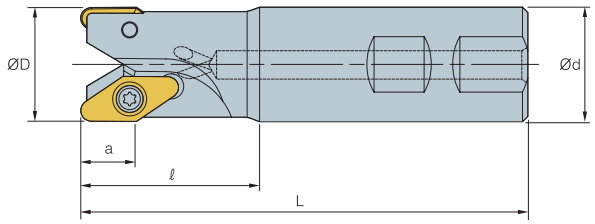
Cutting Dia. ØD	Shank Dia. Ød	Cutting Length a	l	Overall Length L	No. of Inserts	Insert Style	Locking Screw Code No.	Locking Screw Price $	Torx Key Code No.	Torx Key Price $
1/2	3/8	0.325	0.142	2.300	1	TDGW-21.5	143790	**28.27**	143792	**7.86**
3/4	3/8	0.325	0.202	2.390	2	TDGW-21.5	143790	**28.27**	143792	**7.86**
1	1/2	0.325	0.375	2-5/8	3	TDGW-21.5	143790	**28.27**	143792	**7.86**
1-3/8	5/8	0.510	0.550	2.862	3	TDGW-32	143762	**1.28**	143752	**7.86**
1-7/8	7/8	0.510	0.550	3	3	TDGW-32	143762	**1.28**	143752	**7.86**
2-1/4	1	0.700	0.750	3-1/2	3	TDGW-43	-	-	143752	**7.86**

➤ P. E103

Alumi Mill End Mill

Coolant through

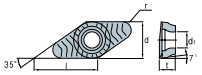
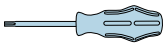
- High rake angle ensures excellent finish and reduces cutting resistance
- For shouldering, curved surface, and slanted shouldering
- Buffed mirror finish of inserts allows outstanding chip control and prevents edge build up



(inch)

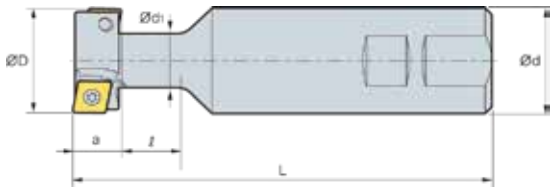
Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AME	2050HR	146887	**294.13**	0.500	0.625	0.315	0.984	3.346	1	VDKT 11T210N-MA
AME	4125HR	-	-	1.250	1.250	0.590	1.969	4.921	2	VCKT 43.57.5N-A
AME	4150HR	-	-	1.500	1.250	0.590	1.969	5.512	3	

Inserts / Parts

Designation		Available Insert	Screw			Wrench		
								
AME	2050 & 2062	VDKT 11T210N-MA	ETNA 02505	147870	**$ 10.80**	TW07S	148209	**$ 31.83**
AME	2075 -2150		ETNA 02506	147596	**$ 10.80**			
AME	4000 type	VCKT 43.57.5N-A	FTNC 04509	146752	**$ 5.86**	TW20S	147216	**$ 31.83**

➤ P. E104

TSC

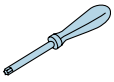


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	a	ℓ	L	No. of Inserts	Insert
TSC	083100R	147892	**487.35**	0.83	1.00	0.41	0.35	0.79	4.25	2	CPMT060204-M
	098100R	147925	**510.82**	0.98	1.00	0.49	0.43	0.83	4.50	2	CPMT080308-M
	126125R	147973	**542.76**	1.26	1.25	0.65	0.55	1.02	5.00	2	CPMT09T308-M
	157125R	147982	**692.43**	1.57	1.25	0.81	0.71	1.26	5.25	2	
	197125R	147985	**917.81**	1.97	1.25	1.00	1.30	1.50	5.50	4	CPMH432-M

AA:0°, AR:5°, RR:-5°

Parts

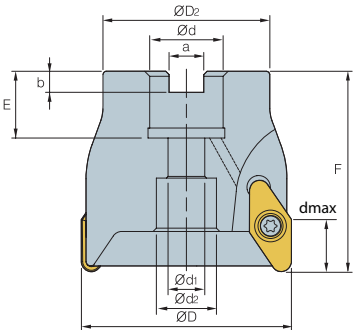
Designation		Insert	Screw			Wrench		
		CPMT CPMH						
CPMT	083100R	CPMT	FTNA02555	147769	**$ 6.78**	TW 08S	146728	**$ 31.83**
CPMT	098100R		FTNA0306	145548	**$ 6.78**	TW 09S	148191	**$ 31.83**
CPMT	126125R		FTNA0407	148006	**$ 8.35**	TW 15S	146801	**$ 31.83**
CPMT	157125R		PTMA0511A	147235	**$ 9.93**	TW 15S	146801	**$ 31.83**
CPMH	197125R	CPMH	PTMA0511A	147235	**$ 9.93**	TW 15S	146801	**$ 31.83**

➤ P. E94

Alumi Mill Face Mill

Coolant through

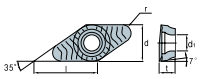
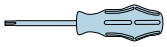
- High rake angle ensures excellent finish and reduces cutting resistance
- For shouldering, curved surface, and slanted shouldering
- Buffed mirror finish of inserts allows outstanding chip control and prevents edge build up



(inch)

Designation		Code No.	Price $	ØD	Ød	$ØD_2$	a	b	E	F	dmax	No. of Inserts
AMFM	4150R	147833	**459.29**	1.500	0.500	1.417	0.252	0.169	0.630	2.165	0.59	3
	4200R	147424	**466.55**	2.000	0.750	1.772	0.321	0.220	0.787	2.165	0.59	3
	4250R	147834	**572.88**	2.500	0.750	1.970	0.321	0.220	0.787	2.362	0.59	4
	4300R	147470	**602.70**	3.000	1.000	2.205	0.384	0.248	0.866	2.362	0.59	4
	4400R	147471	**738.25**	4.000	1.250	2.874	0.510	0.319	1.260	2.362	0.59	5

Inserts / Parts

Designation		Available Insert	Screw				Wrench		
									
AMFM	4150 4200 - 4400	VCKT 43.57.5N-MA	*FTNC04509	146752	**$ 5.86**	FTNC04511	146424	**$ 5.89**	TW20S	147216	**$ 31.83**

➤ P.E104

* For 4150R

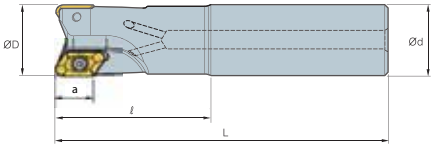
Recommended Cutting Condition

Workpiece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P			
M			
K	Aluminum 750~2000	0.002~0.010	Uncoated (KTM10U)

Alumi Mill-X End Mill

Coolant through

- Multi-dimensional clamping face prevents micro-vibrations during high speed machining
- Buffed mirror finish of inserts allows outstanding chip control and prevents edge build up
- Multi-functional aluminum milling tool: Shouldering, Slotting, Helical Ramping, and Copying

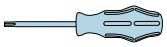


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AME-X	5100HR-A	146411	380.06	1.00	1.00	0.669	2.362	5.512	2	XEKT 19M5
AME-X	5100HR-B	146413	380.06	1.00	1.00	0.669	2.362	5.512	2	
AME-X	5125HR-A	146419	405.47	1.25	1.25	0.669	2.756	5.901	2	
AME-X	5125HR-B	146423	405.47	1.25	1.25	0.669	2.756	5.901	2	
AME-X	5150HR-A	146431	550.64	1.50	1.50	0.669	2.756	6.229	3	
AME-X	5150HR-B	146432	550.64	1.50	1.50	0.669	2.756	6.229	3	

* Type A: Insert Nose R 1/64"~1/8" Type B: Insert Nose R 0.157"~0.197

Inserts / Parts

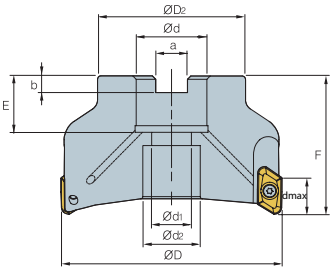
Designation	Available Insert	Screw			Wrench		
							
AME-X HR-A AME-X HR-B	XEKT 19M50 to 19M53 XEKT 19M54 to 19M55	PTKA 0408	148716	$ 9.06	TW15S	146801	$ 31.83

➤ P. E105

Alumi Mill-X Face Mill

Coolant through

- Multi-dimensional clamping face prevents micro-vibrations during high speed machining
- Buffed mirror finish of inserts allows outstanding chip control and prevents edge build up
- Multi-functional aluminum milling tool: Shouldering, Slotting, Helical Ramping, and Copying

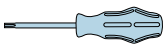


(inch)

Designation		Code No.	Price $	ØD	Ød	ØD2	a	b	E	F	dmax	No. of Inserts
AMFM-X	5150HR-A	146434	524.33	1.50	0.50	1.417	0.252	0.169	0.630	1.50	0.67	3
AMFM-X	5150HR-B	146445	524.33	1.50	0.50	1.417	0.252	0.169	0.630	1.50	0.67	3
AMFM-X	5200HR-A	146467	559.20	2.00	0.75	1.772	0.321	0.220	0.787	1.75	0.67	4
AMFM-X	5200HR-B	146469	559.20	2.00	0.75	1.772	0.321	0.220	0.787	1.75	0.67	4
AMFM-X	5250HR-A	146481	626.06	2.50	0.75	1.772	0.321	0.220	0.787	1.75	0.67	5
AMFM-X	5250HR-B	146490	626.06	2.50	0.75	1.772	0.321	0.220	0.787	1.75	0.67	5
AMFM-X	5300HR-A	146525	649.59	3.00	1.00	2.205	0.384	0.248	0.866	2.00	0.67	5
AMFM-X	5300HR-B	146526	649.59	3.00	1.00	2.205	0.384	0.248	0.866	2.00	0.67	5
AMFM-X	5400HR-A	146534	740.50	4.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	6
AMFM-X	5400HR-B	146535	740.50	4.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	6
AMFM-X	5500HR-A	146544	956.64	5.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	7
AMFM-X	5500HR-B	146550	956.64	5.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	7

* Type A: Insert Nose R 1/64"~1/8" Type B: Insert Nose R 0.157"~0.197

Inserts / Parts

Designation	Available Insert	Screw			Wrench		
							
AMFM-X HR-A AMFM-X HR-B	XEKT 19M50 to 19M53 XEKT 19M54 to 19M55	PTKA 0408	148716	$ 9.06	TW15S	146801	$ 31.83

➤ P. E105

Square Shoulder Milling Cutters 90°

Positive Rake 90° Right Hand Cut

Note: Square shoulder milling cutters are furnished without cutting inserts. Precision and utility inserts can be used.

Tool Angles

- Cutting rake 0°
- Setting angle 90°
- Axial rake 0°

Cutting Dia.	Shank Arbor Hole	No. of Inserts	Insert	Code No.	Price $
2	3/4	3	TPG	141220	**528.67**
2-1/2	1	3	TPU 43_	141200	**771.69**
3	1	4	TPU 43_	141202	**834.06**
4	1-1/2	5	TPU 43_	141204	**1,154.44**
5	1-1/2	6	TPU 43_	141206	**1,629.21**
6	2	7	TPU 43_	141208	**1,954.91**

➤ P. E104

Spare Parts

Cutting Dia.	For 2" Cutters		For 2-1/2" to 6" Cutters	
	Code No.	Price $	Code No.	Price $
Clamp Screw	141061	**10.94**	141210	**26.43**
Shim	-	**-**	141212	**10.50**
Shim Screw	-	**-**	141214	**8.14**
Hex Key	-	**-**	-	**-**

Carbide Insert End Mills 90°

Note: Insert End Mills are furnished without cutting inserts. Precision and utility inserts can be used.

Tool Angles

- Cutting rake 0°
- Setting angle 90°
- Axial rake 0°

Cutting Dia.	Shank	No. of Inserts	Insert	Code No.	Price $
1/2	1/2" Str. Shk. Weldon	1	TPG/TPU-21	141000	**210.08**
3/4	3/4" Str. Shk. Weldon	2	TPG/TPU-21	141002	**202.45**
1	3/4" Str. Shk. Weldon	2	TPG/TPU-22	141003	**249.08**
1-1/4	3/4" Str. Shk. Weldon	2	TPG/TPU/TPC-32	141004	**299.39**
1-1/2	3/4" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141005	**396.88**
2	3/4" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141007	**520.13**
1-1/2	1" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141010	**366.10**
2	1" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141012	**498.37**
1-1/4	R-8 Bridgeport	2	TPG/TPU/TPC-32	141013	**324.38**
1-1/2	R-8 Bridgeport	3	TPG/TPU/TPC-32	141014	**420.44**
1-3/4	R-8 Bridgeport	3	TPG/TPU/TPC-32	141015	**507.35**
2	R-8 Bridgeport	3	TPG/TPU/TPC-32	141016	**510.10**

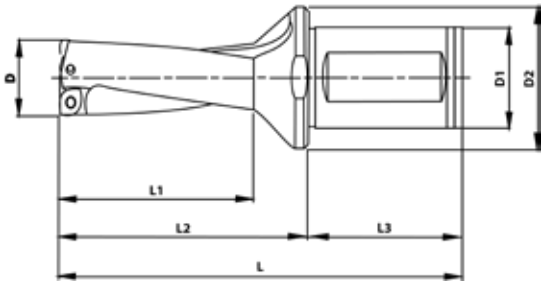
➤ P. E104

Spare Parts

Description	Code No.	Price $
Screw for 1/2"	141244	**16.97**
Screw for 3/4", 7/8", 1"	141060	**10.66**
Screw for 1-1/2"	141064	**10.50**
All other sizes	141061	**10.94**

Pro SP/NP Drill (3XD)

- Strong shank and excellent design optimizes the performance of hole-making
- Special abrasive wear resistant surface treatment protects the shank from machined chips, increasing tool life
- Strengthened drill body provides better performance even in difficult cutting conditions
- Specially designed flute guarantees excellent chip evacuation and long durability



(inch)

Designation		Code No.	Price $	D	D1	D2	L	L1	L2	L3	Insert	Screw	Wrench
PRO-SP	0500 - 1/2	147894	**528.55**	0.500	0.75	-	4.14	1.50	1.97	2.17		FTNA 0204	TW06P
	0531 - 17/32	147895	**528.55**	0.531	0.75	-	4.23	1.59	1.97	2.26	SPMT 050203-MD	**148207**	**147222**
	0562 - 9/16	147896	**528.55**	0.562	0.75	-	4.36	1.69	1.97	2.39		**$ 10.45**	**$ 11.19**
	0625 - 5/8	147897	**528.55**	0.625	1.00	-	4.59	1.88	1.97	2.62		FTKA 02206S	
	0687 - 11/16	147898	**528.55**	0.687	1.00	1.40	5.01	2.07	2.20	2.81	SPMT 060204-MD	**148208**	TW07S
	0750 - 3/4	147899	**528.55**	0.750	1.00	1.40	5.24	2.25	2.20	3.04		**$ 10.42**	**148209**
	0812 - 13/16	147900	**608.30**	0.812	1.00	1.40	5.50	2.44	2.20	3.30	SPMT 070204-MD	FTKA 02565	**$ 31.83**
	0875 - 7/8	147901	**608.30**	0.875	1.00	1.40	5.69	2.63	2.20	3.49		**146930**	
PRO-NP	0937 - 15/16	147902	**608.29**	0.937	1.25	1.80	6.12	2.81	2.36	3.76	NPMT 222408-00	**$ 10.72**	
	1000 - 1"	147903	**658.62**	1.000	1.25	1.80	6.34	3.00	2.36	3.98			
	1031 - 1-1/32	147904	**658.62**	1.031	1.25	1.80	6.44	3.09	2.36	4.08	NPMT 252808-00	FTKA 0307	
	1062 - 1-1/16	147905	**658.62**	1.062	1.25	1.80	6.53	3.19	2.36	4.17		**148210**	
	1125 - 1-1/8	147906	**658.62**	1.125	1.25	1.80	6.80	3.38	2.36	4.44		**$ 10.72**	
	1187 - 1-3/16	147907	**658.62**	1.187	1.25	1.80	7.06	3.56	2.36	4.70	NPMT 293208-00		
	1250 - 1-1/4	147908	**743.36**	1.250	1.25	1.80	7.25	3.75	2.36	4.89			
	1312 - 1-5/16	147909	**743.36**	1.312	1.50	2.00	7.92	3.94	2.76	5.16		FTKA 03508	
	1375 - 1-3/8	147910	**743.36**	1.375	1.50	2.00	8.17	4.16	2.76	5.41	NPMT 334008-00	**148212**	
	1500 - 1-1/2	147912	**783.73**	1.500	1.50	2.00	8.60	4.50	2.76	5.84		**$ 9.75**	
	1562 - 1-9/16	147913	**783.73**	1.562	1.50	2.00	8.78	4.69	2.76	6.02			
	1625 - 1-5/8	147914	**842.09**	1.625	1.50	2.00	9.09	4.88	2.76	6.33			TW15S
	1687 - 1-11/16	147915	**842.09**	1.687	1.50	2.00	9.32	5.06	2.76	6.56			**146801**
	1750 - 1-3/4	147916	**842.09**	1.750	1.50	2.00	9.51	5.25	2.76	6.75		FTKA 0410	**$ 31.83**
	1812 - 1-13/16	147917	**890.98**	1.812	1.50	2.00	9.73	5.44	2.76	6.97	NPMT 415008	**146969**	
	1875 - 1-7/8	147918	**890.98**	1.875	1.50	2.00	9.96	5.63	2.76	7.20		**$ 8.64**	
	1937 - 1-15/16	147919	**890.98**	1.937	1.50	2.00	10.22	5.81	2.76	7.46			
	2000 - 2"	147920	**890.98**	2.000	1.50	2.60	10.41	6.00	2.76	7.65			

➤ P. E95-96

Recommended Cutting Condition

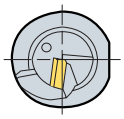
Workpiece	Cutting Condition	
	V(sfm)	f(ipr)
P	250~720	0.004~0.010
M Stainless Steel	120~500	0.004~0.008
K	250~750	0.004~0.016

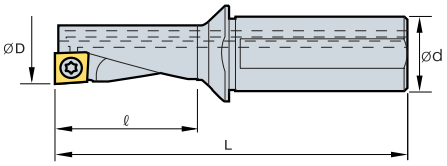
Combo Turning & Drilling Tool

Coolant through

Features
- Double coolant system
- Excellent chip evacuation and tool life
- Ideal flute design minimizing stress concentrations

Uses
- External/Internal turning
- Facing
- Drilling





(inch)

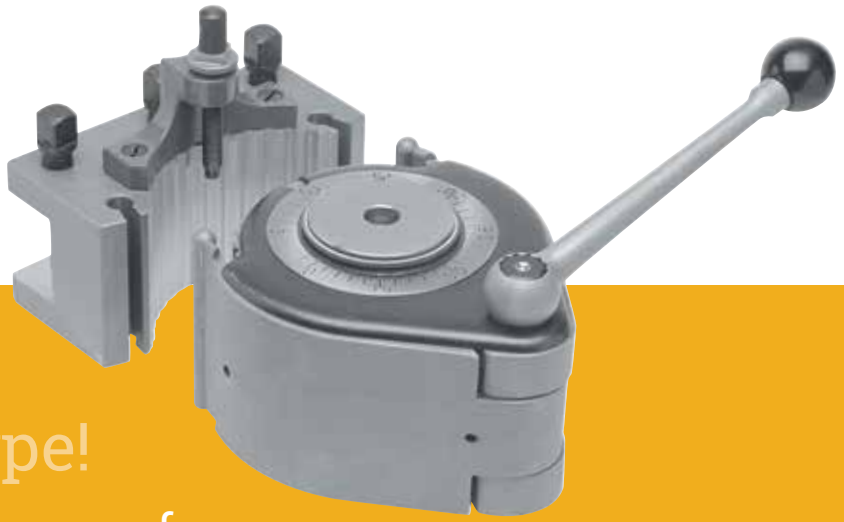
Designation	Code No.	Price $	ØD	Ød	ℓ	L	Insert
CTD10R-2.25D	147993	**374.67**	0.394	0.472	0.886	2.736	QCMT 050204-CM
CTD12R-2.25D	147243	**386.25**	0.472	0.630	1.063	1.890	QCMT 060204-CM
CTD14R-2.25D	147698	**394.15**	0.551	0.630	1.240	3.287	QCMT 070304-CM
CTD16R-2.25D	147008	**402.19**	0.630	0.787	1.417	3.701	QCMT 080304-CM
CTD20R-2.25D	147061	**473.16**	0.787	0.984	1.772	4.370	QCMT 10T304-CM

Available Insert

QCMT-CM

Tool Designation	Insert							
	Designation	Screw			Wrench		
CTD10R-2.25D	QCMT 050204-CM	FTNA0204S	147736	**$ 8.81**	TW06P	147222	**$ 11.19**
CTD12R-2.25D	QCMT 060204-CM	FTNA02205S	147756	**$ 10.38**	TW06P	147222	**$ 11.19**
CTD14R-2.25D	QCMT 070304-CM	FTNA02555	147769	**$ 6.78**	TW07P	146939	**$ 11.19**
CTD16R-2.25D	QCMT 080304-CM	FTNA0306	145548	**$ 6.78**	TW09P	146951	**$ 11.19**
CTD20R-2.25D	QCMT 10T304-CM	FTNA03508	147771	**$ 6.78**	TW15P	146940	**$ 11.66**

➤ P. E97



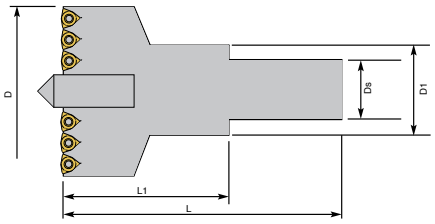
We've got your type!

No matter your machine or preference,
we've got the tool post and holders you need.

See Pages H132-135

Milling Cutters

VMD Max Drill - MX Modular Shank Type



Note: Drill head complete with cartridges - Pilot Drill not included

(mm)

Model	Code No.	Price $	D	Ds	D_1	L_1	L	Pilot Drill	Cartridge
VMD-045050	156000	**865.39**	1.77-1.97	13	28	50	85	PLD-1035 TiN-H	VMC-045050N/T
VMD-050055	156002	**865.39**	1.97-2.17	13	28	50	85	PLD-1035 Tin-H	VMC-050055N/T
VMD-055060	156004	**906.42**	2.17-2.36	16	32	60	100	PLD-1238 Tin-H	VMC-055060N/T
VMD-060065	156006	**906.42**	2.36-2.56	16	32	60	100	PLD-1238 Tin-H	VMC-060065N/T
VMD-065070	156008	**992.71**	2.56-2.76	16	32	60	100	PLD-1238 Tin-H	VMC-065070N/T
VMD-070075	156010	**992.71**	2.76-2.95	22	40	70	115	PLD-1238 Tin-H	VMC-070075N/T
VMD-075080	156012	**1,034.07**	2.95-3.15	22	40	70	115	PLD-1645 Tin-H	VMC-075080N/T
VMD-080085	156014	**1,096.13**	3.15-3.35	22	40	70	115	PLD-1645 Tin-H	VMC-080085N/T
VMD-085090	156016	**961.11**	3.35-3.54	27	48	70	120	PLD-1645 Tin-H	VMC-085090N/T
VMD-090095	156018	**1,096.13**	3.54-3.74	27	48	70	120	PLD-1645 Tin-H	VMC-090095N/T
VMD-095100	156020	**1,178.84**	3.74-3.94	27	48	70	120	PLD-1645 Tin-H	VMC-095100N/T
VMD-100105	156022	**1,178.84**	3.94-4.13	32	58	80	130	PLD-2045 Tin-H	VMC-100105N/T
VMD-105110	156024	**1,178.84**	4.13-4.33	32	58	80	130	PLD-2045 Tin-H	VMC-105110N/T
VMD-110115	156026	**1,178.84**	4.33-4.53	32	58	80	130	PLD-2045 Tin-H	VMC-110115N/T
VMD-115120	156028	**1,406.36**	4.53-4.72	40	70	90	145	PLD-2045 Tin-H	VMC-115120N/T
VMD-120125	156030	**1,571.82**	4.72-4.92	40	70	90	145	PLD-2556 Tin-H	VMC-120125N/T
VMD-125130	156032	**1,344.90**	4.92-5.12	40	70	90	145	PLD-2556 Tin-H	VMC-125130N/T
VMD-130135	156034	**1,571.82**	5.12-5.32	40	70	90	145	PLD-2556 Tin-H	VMC-130135N/T
VMD-135140	156036	**1,571.82**	5.32-5.51	40	70	90	145	PLD-2556 Tin-H	VMC-135140N/T
VMD-140150	156038	**1,902.71**	5.51-5.91	50	80	100	160	PLD-2556 Tin-H	VMC-140150N/T
VMD-150160	156040	**1,902.71**	5.91-6.30	50	80	100	160	PLD-2556 Tin-H	VMC-150160N/T
VMD-160170	156042	**1,944.07**	6.30-6.69	50	80	100	160	PLD-3068 Tin-H	VMC-160170N/T
VMD-170180	156043	**2,481.78**	6.69-7.09	50	80	100	160	PLD-3068 Tin-H	VMC-170180N/T

➤ P. E151 ➤ P. E152

Recommended Speed & Feeds for VMD Max Drill

Material		Cutting Speed	Feed F (mm/rev) For Drill Diameter D (mm)						
			ø45~ø55	ø55~ø60	ø60~ø75	ø75~ø100	ø100~ø105	ø105~ø150	ø150~ø180
Low Alloy Steel	<0.25%	120-180	0.06 - 0.10	0.07 - 0.11	0.08 - 0.12	0.1 - 0.14	0.14 - 0.2	0.08 - 0.12	0.1 - 0.14
High Alloy Steel	>0.25%	110-170	0.06 - 0.10	0.07 - 0.11	0.08 - 0.12	0.1 - 0.14	0.12 - 0.18	0.08 - 0.12	0.1 - 0.14
Low Alloy Steel	<300HRB	90-130	0.06 - 0.10	0.07 - 0.11	0.08 - 0.12	0.1 - 0.14	0.12 - 0.18	0.08 - 0.12	0.1 - 0.14
High Alloy Steel	>300HRB	60-100	0.05 - 0.07	0.05 - 0.07	0.06 - 0.08	0.06 - 0.1	0.09 - 0.13	0.06 - 0.08	0.06 - 0.1
Stainless Steel		60-110	0.04 - 0.07	0.04 - 0.11	0.06 - 0.12	0.08 - 0.14	0.1 - 0.18	0.06 - 0.12	0.08 - 0.14
Grey Cast Iron		120-180	0.07 - 0.13	0.07 - 0.15	0.08 - 0.16	0.1 - 0.18	0.12 - 0.22	0.08 - 0.16	0.1 - 0.18
Cast Iron & Nodular Cast Iron		100-180	0.04 - 0.13	0.07 - 0.15	0.08 - 0.16	0.1 - 0.25	0.12 - 0.26	0.08 - 0.16	0.1 - 0.25
Aluminum Forging Alloys		180-280	0.04 - 0.06	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.12 - 0.2	0.08 - 0.13	0.09 - 0.15
Aluminum Cast Alloys		120-270	0.04 - 0.06	0.06 - 0.12	0.08 - 0.13	0.09 - 0.15	0.12 - 0.2	0.08 - 0.13	0.09 - 0.15

Conversion examples:
0.08mm= 0.0031 In/Rev
0.12mm= 0.00472 In/Rev
0.16mm= 0.0063 In/Rev

Conversion examples:
60-100 (195-325 sfm)
120-180 (390-585 sfm)

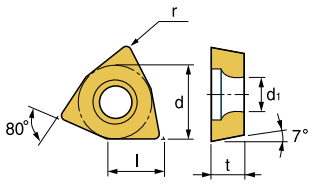
Cartridges for VMD Max Drill

Specify Inner or Outer when ordering

Drilling Range (mm)	Inner Cartridge	Inner Code No.	Inner Price $	Outer Cartridge	Outer Code No.	Outer Price $	Screw	No. of Inserts	Insert
45-50	**VMC-045050N**	156044	**121.34**	**VMC-045050T**	156090	**121.34**	TSB-22045	2	WCMT 1.81.51
50-55	**VMC-050055N**	156046	**151.90**	**VMC-050055T**	156092	**152.07**			
55-60	**VMC-055060N**	156048	**163.75**	**VMC-055060T**	156094	**164.68**	TSB-25055	2	WCMT 21.52
60-65	**VMC-060065N**	156050	**164.70**	**VMC-060065T**	156096	**163.66**	TSB-30070	2	WCMT 2.522
65-70	**VMC-065070N**	156052	**133.46**	**VMC-065070T**	156098	**133.46**			
70-75	**VMC-070075N**	156054	**133.46**	**VMC-070075T**	156100	**133.46**			
75-80	**VMC-075080N**	156056	**206.06**	**VMC-075080T**	156102	**207.40**	TSB-35090	2	WCMT 32.52
80-85	**VMC-080085N**	156058	**145.60**	**VMC-080085T**	156104	**145.60**			
85-90	**VMC-085090N**	156060	**145.60**	**VMC-085090T**	156106	**145.60**			
90-95	**VMC-090095N**	156062	**206.06**	**VMC-090095T**	156108	**206.30**			
95-100	**VMC-095100N**	156064	**145.60**	**VMC-095100T**	156110	**145.60**			
100-105	**VMC-100105N**	156066	**301.62**	**VMC-100105T**	156112	**301.74**	TSB-30070	3	WCMT 2.522
105-110	**VMC-105110N**	156068	**181.97**	**VMC-105110T**	156114	**181.97**	TSB-35090	3	WCMT 32.52
110-115	**VMC-110115N**	156070	**181.97**	**VMC-110115T**	156116	**181.97**			
115-120	**VMC-115120N**	156072	**181.97**	**VMC-115120T**	156118	**181.97**			
120-125	**VMC-120125N**	156074	**181.97**	**VMC-120125T**	156120	**181.97**			
125-130	**VMC-125130N**	156076	**302.01**	**VMC-125130T**	156122	**181.97**			
130-135	**VMC-130135N**	156078	**181.97**	**VMC-130135T**	156124	**181.97**			
135-140	**VMC-135140N**	156080	**301.37**	**VMC-135140T**	156126	**301.62**			
140-150	**VMC-140150N**	156082	**194.14**	**VMC-140150T**	156128	**194.14**	TSB-40110	3	WCMT 432
150-160	**VMC-150160N**	156084	**194.14**	**VMC-150160T**	156130	**194.14**			
160-170	**VMC-160170N**	156086	**301.62**	**VMC-160170T**	156132	**194.14**			
170-180	**VMC-170180N**	156088	**194.14**	**VMC-170180T**	156134	**194.14**			

• Outer cartridge can be ground to achieve the size in the range of head

WCMT-C20/C21 Drilling Inserts for VMD Max Drill



		Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
WCMT 1.81.52-C20	030208		**146242 $ 15.08**									**146537 $ 12.07**	0.149	7/32	3/32	1/32	0.110	MAX DRILL	E150-154
WCMT 21.52-C20	040208		**146237 $ 15.13**									**147155 $ 12.09**	0.169	1/4	3/32	1/32	0.118		
WCMT 2.522-C20	050308		**146236 $ 16.11**										0.212	5/16	5/16	1/32	0.134		
WCMT 32.52-C20	06T308		**146235 $ 16.11**									**146539 $ 12.88**	0.256	3/8	5/32	1/32	0.157		
WCMT432-C20	080408		**146855 $ 19.71**										0.342	1/2	3/16	1/32	0.169		
WCMT 433-C20	080412		**146000 $ 19.71**									**146563 $ 15.78**	0.342	1/2	3/16	3/64	0.169		

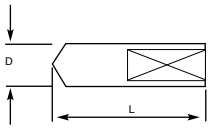
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron - Alum	S Heat Resistant Alloy

Milling Cutters

Parts for VMD Max Drill

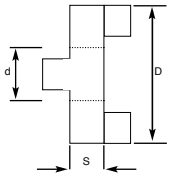
PILOT DRILL



(mm)

Model	Code No.	Price $	D	L
PLD-1035 TiN-H	156146	54.72	10	35
PLD-1238 TiN-H	156148	54.72	12	38
PLD-1645 TiN-H	156150	84.77	16	45
PLD-2045 TiN-H	156152	99.60	20	45
PLD-2556 TiN-H	156154	120.19	25	56
PLD-3068 TiN-H	156156	151.64	30	68

DRIVE RING



(mm)

Model	Code No.	Price $	D	d	S
DVR-281310	156158	62.39	28	13	10
DVR-321610	156160	50.82	32	16	10
DVR-402212	156162	64.72	40	22	12
DVR-482712	156164	73.98	48	27	12
DVR-583214	156166	126.03	58	32	14
DVR-704014	156168	117.86	70	40	14
DVR-805016	156170	145.60	80	50	16

SET SCREW

(mm)

Model	Code No.	Price $	Size	Hex Driver
MTB-08115	156206	5.79	M8 x 11.5mm	4
MTB-10145	156208	5.79	M10 x 14.5mm	5
MTB-12175	156210	5.79	M12 x 17.5mm	6
MTB-12195	156212	5.79	M12 x 19.5mm	6
MTB-16260	156214	6.94	M16 x 26.5mm	8

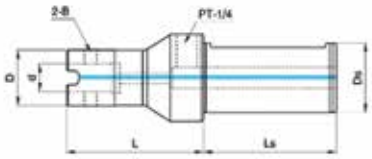
INSERT SCREW

(mm)

Model	Code No.	Price $	Size	Torx Driver
TSB-22045	156136	3.61	M2.2 x 4.5mm	T-6
TSB-25055	156138	3.57	M2.5 x 5.5mm	T-8
TSB-30070	156140	3.57	M3 x 7.0mm	T-8
TSB-35090	156142	3.89	M3.5 x 9.0mm	T-15
TSB-40110	156144	3.89	M4 x 11.0mm	T-15

Assembly for VMD Max Drill

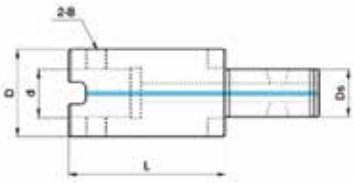
MX Holders for VMD Max Drill — Cylindrical Shank Type



(mm)

Model	Code No.	Price $	Ds	d	L	D	Ls	Screw (B)	Drive Ring
MXA-3213115	156172	**184.88**	32	13	115	28	70	MTB-08115	DVR-281310
MXA-3213200	156174	**277.34**	32	13	200	28	70	MTB-08115	DVR-281310
MXA-3213300	156176	**277.34**	32	13	300	28	70	MTB-08115	DVR-281310
MXA-4016125	156178	**208.00**	40	16	125	32	80	MTB-08115	DVR-321610
MXA-4016200	156180	**231.12**	40	16	200	32	80	MTB-08115	DVR-321610
MXA-4016300	156182	**299.80**	40	16	300	32	80	MTB-08115	DVR-321610
MXA-4022148	156184	**231.12**	40	22	148	40	80	MTB-10145	DVR-402212
MXA-4022200	156186	**277.34**	40	22	200	40	80	MTB-10145	DVR-402212
MXA-4022300	156188	**323.58**	40	22	300	40	80	MTB-10145	DVR-402212
MXA-4027168	156190	**277.34**	40	27	168	48	80	MTB-12175	DVR-482712
MXA-4027300	156192	**369.79**	40	27	300	48	80	MTB-12175	DVR-482712
MXA-4032186	156194	**323.58**	40	32	186	58	80	MTB-12195	DVR-583214
MXA-4032300	156196	**369.79**	40	32	300	58	80	MTB-12195	DVR-583214
MXA-5040186	156198	**369.79**	50	40	186	70	100	MTB-16260	DVR-704014
MXA-5040300	156200	**462.21**	50	40	300	70	100	MTB-16260	DVR-704014
MXA-5050184	156202	**416.00**	50	50	184	80	100	MTB-16260	DVR-805016
MXA-5050300	156204	**531.58**	50	50	300	80	100	MTB-16260	DVR-805016

MXB Extension Holders for VMD Max Drill

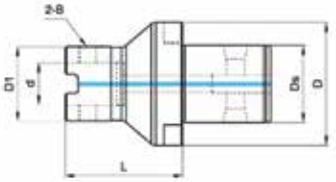


(mm)

Model	Code No.	Price $	Ds	d	L	D	Screw (B)	Drive Ring
MXB-2813115	156216	**184.88**	13	13	115	28	MTB-08115	DVR-281310
MXB-2813150	156218	**196.42**	13	13	150	28	MTB-08115	DVR-281310
MXB-2813200	156220	**196.42**	13	13	200	28	MTB-08115	DVR-281310
MXB-2813300	156222	**231.12**	13	13	300	28	MTB-08115	DVR-281310
MXB-3216115	156224	**196.35**	16	16	115	32	MTB-08115	DVR-321610
MXB-3216200	156226	**208.00**	16	16	200	32	MTB-08115	DVR-321610
MXB-3216300	156228	**254.21**	16	16	300	32	MTB-08115	DVR-321610
MXB-4022113	156230	**208.00**	22	22	113	40	MTB-10145	DVR-402212
MXB-4022200	156232	**231.12**	22	22	200	40	MTB-10145	DVR-402212
MXB-4022300	156234	**277.34**	22	22	300	40	MTB-10145	DVR-402212
MXB-4827113	156236	**231.12**	27	27	113	48	MTB-12175	DVR-482712
MXB-1827200	156238	**277.34**	27	27	200	48	MTB-12175	DVR-482712
MXB-4827300	156240	**323.58**	27	27	300	48	MTB-12175	DVR-482712
MXB-5832186	156242	**300.42**	32	32	186	58	MTB-12195	DVR-583214
MXB-5832300	156244	**369.79**	32	32	300	58	MTB-12195	DVR-583214
MXB-7040186	156246	**323.58**	40	40	186	70	MTB-16260	DVR-704014
MXB-7040300	156248	**416.00**	40	40	300	70	MTB-16260	DVR-704014
MXB-7040500	156250	**577.79**	40	40	500	70	MTB-16260	DVR-704014
MXB-8050204	156252	**369.79**	50	50	204	80	MTB-16260	DVR-805016
MXB-8050300	156254	**508.42**	50	50	300	80	MTB-16260	DVR-805016
MXB-8050500	156256	**693.34**	50	50	500	80	MTB-16260	DVR-805016

Milling Cutters

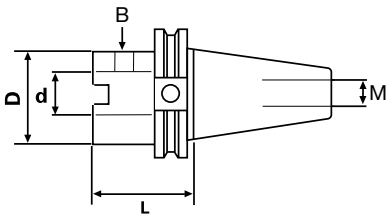
Reducers for VMD Max Drill



(mm)

Model	Code No.	Price $	Ds	d	L	D	D_1	Screw (B)	D1/Drive Ring	D/Drive Ring
MXR-1613100	156270	**184.88**	16	13	100	32	28	MTB-08115	DVR-28130	DVR-32610
MXR-2216100	156272	**184.88**	22	16	100	40	32	MTB-08115	DVR-321610	DVR-402212
MXR-2722100	156274	**184.88**	27	22	100	48	40	MTB-10145	DVR-402212	DVR-482712
MXR-3227100	156276	**231.12**	32	27	100	58	48	MTB-12175	DVR-482712	DVR-583214

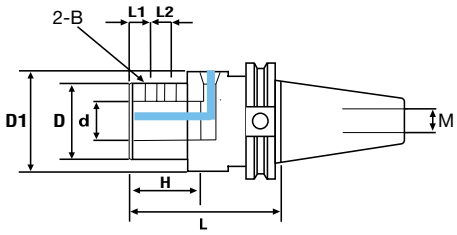
SK MXA Holders for VMD Max Drill



(mm)

Model	Code No.	Price $	d	L	D	M	Screw (B)
SK40-MXA-32065	156258	**231.09**	32	65	58	M16	MTB-12195
SK50-MXA-32070	156260	**346.66**	32	70	58	M24	MTB-12195
SK50-MXA-50070	156262	**416.00**	50	70	80	M24	MTB-16260

SK OMS Side Lock Coolant Feed Holders for VMD Max Drill



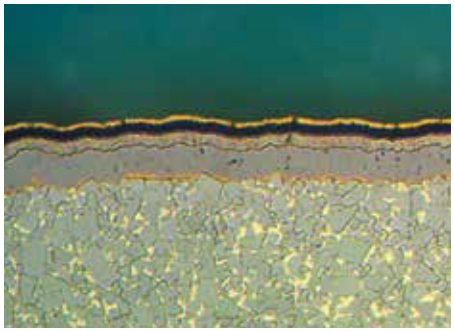
(mm)

Model	Code No.	Price $	d	L	D	D1	H	L_1	L_2	Screw (B)	M
SK40-OMS-20110	156201	**647.12**	20	110	50	78	50	20	-	M12	M16
SK40-OMS-25125	156203	**647.12**	25	125	50	78	60	20	20	M12	M16
SK40-OMS-32130	156205	**647.12**	32	130	65	88	70	20	20	M14	M16
SK50-OMS-20105	156207	**739.54**	20	105	50	78	50	20	-	M12	M24
SK50-OMS-25120	156209	**739.54**	25	120	50	78	60	20	20	M12	M24
SK50-OMS-32125	156211	**739.54**	32	125	65	98	70	20	20	M14	M24
SK50-OMS-40135	156213	**739.54**	40	135	65	98	80	20	25	M16	M24

Special Features

1) Having superior wear resistance and toughness at the same time due to special crystalline structure of film

2) High bonding strength between film and substrate by adopting new-coating technology.



TiN Reduces Friction-Force

Al_2O_3 Wear Resistance, Prevents Edge Build-Up

TiC Wear Resistance

TiCN Enhancing Wear-resistance and toughness by adopting New-Coating Tech.

Cross-sectional view of CVD coating film

Guide of Grade Selection

Turning

Workpiece	Cutting Condition	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	Continuous Cutting			P01	PT10C, PT15C, PT25C, PT30C, PT40C
		PT10C	925(725 ~ 1150)	P10	
		PT25C	918(590 ~ 1,246)	P20	
	Intermittent Cutting	PT20C	600(500 ~ 650)	P30	
		PT30C	500(400 ~ 650)S	P40	
Cast Iron	Continuous Cutting	KT05C	825(500 ~ 975)	K01	KT05C, KT10C
		KT10C	725(500 ~ 875)	K10	
	Intermittent Cutting	KT10C	600(500 ~ 825)	K20	
				K30	
Stainless Steel	Continuous Cutting	MT20C	550(400 ~ 725)	M01	MT20C, PT30C
				M10	
	Intermittent Cutting	PT30C	325(250 ~ 400)	M20	
				M30	

Milling

Workpiece	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	PM25C	825(500 ~ 975)	P20 M20	PM25C, PM30C
			P30 M30	
	PM30C	650(500 ~ 825)	P40 M40	
Cast Iron			K10	KM20C
			K20	
	KM20C	650(500 ~ 825)	K30	

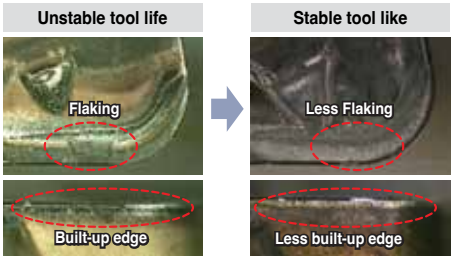
Introducing The New & Improved PT25C

Features of PT25C [New coating layer with oxidation resistance and adhesion]

- Universal grade especially for machining forged automobile components and bearing steel both in continuous and interrupted cutting
- Available for all kinds of steels - carbon steel, alloy steel, rolled steel, tool steel, mild steel, bearing steel and other special kinds of steel
- New coating technology increases welding resistance and chipping resistance, which leads to longer tool life

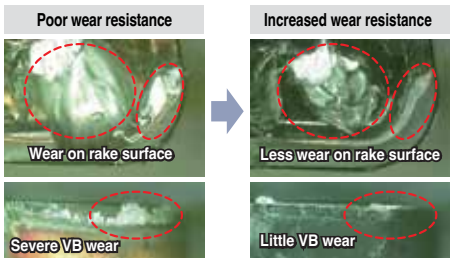
Stable tool life
> Higher production stability

Longer tool life & Higher removal rate
> High cutting conditions and shorter cutting time available



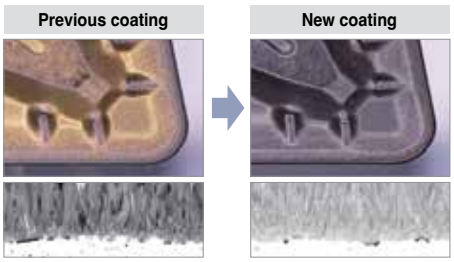
Competitor PT25C

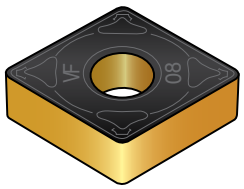
Ideal combination of a grade and chip breakers
> Prolongs tool life
> Wide applications ranging from roughing to finishing



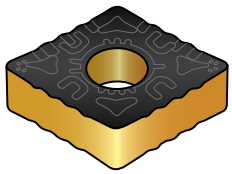
Competitor PT25C

Disperse cutting force > Reduce chipping > Increase tool life > Improved productivity

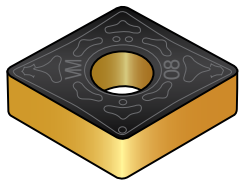




[For Finishing]



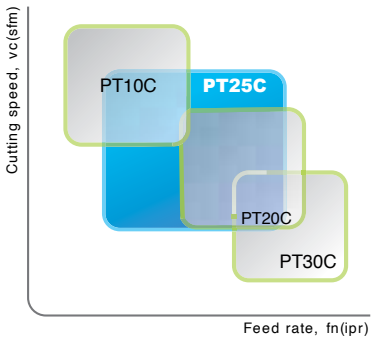
[For medium- finishing]



[For medium machining

Increased wear resistance, welding resistance, and chipping resistance

Application and Features

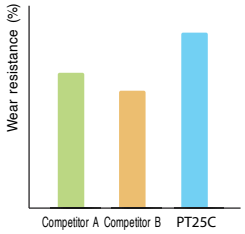


- General grade for all kinds of steel (carbon steel, alloy steel, rolled steel, tool steel, mild steel, bearing steel, etc.) in both continuous and interrupted machining
- Longer tool life in high speed machining due to improved wear resistance and plastic deformation resistance
- Improved coating layer with superior adhesion improves chipping resistance and stability of machining
- Fine finished coating surface provides welding resistance, superior lubrication, and lower cutting load

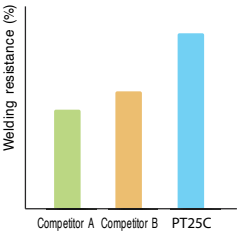
Recommended Cutting

Workpiece			Recommended grade	vc(sfm)	ISO	Application range
P	Steel	Continuous cutting	PT10C	984(656~ 1,312)	P01	PT10C
					P10	
					P15	
			PT25C	918(590~ 1,246)	P20	PT25C
			PT20C	820(492~ 1,148)	P20	PT20C
		Interrupted cutting	PT30C	656(492~ 820)	P30	PT30C
			PTM50C	623(328~ 754)	P35	PTM50C
					P40	

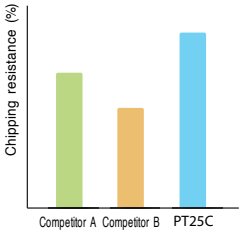
• Wear resistance



• Welding resistance



• Chipping resistance

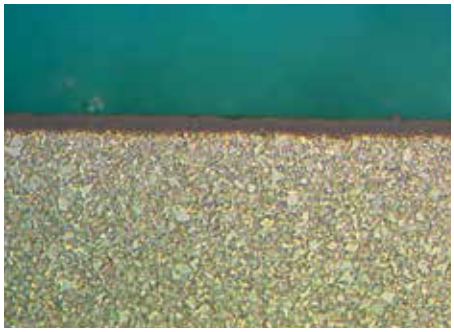


CVD Coating Grades

Grade	ISO	Special Features	Use
PT10C	**P05 - P15**	• For high speed machining of steel • Optimal for high speed machining of steel due to the combination of high hardness substrate and CVD Al_2O_3 film • MT-TiCN + Al_2O_3 + TiN	Turning
PT15C	**P10 - P20**	• For medium to high speed machining of steel • Excellent combination of toughness and wear resistance • Stable consistent cutting performance • MT-TiCN + Al_2O_3 + TiN	Turning
PT25C	**P15 - P30**	• For medium cutting of steel • Excellent combination of tough substrate and coating having superior chipping resistance providing stable and consistent cutting performance • MT-TiCN + Al_2O_3 + TiN	Turning
PT30C	**P25 - P35** **M15 - M25**	• For medium to roughing and intermittent cutting of steel and stainless steel • Toughest substrate provides wide available application range • MT-TiCN + Al_2O_3 + TiN	Turning
PT40C	**P25 - P40** **M15 - M25**	• For medium to roughing and intermittent cutting of steel and stainless steel • Toughest substrate provides wide available application range • MT-TiCN + Al_2O_3 + TiN	Turning
KT05C	**K05 - K15**	• For high speed cutting of cast iron • High hardness substrate and thick CVD Al_2O_3 coating provide excellent wear resistance • MT-TiCN + Al_2O_3 + TiN	Turning
KT10C	**K10 - K25**	• For general, high efficient cutting of cast iron • Special substrate suitable for fast feed and deep depth of cut and thick CVD Al_2O_3 coating provide stable and consistent cutting performance • MT-TiCN + Al_2O_3 + TiN	Turning
MT20C	**M10 - M20**	• For high speed cutting of stainless steel • Special substrate having excellent thermal properties and CVD coating having superior chipping resistance provide longer tool life • MT-TiCN + Al_2O_3 + TiN	Turning
PM10C	**P05 - P15**	• For high speed machining of steel • Optimal for high speed machining of steel due to the combination of high hardness substrate and CVD Al_2O_3 film • MT-TiCN + Al_2O_3 + TiN	Milling
PM25C	**P20 - P30** **M20 - M30**	• For high speed milling of steel and stainless steel • Optimal substrate and coating having optimal wear resistance and toughness provide consistent tool life • MT-TiCN + Al_2O_3 + TiN	Milling
PM30C	**P30 - P40** **M30 - M40**	• For intermittent and rough milling of steel and stainless steel • Tough substrate provide stable cutting even at severe intermittent cutting • MT-TiCN + Al_2O_3 + TiN	Milling
KM20C	**K15 - K25**	• For general milling of cast iron • Tough substrate and fine grain size Al_2O_3 coating provide wide available cutting range for both dry and wet cutting • MT-TiCN + Al_2O_3	Milling

Special Features

1) PVD coating technique has inherent advantage such as superior chipping resistance of coated film itself and maintains the toughness of carbide substrate. Thus it is possible to increase the tool life approximately 2~4 times longer than carbide cutting tools.
2) PVD coating can make sharp cutting edge without blunting of sharp substrate.
3) Ti-base coating film can provide excellent surface finish and high accuracy machining due to the low affinity of Ti film and workpiece.



Cross-sectional view of PVD coating film

SOWA PVD Trio

PM30P Steel milling grade equipped with tough substrate and Nano-TiAlN coating film.

MT30P Exclusive grade for turning of stainless steel consisting of tough substrate and TiAlN coating film.

MM30P Exclusive grade for milling of stainless steel consisting ultra fine grain size substrate and TiAlN coating film.

Guide of Grade Selection

Turning

Workpiece	Cutting Condition	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	TiAlN		600(400 ~ 750)	P10	
				P20	
	TiCN		425(305 ~ 525)	P30	
				P40	
Cast Iron	TiAlN		650(500 ~ 825)	K01	
			550(400 ~ 700)	K10	
	TiAlN		500(325 ~ 650)	K20	
Stainless Steel	TiAlN	MT30P	420(160 ~ 260)	M20	
				M30	
				M40	MT30P

Milling

Workpiece	Cutting Condition	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	TiAlN	PM10P	650(500 ~ 825)	P10	PM10P
				P20	
		PM30P PM40P	400(325 ~ 500)	P30	PM30P
				P40	PM40P
Cast Iron	TiAlN		650(500 ~ 825)	K01	
			550(400 ~ 700)	K10	
	TiAlN		500(325 ~ 650)	K20	
Stainless Steel	TiAlN	MM30P	420(160 ~ 260)	M20	
				M30	
				M40	MM30P

PVD Coating Grades

Grade	ISO	Special Features	Use
PM10P	**P05 - P15**	• For milling of steel • Tough exclusive substrate with Nano-TiAlN coating provides excellent wear resistance and toughness at the same time • Nano-TiAlN coating	Milling
PM30P	**P10 - P25**	• For milling of steel • Tough exclusive substrate with Nano-TiAlN coating provides excellent wear resistance and toughness at the same time • Nano-TiAlN coating	Milling
PM35P	**P25 - P40**	• For milling of steel • Tough exclusive substrate with Nano-TiAlN coating provides excellent wear resistance and toughness at the same time • Nano-TiAlN coating	Milling
PM40P	**P25 - P40**	• For milling of steel • Tough exclusive substrate with Nano-TiAlN coating provides excellent wear resistance and toughness at the same time • Nano-TiAlN coating	Milling
MT30P	**M20 - M35**	• For medium to roughing, intermittent turning of stainless steel • Toughest sub-micron substrate with PVD TiAlN coating prevents edge build-up, thus providing extended and consistent tool life • TiAlN coating	Turning Threading
MM30P	**M35 - M45**	• For medium to rough milling of Stainless Steel • Toughest sub-micron substrate provides excellent cutting performance at fast feed machining • TiAlN coating	Milling
KT15P	**K10 - K20**	• Optimal grade for milling of cast iron at medium to low speed cutting • Available for machining aluminum as well • TiAlN coating	Milling
SM20P	**S20**	• For milling high temp alloys (inconel, titanium, stellite, haynes hastelloy) • Special substrate with increased toughness for better shock resistance • Special coating for increased oxidation resistance and anti-adhesion • TiAl(ME)N coating	Milling
ST10P	**S10**	• For turning high temp alloys (inconel, titanium, stellite, haynes hastelloy) • Unique substrate combining high wear resistance and toughness • Special PVD coating provides good wear resistance and anti-adhesion • TiAl(ME)N coating	Turning

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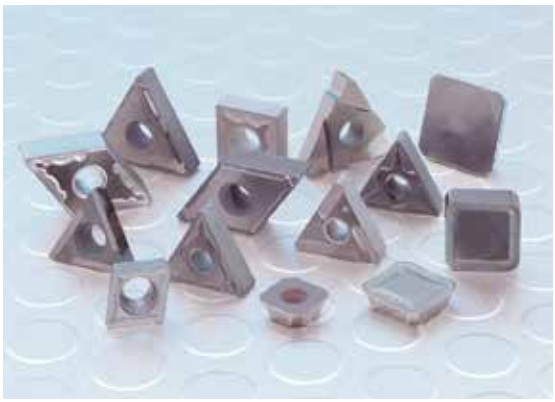
Images are representational only and may not reflect actual product.

Cermet Grades

Comparing with Coated Carbide

1. Suitable for light cutting (finishing)
2. Better wear resistance and surface finish can be acquired at the same cutting condition



Guide of Grade Selection

Turning

Workpiece	Cutting Condition	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	Finishing			P01	
	Light to Medium Cutting	PT10S	650(500 ~ 825)	P10	PT10S
		PT20S	650(425 ~ 825)	P20	PT20S

Milling

Workpiece	Cutting Condition	1st Choice	Cutting Speed (sfm)	ISO	Application Range
Steel	Finishing	PM20S	750(500 ~ 975)	P01	
				P10	PM20S
	Light to Medium Cutting	PM30S	650(500 ~ 825)	P20	PM30S

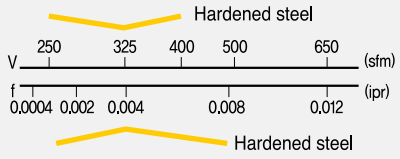
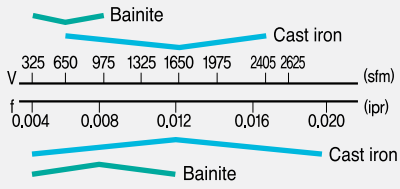
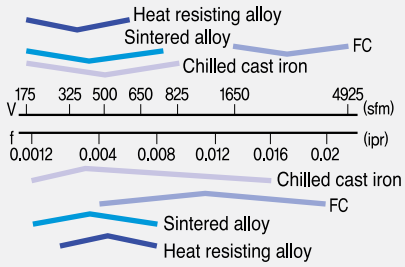
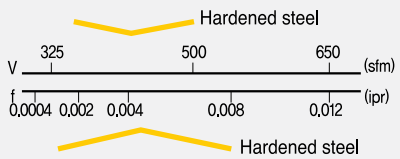
Cermet Grades

SOWA Grade	ISO	Special Features	Use
PT10S	**P05 - P15**	For turning of steel. * Hard cermet having superior wear resistance	Milling Turning
PM20S	**P10 - P20**	For milling and turning of steel. * General grade has optimal wear resistance and toughness at the same time.	Milling Turning
PT20S	**P05 - P15**	Comprehensive grade can cover from roughing to finishing of steel. * Special cermet developed with Functionally-Gradiented-Material technology.	Turning
PM30S	**P20 - P30**	Exclusive for steel milling	Milling

Special Features

CBN is a cutting tool material made under ultra high pressure and temperature sintering mixture of cubic boron nitride and special ceramic binder material. CBN tool is suitable for machining of high speed precise machining of hardened steels and cast irons. Machining with CBN can replace conventional grinding process effectively.

SOWA CBN Grades

Cutting Condition	Special Features	Workpiece
	**KB320** • Suitable for general cutting, intermittent and continuous cutting • Superior toughness • Comprehensive grade having optimal wear resistance and toughness	**Hardened Steel** HRC : 40 ~ 65
	KB330 • Suitable for intermittent cutting	**Hardened Steel** HRC : 40 ~ 65
	**KB350** • Suitable for high speed finishing of cast iron • Comprehensive grade for machining of cast iron	**Cast Iron** HRB : 180 ~ 250
	**KB360** • Suitable for high speed cutting of cast iron and milling of high hardness roll, sintered alloy as well	**FC, Sintered Alloy, Heat Resisting Alloy, Carbide Roll**
	**KB420** • Unsurpassed tool life at high speed cut • High productivity	**Hardened Steel** HRC : 40 ~ 65

Cutting Conditions

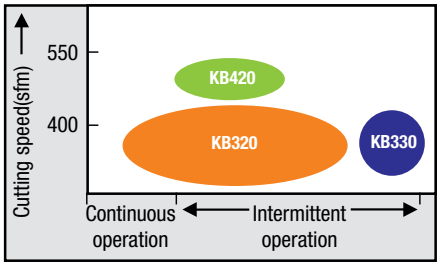
Hardened Steel

Grade

Grade	Application Range	Hardness	TRS (kgm²)
KB320	Comprehensive grade for hardened steel	>45HRC	100 ~ 110
KB330	Severe intermittent cutting	>45HRC	110 ~ 120
KB420	For difficult intermittent operations	>45HRC	110 ~ 120

TRS = Transverse ruptural strength

Application



Cast Iron

Grade

Grade	Application Range	Hardness	TRS (kgm²)
KB350	Cast Iron, Ductile Cast Iron	180 ~ 230 HRB	100 ~ 110
KB360	Machining of Cast Iron	180 ~ 230 HRB	95 ~ 110

TRS = Transverse ruptural strength

Application range

Workpiece	Hardness (HRB)	Part Name	Cutting Speed (sfm)
GC250 (Ferrite & Pearlite)	180	Oil Pump Housing Brake Disc	325 650 1325 1975 2625
GC300 Pearlite		Engine Block Scroll Compressor	KB360 KB350
Alloy Iron Pearlite	250	Brake Drum Liner	
GCD400 Ferrite & Pearlite	150	Differential Case Brake Body	KB350
GCD700 Bainite	300	Knuckle	

Sintered Alloy

Grade

Grade	Application Range	Hardness	TRS (kgm²)
KB360	Machining of sintered alloy, roll, heat resistant alloy	180 ~ 230 HRB	95 ~ 110

TRS = Transverse ruptural strength

Heat Resistant Alloy

Grade

Grade	Application Range	Hardness	TRS (kgm²)
KB360	Machining of sintered alloy, roll, heat resistant alloy	180 ~ 230 HRB	95 ~ 110

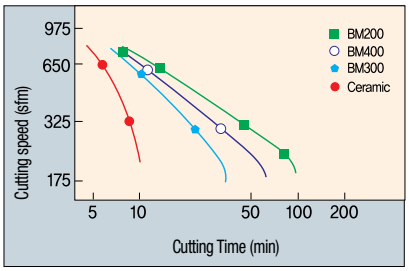
TRS = Transverse ruptural strength

Application range

	Valve seat of gasoline engine	Valve seat of gasoline engine
Flange Cutting	KB360 KB320	KB360 KB330
Traverse Cutting	KB360 KB350	KB360 KB350
Hardness of Workpiece	low Hv300 high	low Hv300 high

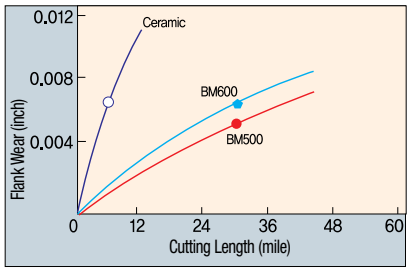
Cutting Test Examples

Heat Treated Steels



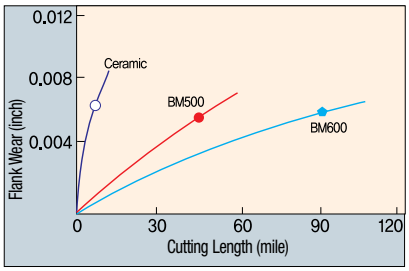
Workpiece : SUJ2(62~64 HRC) Cutting condition : V=250, 325, 650, 825sfm
Insert : SNGN 432 f=0.004ipr d=0.008inch
Cutting condition : BM200,BM300,BM400

Gray Cast Iron (No45B)



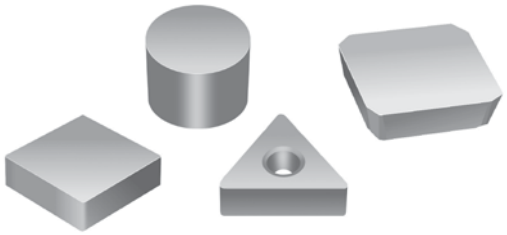
Workpiece : Gray cast irons (No35B) Cutting condition : V=1650sfm f=0.012ipr d=0.005inch, Wet cut

Gray Cast Iron (No35B)



Workpiece : Gray cast irons (No35B) Cutting condition : V=2300sfm f=0.01ipr d=0.01inch, Wet cut

SOWA Ceramic Grades



SOWA Grade	ISO	Special Features	Use
GP100	**P01 - P10** **K01 - K10**	Universal grade for machining cast iron and hardened steel. Tougher alternative to GP300. High thermal shock resistance. Al_2O_3+TiC grade with micrograin structure.	Turning
GP300	**P01 - P15** **K01 - K15**	GP300 was developed for extremely hardened steel and high hardness alloy steel. It is a Al_2O_3+TiCN grade with micrograin structure.	Turning
S300	**P01 - P15** **K01 - K15**	Designed for high cutting speed of cast iron with heavy interruption.	Milling
S400	**P01 - P20** **K01 - K20**	The toughness and hardness of the edge were highly improved against wear for high speed cutting with heavy interruption. Especially in the automobile industry.	Milling

Recommended Cutting Condition

Turning

Grade	Workpiece		Cutting Style	Speed (sfm)	Feed (in/rev)	Depth (D.O.C.) (in)
GP100	Gray Cast Iron	• Gray Cast Iron (FC) • Malleable (FCMB) • Ductile Cast Iron (FCD)	Rough Finish	450 ~ 2,400 600 ~ 3,600	0.008 ~ 0.02 0.012 ~ 0.02	0.118 ~ 0.236 0.004 ~ 0.020
		• Chilled Cast Iron	Rough Finish	90 ~ 300 150 ~ 600	0.004 ~ 0.008 0.002 ~ 0.006	0.020 ~ 0.059 0.004 ~ 0.020
GP300	Steel	• Carbon Steel • Alloy Steel • Bearing Steel	Rough Finish	450 ~ 1,200 600 ~ 2,400	0.008 ~ 0.02 0.002 ~ 0.008	0.079 ~ 0.197 0.004 ~ 0.020
		• Hard Steel (45HRC >)	Rough Finish	60 ~ 300 120 ~ 600	0.004 ~ 0.008 0.002 ~ 0.02	0.020 ~ 0.059 0.004 ~ 0.020

Milling

Grade		Cutting Style	Speed (sfm)	Feed (in/rev)	Depth (D.O.C.) (in)
S300	• Gray Cast Iron	Rough Finish	300 ~ 3,600 450 ~ 4,500	0.012 ~ 0.020 0.012 ~ 0.028	0.118 ~ 0.236 0.004 ~ 0.020
S400	• Ductile Cast Iron • Alloy Steel	Rough Medium Finish	270 ~ 1,500 300 ~ 2,100 600 ~ 4,500	0.004 ~ 0.012 0.004 ~ 0.016 0.004 ~ 0.020	<0.197 <0.118 <0.118

Guide of Grade Selection

Turning

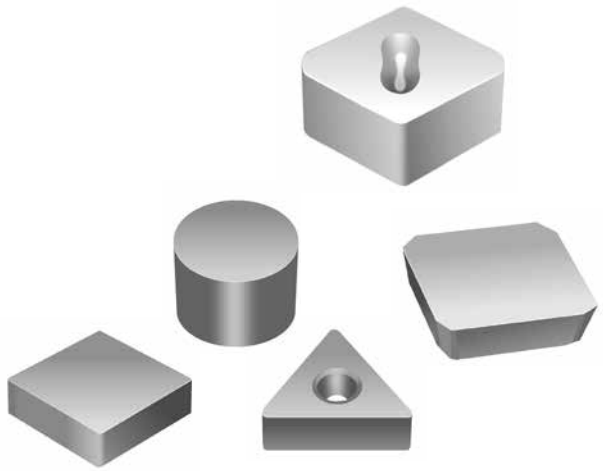
ISO	Application Range	ISO	Application Range
P01		K01	
P10	GP100	K10	GP100
P20	GP300	K20	GP300

Milling

ISO	Application Range	ISO	Application Range
P01		K01	
P10	S300	K10	S300
P20	S400	K20	S400

Choice of Ceramic

	Workpiece / Grade	GP 100 GP 300	GP 100 GP 300
Cast Iron	Gray Cast Iron	●	●
	Chilled Cast Iron	●	●
	Ductile Cast Iron	○	○
Steel	Mild Steel		
	Carbon Steel		
	Alloy Steel	●	
	Forged Steel	●	
	Heat Treated Steel	●	
	High Speed Steel	●	
	High Manganese Steel	○	○
	Stainless Steel		
	Heat Resistant Steel	○	○
	Super Alloys Steel	○	○



Special Features

SOWA uncoated carbide grades have exceptional wear resistance and toughness at the same time through special alloy design with WC, Co, and additives like TaC, TiC etc.

1. Excellent resistance to thermal crack allows cutting with coolant.
2. Specially designed alloys have fine micro structure and low affinity with workpiece.
3. They have excellent toughness in general.

Special Features

ISO	Composition	Characteristics	Workpiece
P	WC-TiC-TaC-Co	Excellent thermal shock resistance and resistance against plastic deformation	Carbon Steel, Alloy Steel
M	WC-TiC-TaC-Co	Comprehensive grades have excellent thermal shock resistance and superior strength	Alloy Steel, Stainless Steel
K	WC-Co	Hard and strong grades	Cast Iron, Non-ferrous metal, Plastic, Acryl, etc

ISO	Grade	Hardness (HRA)	TRS (kg/mm^2)	Young's Modulus ($x103kg/mm^2$)	Thermal Conductivity (cal/cm·Sec·°C)	Thermal Expansion Coefficient ($x10^{-6}$/°C)
P	PT20U	91.8	180	5.6	0.10	5.2
	PM20U	91.5	200	5.3	-	5.2
	PTM30U	91.3	210	5.3	-	5.2
M						
K	KT10U	92.8	190	6.6	0.26	4.7

Special Features

For Turning

Workpiece	1st Choice	Recommended Cutting Speed (sfm)	ISO	Application Range
Steel			P10	
			P20	PT20U, PM20U, PTM30U
	PT20U	425(225 ~ 600)		
	PM20U, PTM30U	425(225 ~ 600)	P30	
Cast Iron			K01	
	KTM10U	500(325 ~ 650)	K10	KTM10U
			K20	KT10U
Aluminum Alloy	KT10U	1650(975 ~ 2625)		
Copper, Bronze	KT10U	650(500 ~ 975)	K30	

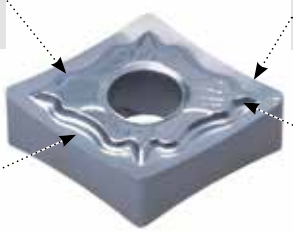
For Milling

Workpiece	1st Choice	Recommended Cutting Speed (sfm)	ISO	Application Range
Steel	PM20U	425(225 ~ 600)	P20	PM20U
	PTM30U	425(225 ~ 600)	P30	PTM30U
Cast Iron	KTM10U	500(325 ~ 650)	K01	
			K10	KTM10U
Aluminum Alloy	KTM10U	1650(975 ~ 2625)	K20	
Copper, Bronze	KTM10U	650(500 ~ 975)	K30	

Aluminum Machining — Chipbreaker A

1. Wide Chip Pocket & High Rake Angle
   - Smooth chip evacuation
   - Prevents edge build-up
   - Reduces cutting force

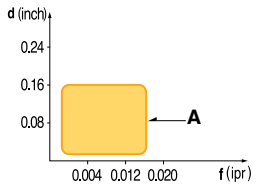
2. Reinforce Cutting Edge Strength
   - Increases main cutting edge toughness
   - Induces smooth chip flow at shallow depth of cut
   - Prevent chipping



4. Curved Cutting Edge
   - Sharp cutting edge provides effective shallow cutting
   - Excellent surface finish of workpiece and smooth cut

3. 2 Step Chip Breaker
   - Induces smooth chip curl.
   - Reduces cutting force at high speed, high feed machining

Recommended Cutting Condition

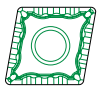
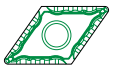
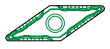
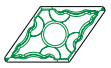
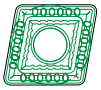
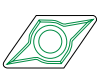


Cutting Condition

Workpiece	Hardness	Recommended Grade	Recommended Cutting Condition		
			Speed (sfm)	Feed (ipr)	Depth of Cut (inch)
Aluminum and Aluminum Alloy	20°~125 HRB	KT10U KTM10U	650 ~ 2650	0.004-0.016	0.020-0.040

1. Workpiece Material : 1010, 1015, 12L14, 5015, 1112, etc.
Soft Steel
Hardness : Under 180HRB (18HRC)

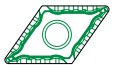
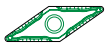
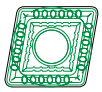
Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.008 ~ 0.020 ~ 0.039 Ultra Finishing	F1	0.002 ~ 0.004 ~ 0.008	PT10S PT20S	925 850						
0.020 ~ 0.039 ~ 0.079 Finishing	F2	0.003 ~ 0.006 ~ 0.012	PT10C PT25C PT20S	1025 957 875 875	CNMG  P. E10	WNMG P. E31	DNMG  P. E14		VNMG  P. E29	
0.03 ~ 0.08 ~ 0.14 Medium-Finishing	A	0.004 ~ 0.010 ~ 0.016	PT25C PT30C	1000 750	CNMG P. E10	WNMG P. E31	DNMG  P. E14	TNMG P. E24		SNMG P. E20
0.031 ~ 0.059 ~ 0.138 Medium-Finishing	F3	0.004 ~ 0.008 ~ 0.014	PT10C PT30C PT20S	975 950 825 825			DNMG P. E15			
0.059 ~ 0.098 ~ 0.197 Medium Cutting, Medium-Roughing	M	0.006 ~ 0.01 ~ 0.02	PT10C PT25C PT30C PT20S	875 825 750 700 725	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG P. E29	SNMG P. E20
0.100 ~ 0.160 ~ 0.280 Roughing	R2	0.01 ~ 0.018 ~ 0.026	PT10C PT25C PT30C	500 475 425 325	CNMG P. E11	WNMG P. E33		TNMG P. E26		SNMG P. E21
0.197 ~ 0.280 ~ 0.440 Heavy Duty	R3	0.02 ~ 0.04 ~ 0.044	PT25C PT30C	500 425 325	CNMM  P. E12					SNMM P. E21
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CC□T	[POS] WC□T	[POS] DC□T	[POS] TC□T	[POS] VC□T VB□T	[POS] SC□T
0.004 ~ 0.020 ~ 0.059 Finishing	F1P	0.002 ~ 0.006 ~ 0.01	PT10C PT25C	925 850 825 825	CCGT P. E8					
0.020 ~ 0.059 ~ 0.138 Medium Cutting, Medium-Roughing	F2P	0.003 ~ 0.008 ~ 0.016	PT10C PT25C PT20S	850 800 750 750	CCMT P. E9		DCMT P. E13	TCMT P. E23		SCMT P. E19
0.039 ~ 0.079 ~ 0.118 Medium Cutting	F3P	0.004 ~ 0.01 ~ 0.014	PT10C PT25C	825 750 725	CCMT P. E9		DCMT  P. E13	TCMT P. E24		SCMT P. E19

: 1st Recommended cutting condition

2. Workpiece Material : 1045,1050,4130, 4140 etc.
General Steel
Hardness : 180~260 HRB (up to 26HRC)

Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.020 ~ 0.039 ~ 0.079 Finishing	F2	0.003 ~ 0.006 ~ 0.012	PT10C PT25C PT20S	725 650 625 600	CNMG P. E10	WNMG P. E31	DNMG  P. E14		VNMG  P. E29	
1.031 ~ 0.059 ~ 0.138 Medium-Finishing	F3	0.004 ~ 0.008 ~ 0.014	PT10C PT25C PT30C PT20S	700 950 600 525 500			DNMG P. E15			
0.059 ~ 0.098 ~ 0.197 General Medium	M	0.004 ~ 0.010 ~ 0.016	PT10C PT25C PT30C PT20S	650 600 550 500 525	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG P. E29	SNMG P. E20
0.098 ~ 0.138 ~ 0.280 Roughing	R2	0.01 ~ 0.018 ~ 0.026	PT10C PT25C PT30C	550 525 500 425	CNMG P. E11	WNMG P. E33		TNMG P. E26		SNMG P. E21
0.160 ~ 0.280 ~ 0.520 Heavy Duty	R3	0.016 ~ 0.028 ~ 0.044	PT10C PT25C PT30C	425 400 375 300	CNMM  P. E12					SNMM P. E21
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CC□T	[POS] WC□T	[POS] DC□T	[POS] TC□T	[POS] VC□T VB□T	[POS] SC□T
0.004 ~ 0.020 ~ 0.059 Finishing	F1P	0.002 ~ 0.006 ~ 0.01	PT10C PT25C	725 650 600 650	CCGT P. E8					
0.020 ~ 0.059 ~ 0.138 Medium-Finishing, General Medium	F2P	0.003 ~ 0.008 ~ 0.016	PT10C PT25C PT30C PT20S	700 625 600 500 550	CCMT P. E9		DCMT P. E13	TCMT P. E23		SCMT P. E19
0.039 ~ 0.079 ~ 0.118 Medium-Roughing	F3P	0.004 ~ 0.01 ~ 0.014	PT10C PT25C PT30C	650 600 550 500	CCMT P. E9		DCMT P. E13	TCMT P. E24		SCMT P. E19

: 1st Recommended cutting condition

3. Workpiece Material : 3310, 8640, 4340.
Hardened Steels
Hardness : 260~350 HRB (26-35 HRC)

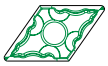
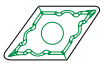
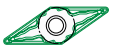
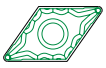
Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.020 ~ 0.039 ~ 0.079 Finishing	F2	0.003 ~ 0.006 ~ 0.012	PT10C PT25C PT20S	425 400 375 375	CNMG P. E10	WNMG P. E31	DNMG P. E14		VNMG P. E29	
0.031 ~ 0.059 ~ 0.138 Medium-Finishing	F3	0.004 ~ 0.008 ~ 0.014	PT25C PT30C PT20S	500 425 375 325			DNMG P. E15			
0.079 ~ 0.118 ~ 0.197 General Medium	M	0.006 ~ 0.01 ~ 0.02	PT10C PT25C PT20S	425 400 325 300	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG P. E29	SNMG P. E20
0.1 ~ 0.14 ~ 0.24 Roughing	R2	0.01 ~ 0.014 ~ 0.024	PT10C PT25C PT30C	325 300 300 275	CNMG P. E11	WNMG P. E33		TNMG P. E26		SNMG P. E21
0.197 ~ 0.24 ~ 0.4 Heavy Duty	R3	0.02 ~ 0.024 ~ 0.04	PT10C PT25C PT30C	300 275 275 225	CNMM P. E12					SNMM P. E21
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CC□T	[POS] WC□T	[POS] DC□T	[POS] TC□T	[POS] VC□T VB□T	[POS] SC□T
0.004 ~ 0.020 ~ 0.059 Finishing	F1P	0.002 ~ 0.006 ~ 0.01	PT10C PT25C	425 400 375 400	CCGT P. E8					
0.008 ~ 0.039 ~ 0.118 Medium-Finishing, General Medium	F2P	0.003 ~ 0.008 ~ 0.016	PT10C PT25C PT20S	400 375 375 325	CCMT P. E9		DCMT P. E13	TCMT P. E23		SCMT P. E19
0.020 ~ 0.059 ~ 0.098 Medium-Roughing	F3P	0.004 ~ 0.01 ~ 0.014	PT10C PT25C PT30C	375 325 325 300	CCMT P. E9		DCMT P. E13	TCMT P. E24		SCMT P. E19

: 1st Recommended cutting condition

4. Workpiece Material : 430, 444, 416, 432, etc.
Stainless Steels
Hardness : 180~260 HRB (up to 26HRC)

Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.02 ~ 0.060 ~ 0.100 Medium-Finishing	A	0.0012 ~ 0.006 ~ 0.012	MT20C MT30P	625 575	CNMG P. E10	WNMG P. E31	DNMG  P. E14	TNMG P. E24		SNMG P. E20
0.04 ~ 0.1 ~ 0.16 Medium-Cutting	SM	0.004 ~ 0.01 ~ 0.016	MT20C MT30P	600 525	CNMG P. E12	WNMG P. E33	DNMG P. E16	TNMG P. E27		SNMG P. E21
0.031 ~ 0.079 ~ 0.157 Medium-Finishing	MM	0.003 ~ 0.01 ~ 0.016	MT20C MT30P	450 560	CNMG P. E11	WNMG P. E32	DNMG  P. E16	TNMG P. E26		
0.039 ~ 0.079 ~ 0.157 General Medium	M	0.004 ~ 0.010 ~ 0.016	MT20C MT30P	525 400	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG  P. E29	SNMG P. E20
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CC□T	[POS] WC□T	[POS] DC□T	[POS] TC□T	[POS] VC□T VB□T	[POS] SC□T
0.005 ~ 0.02 ~ 0.06 Finishing	F1P	0.002 ~ 0.006 ~ 0.01	MT20C MT30P	600 525	CCGT P. E8					
0.02 ~ 0.04 ~ 0.12 Medium-Finishing, General Medium	F2P	0.004 ~ 0.008 ~ 0.012	MT20C MT30P	525 400	CCMT P. E9		DCMT  P. E13	TCMT P. E23		SCMT P. E19
0.04 ~ 0.06 ~ 0.012 Medium-Roughing	F3P	0.006 ~ 0.01 ~ 0.014	MT20C MT30P	500 525	CCMT P. E9		DCMT P. E13	TCMT P. E24		SCMT P. E19

: 1st Recommended cutting condition

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5. Workpiece Material : 304, 316, 202, etc.
Austenitic Stainless Steel
Hardness : 260~350 HRB (26-35 HRC)

Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.02 ~ 0.060 ~ 0.100 Medium-Finishing	**A**	0.0012 ~ 0.006 ~ 0.012	MT20C MT30P	530 450	CNMG P. E10	WNMG P. E31	DNMG P. E14	TNMG P. E24		SNMG P. E20
0.04 ~ 0.1 ~ 0.16 Medium-Cutting	**SM**	0.004 ~ 0.01 ~ 0.016	MT20C MT30P	500 425	CNMG P. E12	WNMG P. E33	DNMG P. E16	TNMG P. E27		SNMG P. E21
0.031 ~ 0.08 ~ 0.16 Medium-Finishing	**MM**	0.004 ~ 0.008 ~ 0.016	MT20C MT30P	450 560	CNMG P. E11	WNMG P. E32	DNMG P. E16	TNMG P. E26		
0.04 ~ 0.08 ~ 0.16 General Medium	**M**	0.004 ~ 0.008 ~ 0.016	MT20C MT30P	425 400	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG P. E29	SNMG P. E20
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CC□T	[POS] WC□T	[POS] DC□T	[POS] TC□T	[POS] VC□T VB□T	[POS] SC□T
0.005 ~ 0.02 ~ 0.06 Finishing	**F1P**	0.002 ~ 0.004 ~ 0.008	MT20C MT30P	500 425	CCGT P. E8					
0.02 ~ 0.04 ~ 0.12 Medium-Finishing, General Medium	**F2P**	0.003 ~ 0.006 ~ 0.012	MT20C MT30P	450 400	CCMT P. E9		DCMT P. E13	TCMT P. E23		SCMT P. E19
0.04 ~ 0.06 ~ 0.012 Medium-Roughing	**F3P**	0.004 ~ 0.008 ~ 0.012	MT20C MT30P	425 350	CCMT P. E9		DCMT P. E13	TCMT P. E24		SCMT P. E19

: 1st Recommended cutting condition

6. Workpiece Material : G1800, G2500, G3000, G3500, M3210, M4504 etc.
Gray Cast Iron, Ductile Cast Iron
Hardness : 135~185 HRB (up to 18HRC)
Tensile Strength : Under 450N/ß±

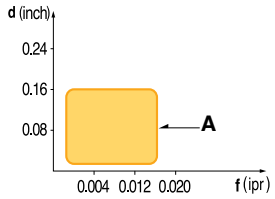
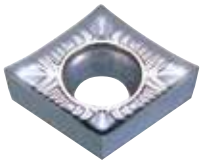
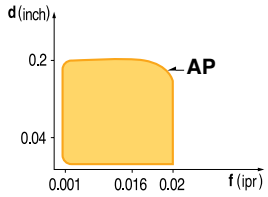
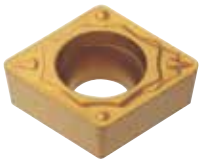
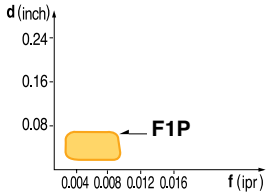
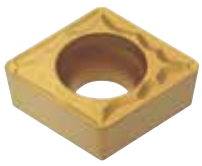
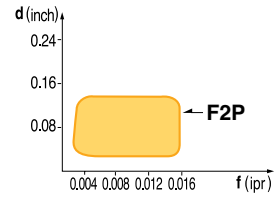
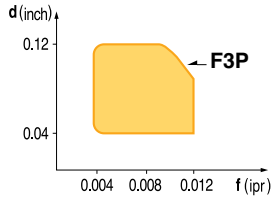
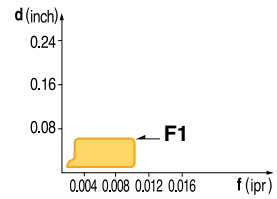
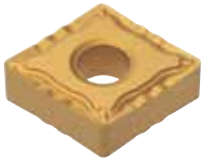
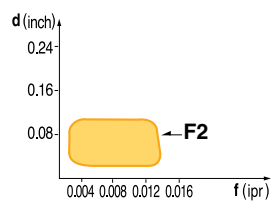
Chipbreaker, Grade, Cutting Condition Recommendation

Workpiece	Chipbreaker & Grade Selection				Insert Shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	CNMG CNGG	WNMG WNGG	DNMG DNGG	TNMG TNGG	VNMG WNGG	SNMG SNGG
0.005 ~ 0.015 ~ 0.04 Finishing		0.002 ~ 0.004 ~ 0.02	KB350 KT05C	650 ~ 1650 ~ 2300 975						SNMA P. E19
0.02 ~ 0.08 ~ 0.14 Medium-Finishing	G	0.004 ~ 0.008 ~ 0.012	KT05C	425 ~ 825 ~ 1150			DNMG P. E15	TNMG P. E25		SNMG P. E20
0.04 ~ 0.1 ~ 0.16 General Medium	M	0.006 ~ 0.012 ~ 0.02	KT05C KT10C	500 ~ 825 ~ 1150	CNMG P. E10	WNMG P. E32	DNMG P. E15	TNMG P. E25	VNMG P. E24	SNMG P. E20
0.004 ~ 0.12 ~ 0.18 Medium-Roughing	R1	0.008 ~ 0.014 ~ 0.02	KT05C KT10C	825 725	CNMG P. E11	WNMG P. E32		TNMG P. E26		SNMG P. E21
0.01 ~ 0.14 ~ 0.24 Roughing	R2	0.01 ~ 0.014 ~ 0.024	PT10C PT22C PT30C	325 300 300 275	CNMG P. E11	WNMG P. E33		TNMG P. E26		SNMG P. E21
0.16 ~ 0.26 ~ 0.4 Heavy Duty	R3	0.012 ~ 0.0028 ~ 1.043	KT10C	500	CNMM P. E12					SNMM P. E21
Depth of Cut (inch)	**Chipbreaker**	**Feed (ipr)**	**Grade**	**Cutting Speed (sfm)**	[POS] CCMT	[POS] WCMT	[POS] DCMT	[POS] TCMT	[POS] VCMT VBMT	[POS] SCMT
0.02 ~ 0.06 ~ 0.12 Medium-Finishing	F2P	0.003 ~ 0.008 ~ 0.016	KT05C KT10C	825 725	CCMT P. E8		DCMT P. E14	TCMT P. E25		SCMT P. E20
0.04 ~ 0.08 ~ 0.14 Medium Cutting	F3P	0.004 ~ 0.01 ~ 0.016	KT05C KT10C	825 725	CCMT P. E9		DCMT P. E14	TCMT P. E26		SCMT P. E20

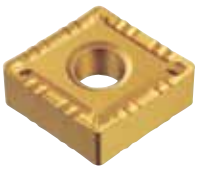
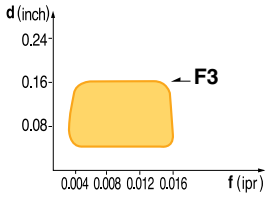
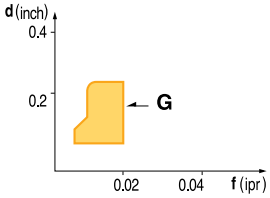
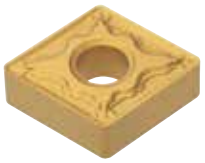
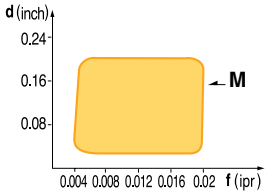
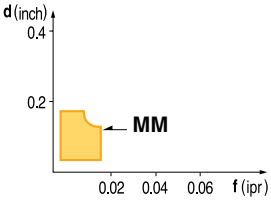
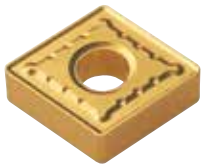
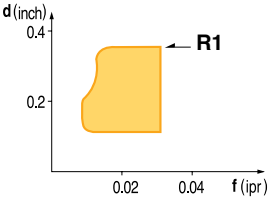
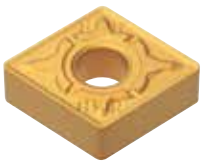
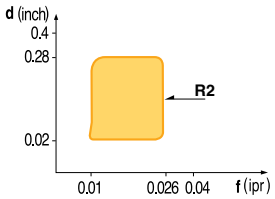
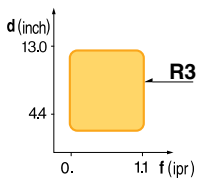
: 1st Recommended cutting condition

Turning Chipbreakers

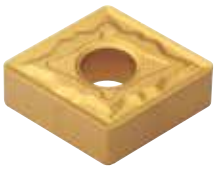
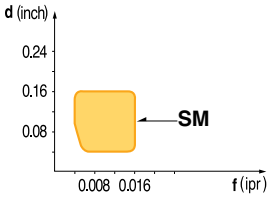
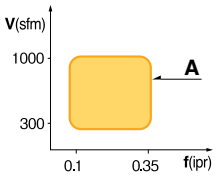
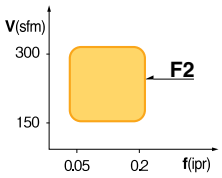
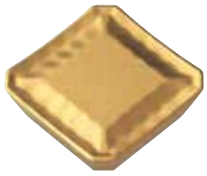
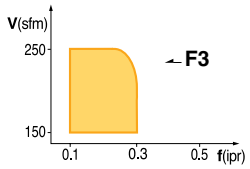
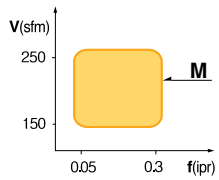
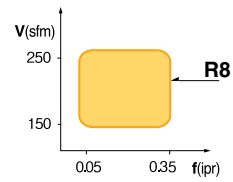
TURNING CHIPBREAKERS

Shape	Application Range	Special Feature
A (Neg)		**For Light-Alloy, Stainless-Steel Machining** · Sharp cutting edge generates low cutting force. · Specially designed tough main cutting edge. · Suitable for cutting of low carbon steel, stainless steel, aluminum. **Recommended Cutting Conditions** d = 0.03 ~ 0.16inch f = 0.004 ~ 0.016ipr
AP (Pos) 		**For Aluminum Cutting** · Exclusive chip breaker for aluminum and aluminum alloy. **Recommended Cutting Conditions** d = 0.04 ~ 0.2inch f = 0.001 ~ 0.02ipr
F1P (Pos) 		**For Finishing** · Excellent chip control at shallow depth of cut and low feed rate. · Excellent surface finish of workpiece due to reduced cutting force. · Suitable for fine boring. **Recommended Cutting Conditions** d = 0.004 ~ 0.06inch f = 0.002 ~ 0.01ipr
F2P (Pos) 		**For Medium cutting** · Excellent chip control at wide range of cutting conditions. · Suitable for stainless steel cutting. **Recommended Cutting Conditions** d = 0.02 ~ 0.14inch f = 0.002 ~ 0.016ipr
F3P (Pos)		**For Medium Cutting** · Suitable for intermittent cutting and cast iron machining. · Good surface finish due to low cutting force. · Suitable for both boring and outer diameter turning. **Recommended Cutting Conditions** d = 0.04 ~ 0.12inch f = 0.004 ~ 0.012ipr
F1 (Neg)		**For Ultra-Fine Finishing, Finishing** · Suitable for applications requiring fine surface finish · Generates low cutting force due to sharp cutting edge design. · Specially designed chip breaker ensures stable chip control at ultra fine-finishing condition. **Recommended Cutting Conditions** d = 0.004~0.006inch f = 0.0012~0.01ipr
F2 (Neg) 		**For Finishing** · Excellent chip control at varied depth of cut cutting. · Strong cutting edge toughness due to special design. **Recommended Cutting Conditions** d = 0.012 ~ 0.1inch f = 0.002 ~ 0.14ipr

Neg = Negative
Pos = Positive

	Shape	Application Range	Special Feature
TURNING CHIPBREAKERS	**F3** (Neg) 		**For Medium to Finish Cutting** · Excellent for copying of special shape. · Smooth chip control at shallow cut as well as deep depth of cut. **Recommended Cutting Conditions** d = 0.03 ~ 0.16inch f = 0.003 ~ 0.016ipr
	G (Neg)		**For General Cutting** · Suitable for general cutting condition cutting. **Recommended Cutting Conditions** d = 0.08 ~ 0.24inch f = 0.01 ~ 0.02ipr
	M (Neg) 		**For Medium Cutting** · Wide available chip control range from medium-finishing to medium-roughing. · Suitable chip breaker for CNC machining. **Recommended Cutting Conditions** d = 0.01 ~ 0.2inch f = 0.004 ~ 0.02ipr
	MM (Neg)		**For Medium to Roughing of Stainless-Steel** · Exclusive chip breaker for stainless steel. **Recommended Cutting Conditions** d = 0.04 ~ 0.2inch f = 0.004 ~ 0.02ipr
	R1 (Neg) 		**For Medium to Roughing** · Suitable for deep depth of cut and fast feed cutting of steel and cast iron. · Suitable for intermittent cutting. **Recommended Cutting Conditions** d = 0.12 ~ 0.32inch f = 0.012 ~ 0.032ipr
	R2 (Neg) 		**For Roughing** · Excellent chip control at deep depth of cut and fast feed rate. · Strong cutting edge makes excellent cutting performance at intermittent cutting. **Recommended Cutting Conditions** d = 0.1 ~ 0.28inch f = 0.01 ~ 0.028ipr
	R3 (Neg)		**For Heavy Duty Cutting** · Specially designed toughest cutting edge provides superior cutting performance at deep depth of cut and fast feed rate. · Unique design of dot on cutting edge makes smooth chip flow and reduce cutting force. **Recommended Cutting Conditions** d = 0.16 ~ 0.5inch f = 0.018 ~ 0.04ipr

Neg = Negative

	Shape	Application Range	Special Feature
	SM (Neg) 		**For Medium Cutting of Stainless-Steel** · Exclusive design for stainless steel cutting provides longer tool life · Wear resistance has been reinforced through high rake angle of chip breaker land. **Recommended Cutting Conditions** d = 0.04 ~ 0.16inch f = 0.004 ~ 0.016ipr
MILLING CHIPBREAKERS	**A** (Pos)		**For Aluminum Milling** · Suitable design for aluminum machining, has sharp cutting edge, mirror face of insert top which prevent build up edge, provides excellent cutting performance. **Recommended Cutting Conditions** d = 0.02 ~ 0.2inch f = 0.004 ~ 0.014ipr
	F2 (Pos)		**For Finishing of Milling** · Special design for light cutting of gummy materials like stainless steel and hard to machine material provides fine surface finish and longer tool life. **Recommended Cutting Conditions** d = 0.02 ~ 0.2inch f = 0.002 ~ 0.008ipr
	F3 (Pos) 		**For General Milling** · Possible to increase productivity through increase feed and depth. · Excellent heat resistance due to the special chip breaker design of top face of insert. **Recommended Cutting Conditions** d = 0.004 ~ 0.2inch f = 0.004 ~ 0.012ipr
	M (Pos)		**For Medium Cutting of Milling** · Chip breaker, designed general cutting conditions, provides wide range of available applications. · Ground type and sintered type are available. **Recommended Cutting Conditions** d = 0.04 ~ 0.2inch f = 0.002 ~ 0.012ipr
	R8 (Pos)		**For Roughing of Milling** · Strongest cutting edge strength provides stable tool life even in case of severe cutting with heavy intermittent and heavy roughing. **Recommended Cutting Conditions** d = 0.06 ~ 0.2inch f = 0.002 ~ 0.014ipr

Neg = Negative
Pos = Positive

APPLICATION			SOWA	KORLOY	SUMITO-MO	SANDVIK	KENNA-METAL	KYOCERA	MITSUBISHI	ISCAR	TOSHIBA	SECO	WALTER	DIJECT
NEGA•TYPE	STEELS	EXTREME FINISHING	F1	HU	FA	QF	FF	GP DP CF	FH	SF	TF	FF1 F1, F2		F1 FA
		FINISHING	F2	HF	SU, SK SP LU	PF	FN FP FW	CQ HQ	SH	NF	TS, AS 11 17	MF2	NF NF3 NF5	FT UA
		MEDIUM FINISHING	F3	HC	SX UU	SM		CQ HQ	SH	NF RF LF	MJ	MF1	NS4 NS8	GP UR PF
		MEDIUM ROUGHING	M	HM	GU UX UG	PM QM	MN MP MW	GS HS CS	MA MH	TF PP	TM	M3 MR3	NM, NM4 NM5, NM6 NM7	UB GG
		ROUGHING	R2	HR	MU MX	PR	RN CT	GT HT ★	GH	NR	TH	MR4 M5 MR7	NR5 NR7	UD
		HEAVY	R3	HH	HG MP HP	HR	RH SP HP	HX	HZ, HV HH HX	TNM	TU 57 65	RR9 R4		UC
		WIPER	W	HW	LUW GUW	WF WM WR	MW FW	WQ	MW SW	WF WG	ASW	M3 M5	NF, PF NM, PM	
	GENERAL		G	B25	UZ	23	MG	★	MT, MV	GN				GN
	STAINLESS STEEL MILD STEEL		A SM MM	HA HS	SU, EX MU, FL (GU)	MF MM, QM MR	FF, FW FP, MP MW, RN	GU, HU XP, XQ XS	FS, FJ SH, MJ MS, GJ GH	PP TF	TF SS SA TU, MS	MF1 MF3 M5	NS4 NM4 NR7	SF
	CAST IRON		R2	GR	UZ UX ★	KF KM, QM KR, QR	FF, FW MP, MW RN	GC ★ ZS	★ ★	GN	★ 33, CM ★	MF3 M5	NS4, NS8 ★ NM4	
	ALUMINUM		A	HA			F GP MS	AH		PP				
POSI•TYPE	STEEL CAST IRON	FINISHING	F1P	HFP	FP FK	PF KF	MT-UF MT-LF GT-LF	GP DP HQ	FV SQ	°/ SM	01 PF	F1	PF4 PF5	FT
	STEEL CAST IRON	MEDIUM FINISHING	F2P	HMP	SJ, SU SK	(PM) (KM)	MF	XQ HQ	R/L R/L-F	14, SM 17, 19	PS 23 PM	F1 F2	PS4 PS5	
	STEEL CAST IRON	MEDIUM ROUGHING	F3P	C25	SF MU	(PR) (KR)	MT-MF GM	★ G	MV MQ ★	19	24 ★	F2	PM2, PM5 (PR5)	
	ALUMINUM & ALLOY		AP	AK	AG	AL	HP	A3		AS	PP	AI		ALU ACB
	STAINLESS STEEL MILD STEEL		F2P	HMP	MU	MF, MM MR	LF	(XQ)	FV ★	14, SM 17, 19	SS		PS4 PM5	

★No Name ★Simple Type

TURNING

ISO	SOWA			KORLOY			SUMITOMO			KYOCERA			ISCAR			SANDVIK			SECO			KENNAMETAL			TOSHIBA			MITSUBISHI			HITACHI			VALENITE			WALTER		
	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET	TUNGSTEN CARBIDE	COATED	CERMET
P		PT10C	PT10S	ST05		CN100	ST10P	AC700G	T110A		CR7015	TN30			IC20N	S1P	GC4005	CT5005	TTX	TP100		K45	KC9010	HT2		T9005	NS520	UE6005	NX1010	SRN5	GM8015	CH350	S1F	SV305			WAP10		
				ST10	NC310	CT10						PV30★	IC70	IC507				CT5015					KC9125	K125															
		PT20S		ST15	NC3015	CC115★	ST20E	AC900G	T2000Z★				IC50M	IC9015	IC520N★	SMA	GC4015		TTM	TP1000	CM		KC9025	HTX	TX10S	T9015	GT530★		STi10T	UC6010		WS20B		CZ25★	VC6	SV310	VC83		
	PT20U			ST20								PV60★						CT525												NX2525									
	PM20U	PT20C	PT20S	MA2	NC3020	CN200	A30	AC2000	T1200A	PW30	CR7025	TN60		IC9025		SM30						KM	KC8050	PS5	TX20	T9025	NS530	STi20T	UE6020	AP25N★	EX35	GM8020	CH530	VC5	SV325			WAP20	
								New AC2000	T3000Z★			PV7020★			IC30N★	S30T	GC4025	GC1525°/		TP200	C15M		KC935	KZ205						UP35N★									
	PTM30U			ST30A		CN20	ST40E		T130A		CA5025	TN6020	IC54	IC3028★	IC40T				TTR	TP2000				KT175	TX30	T9035	NS540	UTi20T	UC6025		EX40		CH550		SV330				
				ST30N																		K420	KC9040							NX335									
		PT30C		ST40	NC330			AC3000	CN8000			TN90			IC530N★	S6	GC4035			TP300			KC9045		TX40	TD930	N308		UE6035		EX45	GM8035	CH570	VC56			WAP30		
M		MT20C	PT20S	U10			U10E				CA6015	PV60★	IC08			H13A	GC2015		AT10	TP400		K313	KC9150	K125			NS520		US7020	AP25N★	WAM10B	GM25		VC27					
				U20	NC9020	CN200	U2	AC304				TN60		IC9025			GC2025	CT525	AT15			K68	KC9215	PS5	TU10	T6020			UP20M★	NX2525									
				A30					T1200A		CA5045	TN6020												KT175			NS530													
				U40			A40	AC3000			PR905★		IC28					GC1525°/				K420	KC5010★	HT2	TU20			UTi20T									WAM20	
		PT30C			NC330						PR915★	TN90		IC3028★		H10F	GC2035		TTR	CP50★			KC9245	KZ205		T6030	NS540		US735			US735		EX35	GX30		VC28		
		MT30P			PC9030★						PR930★	PV90★											KC5025★		TU40													
K		KT05C		H02	NC305K			AC300G	T110A		CA4010	TN30	IC4	IC9015		H1P	GC3005	CT515		TX100		K313	KC9315		TH03	T5010	NS520	HTi05T	UC5005	NX1010		GM3005		VC3	SV405				
	KT10U	KT10C		H01	NC6010		H1	EH510★	T1200A	KW10H		PV30★		IC428			GC3205		THM			K68		HTX		T1015		HTi10T	GP10H★	AP25N★	WH05			VC2	SV415			WTA13	
		KT10C		H05	NC315K			AC500G			CR7015					H10F	GC3210			TX150		K1	KC9325		TH10	T5020		HTi20T	UC5015	NX2525	W10	GM8015							
	KTM10U			H10			G10E	EH520Z★					IC20	IC4050		H13A	GC3015		THR				KC7310★		KS20			UTi20T	UP10H★		WH20			VC1	SV515			WTA33	
											PR610★		IC28				GC3215						KC7315★						UC6010									
				G10				AC700G									GC3025																					

MILLING

ISO	SOWA			KORLOY			SUMITOMO			KYOCERA			ISCAR			SANDVIK			SECO			KENNAMETAL			TOSHIBA			MITSUBISHI			HITACHI			VALENITE			WALTER		
	COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET		COATED	CERMET	
P	PM25C			NCM325	CN100		AC230	T12A				TN60	IC520M			GC1015★			T20M			KC725M★	KT175		T325			F7030	V45N										
	PM30P	PM20S		PC230★	CN20		ACZ330★	T1200A		PR630★	TN100M		IC635			GC1025★			T25M			KC792M			AH330★	AT520★		GP20M★	NX2525		CY150★	CH550		SV935★			WQM15		
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	PM30C	PM30S		NCM335	CN30							TC60M	IC908★		IC30N	GC4030			T200M			KC935M	HT5		AH740★	AT530★		AP20M★	NX55		CY250★	CH570		SM245			WQM25		
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	PM30C	PM30S		NCM335	CN30		EH520Z★	T250A		PR730★	TN100M		IC328★			GC2030	CT520		CP50★			KC705M★	KZ205		AH140★	AT530★		VP20RT★											
	MM30P			PC9530★	CN300					PR830★	TC60M		IC928★				CT530						HT5			GT530★													
							ACZ350									GC2040							KT195M																	
																							HT7																
K				NCM310K			AC211					TN60	IC4050						T15M			KC915M	HT5		T1015	AT520★		F5010									WTA11		
	KM20C			PC205K★						PR510★			IC907★			GC3020						KC992M			T1020									V01					
				NCM320K			ACZ310★						IC910★			GC1020★						KC709M★			AH110★	AT530★		AP10H★			CY10H★			VN8			WTA21		
				PC215K★												GC3040									AH120★	GT530★													

* Coated★ : PVD
Cermet★ : Cermet+PVD

Measuring & Inspecting

Measuring & Inspecting

MICROMETERS

Micrometers & Stands F6

CALIPERS

Calipers F6-8

INDICATORS & ACCESSORIES

Indicators F8-10
Magnetic Bases & Gauge Holders F11-12

GAUGES, ETC.

Depth Gauges F13
Bore Gauges F13
Height Gauges F13-14
Surface Plates & Stands F14
Gauges, Scales & Rules F15-16
Combination Sets F17
Edge & Centre Finders F17
Protractors, Spring Calipers & Dividers F17-18
Scribers & Engineer's Tool Sets F18-19
Squares & Angle Blocks & Angle Plates F19-20
Gauge Blocks & Pin Gauges & Sets F20-21
Hardness & Surface Testers F21
Plug Thread & Ring Gauges F22
Parallels F23
Set-up Blocks F23

ASIMETO®

Exactly what you need.

Everything we do is as exacting as the tools we make. Asimeto is the creator and manufacturer of high-precision measuring instruments - designed and registered exclusively in Germany. Asimeto tools are very competitively priced and are sold through the Asimeto distribution network. Our ultimate commitment to quality allows us to ensure strict production standards and reliable technical service for our global customers.

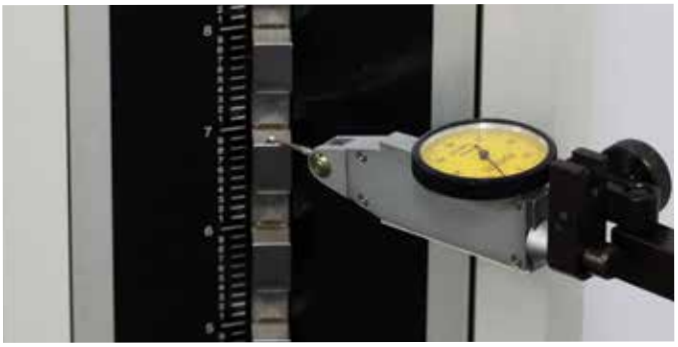
The quality and measuring accuracy of all Asimeto precision tools is guaranteed by the Asimeto Calibration Laboratory. All tools are inspected for conformance to the Asimeto design specifications and are then processed through the Asimeto calibration laboratory. Only the latest state of the art calibration equipment has been selected, from the leading global manufacturers, to ensure that the calibration costs are contained by increasing throughput, without compromising measurement accuracy or repeatability.

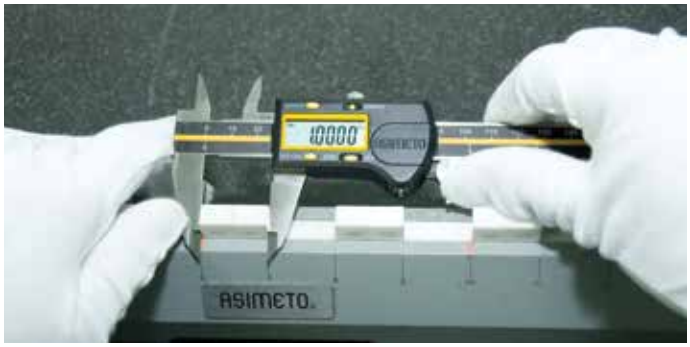
CALIBRATION

Every Asimeto tool is supplied with its own calibration certificate. All tools are calibrated by our **ISO 17025** accredited lab at no extra charge to the customer.

12 + 12 CARE PROGRAM

To supplement the industry standard 12 month warranty an additional 12 month warranty is available by registering your individual purchase online at www.asimeto.com within 30 days from the date of purchase.





Digital Outside Micrometers with SPC Output

ASIMETO

- Accuracy: Per B89.1.13-2001 specification
- Carbide measuring faces
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes

IP 65

Range	Inch Resolution	Accuracy	Range	Metric Resolution	Accuracy	Thimble Type	Code No.	Price $
0-1	0.00005"	0.0001"	0-25	0.001mm	0.002mm	Ratchet	7105015	**212.83**
1-2	0.00005"	0.0002"	25-50	0.001mm	0.002mm	Ratchet	7105025	**261.76**
2-3	0.00005"	0.0002"	50-75	0.001mm	0.003mm	Ratchet	7105035	**292.59**
3-4	0.00005"	0.0002"	75-100	0.001mm	0.003mm	Ratchet	7105045	**302.35**
4-5	0.00005"	0.0002"	100-125	0.001mm	0.003mm	Ratchet	7105055	**346.08**
5-6	0.00005"	0.0002"	125-150	0.001mm	0.003mm	Ratchet	7105065	**374.59**
8-9	0.00005"	0.0002"	200-225	0.001mm	0.004mm	Ratchet	-	**-**
Sets								
0-3	0.00005"		0-75	0.001mm		Ratchet	7105639	**1,041.82**

Economic Digital Outside Micrometers

ASIMETO

- Carbide tipped measuring faces
- Painted frame
- Friction thimble
- Inch/Metric conversion
- Absolute or incremental measuring modes

Range	Resolution	Accuracy	Code No.	Price $
0-1"/0-25mm	0.00005"/0.001mm	±0.00016"/0.004mm	7116011	**124.65**
1-2"/25-50mm	0.00005"/0.001mm	±0.00016"/0.004mm	7116021	**149.59**
2-3"/50-75mm	0.00005"/0.001mm	±0.0002"/0.005mm	7116031	**183.36**

Outside Micrometers — Inch

ASIMETO

- Locking clamp
- Carbide faces
- Satin chrome finish

Ratchet Thimble

Range	Graduation	Accuracy	Thimble Type	Code No.	Price $
0-1"	0.001"	±0.0001"	Ratchet	7101011	**87.47**
1-2"	0.001"	±0.0002"	Ratchet	7101021	**96.71**
0-1"	0.0001"	±0.0001"	Ratchet	7101013	**43.88**
1-2"	0.0001"	±0.0002"	Ratchet	7101023	**48.81**
2-3"	0.0001"	±0.0002"	Ratchet	7101033	**54.34**
3-4"	0.0001"	±0.00015"	Ratchet	7101043	**61.35**
4-5"	0.0001"	±0.00015"	Ratchet	7101053	**75.92**
5-6"	0.0001"	±0.00015"	Ratchet	7101063	**85.80**
6-7"	0.0001"	±0.0002"	Ratchet	7101073	**97.18**
7-8"	0.0001"	±0.0002"	Ratchet	7101083	**109.38**
8-9"	0.0001"	±0.0002"	Ratchet	7101093	**120.50**
9-10"	0.0001"	±0.00025"	Ratchet	7101103	**126.50**
10-11"	0.0001"	±0.00025"	Ratchet	7101113	**147.66**
11-12"	0.0001"	±0.00025"	Ratchet	7101123	**157.74**

Micrometer Stands

ASIMETO

These stands are designed to allow bench top use with hand micrometers.

Notes	Code No.	Price $
Painted Cast Iron Base	7109021	**43.35**

Outside Micrometers Sets — Inch

ASIMETO

- Locking clamp
- Carbide faces
- Satin chrome finish

Range	Grad.	Notes	Code No.	Price $
0-3" (3pc)	0.0001"	0-1"+1-2" Friction 2-3" Ratchet	7101637	**128.18**
0-6" (6pc)	0.0001"	0-1"+1-2" Friction 2-3" to 5-6" Ratchet	7101667	**333.00**
6-12" (6pc)	0.0001"	All Ratchet Stop	7101827	**943.08**
0-12" (12pc)	0.0001"	0-1"+1-2" Friction 2-3" to 11-12" Ratchet	7101727	**938.34**

Outside Micrometers — Metric

ASIMETO

- Locking clamp
- Carbide faces
- Satin chrome finish

Ratchet Thimble

Range	Graduation	Accuracy	Thimble Type	Code No.	Price $
0-25mm	0.001mm	±0.004mm	Ratchet	7101012	**48.43**

Outside Micrometers

STM

- Deluxe heat insulated forged steel frame up to 4"
- Chrome clad
- Complete with standards (2" and up)
- Carbide faces
- Ratchet stop for exact and repetitive reading
- Fitted case

Range (in.)	Graduation (in.)	Code No.	Price $
0-1"	0.0001"	200570	**32.22**
1-2"	0.0001"	200572	**35.91**

Outside Micrometer Sets

STM

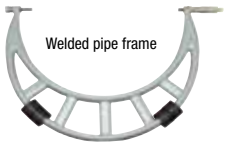
- Ratchet and lock nut
- Complete with standards (2" and up)
- Carbide faces
- Fitted wood case

Range (in.)	Graduation (in.)	Code No.	Price $
0-6"	0.0001"	200580	**314.21**

Interchangeable Anvil Micrometers

ASIMETO

- Ratchet stop
- Locking clamp
- Carbide faces
- Satin chrome finish
- Sizes over 12" have a welded pipe frame



Range	Grad.	Accuracy	Notes	Code No.	Price $
0-6"	0.001"	± 0.0002"	with 6 Anvils & 5 Standards	7111061	**292.60**
6-12"	0.001"	± 0.0003"	with 6 Anvils & 6 Standards	7111121	**324.33**
12-16"	0.001"	± 0.0004"	with 4 Anvils & 2 Standards	7111161	**598.74**
16-20"	0.001"	± 0.0005"	with 4 Anvils & 2 Standards	7111201	**666.04**
20-24"	0.001"	± 0.0006"	with 4 Anvils & 2 Standards	7111241	**852.30**
24-28"	0.001"	± 0.0006"	with 4 Anvils & 2 Standards	7111281	**1,022.99**
28-32"	0.001"	± 0.0007"	with 4 Anvils & 2 Standards	7111321	**1,193.67**
32-36"	0.001"	± 0.0008"	with 4 Anvils & 2 Standards	7111361	**1,218.88**
36-40"	0.001"	± 0.0008"	with 4 Anvils & 2 Standards	7111401	**1,552.77**

Note: The individual anvils are matched as a set with the frame.
The accuracy cannot be guaranteed if used with a different frame.

Digital Disc Micrometers — Non-Rotating Spindle

ASIMETO

- Resolution: 0.00005"/0.001mm
- Non rotating spindle
- Ratchet stop
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Automatic On/Off
- Sizes over 1" come with standard

IP 65

Range	Accuracy	Notes	Code No.	Price $
0-1" / 0-25mm	±0.0001"	Disc Diameter 0.79"	7145011	**487.52**
1-2" / 25-50mm	±0.0002"	Disc Diameter 0.79" with Standard	7145021	**533.70**
2-3" / 50-75mm	±0.0002"	Disc Diameter 0.79" with Standard	7145031	**593.66**
3-4" / 75-100mm	±0.0002"	Disc Diameter 0.79" with Standard	7145041	**658.14**

Digital Blade Micrometers

ASIMETO

- For measuring the groove diameter of shafts, keyways, and other hard to reach portions
- Ratchet stop
- Non-rotating spindle
- Carbide measuring faces
- Inch/Metric conversion
- Absolute or incremental measuring modes

IP 65

Range	Resolution	Accuracy	Blade Dimensions Depth x Length	Code No.	Price $
0-1" / 0-25mm	0.00005" / 0.001mm	±0.0001"	0.030" x 0.250"	7117011	**553.46**
1-2" / 25-50mm	0.00005" / 0.001mm	±0.0002"	0.030" x 0.250"	7117021	**586.77**
2-3" / 50-75mm	0.00005" / 0.001mm	±0.0002"	0.030" x 0.250"	7117031	**583.24**
3-4" / 75-100mm	0.00005" / 0.001mm	±0.0002"	0.030" x 0.250"	7117041	**626.29**

Digital Screw Thread Micrometers

ASIMETO

- For measuring various screw threads
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Ratchet stop
- Interchangeable tips are optional
- Non-rotating spindle

IP 65

Range (in.)	Inch Resolution	Accuracy	Range (mm)	Metric Resolution	Accuracy	Code No.	Price $
0-1"	0.00005"	±0.0001"	0-25	0.001mm	±0.004mm	7136011	**383.82**
1-2"	0.00005"	±0.0002"	25-50	0.001mm	±0.004mm	7136021	**418.67**

Screw Thread Micrometers

ASIMETO

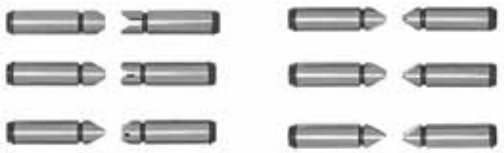
- For measuring various screw threads
- Friction thimble
- Interchangeable tips are optional

Range	Grad.	Accuracy	Notes	Code No.	Price $
0-1"	0.001"	±0.0001"		7132011	**146.70**
1-2"	0.001"	±0.0002"	with Standard	7132021	**163.46**
2-3"	0.001"	±0.0002"	with Standard	7132031	**190.93**
3-4"	0.001"	±0.0002"	with Standard	7132041	**209.20**

Anvils

ASIMETO

- For screw 60° ISO



T.P.I.		Pitch (in./mm)	Notes	Code No.	Price $
64-48	(M1)	0.016-0.019"/0.4-0.5mm	1 pair	7130610	**27.23**
44-28	(M2)	0.024-0.035"/0.6-0.9mm	1 pair	7130620	**27.23**
24-14	(M3)	0.04-0.068"/1.0-1.75mm	1 pair	7130630	**27.23**
13-9	(M4)	0.079-0.118"/2.0-3.0mm	1 pair	7130640	**27.23**
8-5	(M5)	0.138-0.196"/3.5-5.0mm	1 pair	7130650	**27.23**
4.5-3.5	(M6)	0.217-0.275"/5.5-7.0mm	1 pair	7130660	**27.23**
64-3.5		0.016-0.275"/0.4-7.0mm	6 Pair Set	7130600	**167.88**

Micrometer Standards

ASIMETO

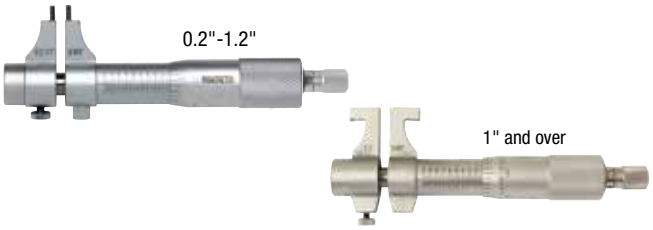
- Used for zero point setting of outside micrometers
- Heat insulating handle to prevent heat expansion due to body temperature
- Flat measuring face

Size	Accuracy	Diameter	Code No.	Price $
1"	±0.00005"	0.276"	7110011	**7.36**
2"	±0.0001"	0.276"	7110021	**8.29**
3"	±0.0001"	0.276"	7110031	**10.07**
4"	±0.0001"	0.315"	7110041	**12.77**
5"	±0.00015"	0.315"	7110051	**15.40**
6"	±0.00015"	0.315"	7110061	**17.16**
7"	±0.00015"	0.315"	7110071	**19.71**
8"	±0.00015"	0.315"	7110081	**22.55**
9"	±0.00020"	0.315"	7110091	**24.90**
10"	±0.00020"	0.315"	7110101	**28.42**
11"	±0.00020"	0.315"	7110111	**30.86**
12"	±0.00025"	0.630"	7110121	**69.88**
13"	±0.00025"	0.630"	7110131	**69.88**
14"	±0.00025"	0.630"	7110141	**83.73**
15"	±0.00025"	0.630"	7110151	**69.88**
16"	±0.00025"	0.630"	7110161	**83.73**
17"	±0.00025"	0.630"	7110171	**74.07**
18"	±0.00025"	0.630"	7110181	**85.04**
19"	±0.00030"	0.630"	7110191	**74.07**
20"	±0.00030"	0.630"	7110201	**88.72**
21"	±0.00030"	0.630"	7110211	**85.17**
23"	±0.00030"	0.630"	7110221	**93.46**

Inside Micrometers

ASIMETO

- Carbide measuring faces
- Graduation: Inch: 0.001"
- Ratchet stop
- Caliper type jaws are made of high grade tool steel



Range	Grad.	Accuracy	Notes	Code No.	Price $
0.2"-1.18"	0.001"	±0.0001"	c/w ring gauge	7203011	**109.23**
1-2"	0.001"	±0.0002"	c/w ring gauge	7203021	**124.16**
2-3"	0.001"	±0.0002"		7203031	**192.48**
3-4"	0.001"	±0.0002"		7203041	**226.72**

Digital Depth Micrometers

ASIMETO

- Resolution: 0.00005"
- 0.157 Dia. interchangeable rod lengths can be adjusted after wear on the measuring tip
- Ratchet stop
- Satin Chrome finish throughout
- Protection level IP65
- Absolute and incremental measuring modes
- Auto On/Off
- Inch/Metric conversion

IP 65

Range	Thimble Grad.	Accuracy	Base Length	Notes	Code No.	Price $
0-4"	0.0001"	±0.0002"	2.5"	With Int. Rods: 4pcs	7205041	**553.54**
0-6"	0.0001"	±0.0002"	2.5"	With Int. Rods: 6pcs	7205061	**572.75**
0-4"	0.0001"	±0.0002"	4.0"	With Int. Rods: 4pcs	7205043	**568.06**
0-6"	0.0001"	±0.0002"	4.0"	With Int. Rods: 6pcs	7205063	**572.75**

Digital Inside Micrometers

ASIMETO

- Resolution: 0.00005"/0.001mm
- Carbide faces
- Ratchet Stop
- 0.2"-1.2"/5-30mm & 1.0"-2.0"/25-50mm ranges are supplied with setting rings

Range	Resolution	Accuracy	Code No.	Price $
Inch Thimble				
0.2"-1.2" / 5-30mm	0.00005"/0.001mm	±0.0001"	7207011	**487.64**
1.0"-2.0" / 25-50mm	0.00005"/0.001mm	±0.0002"	7207021	**426.40**
2.0"-3.0" / 50-75mm	0.00005"/0.001mm	±0.0002"	7207031	**448.09**
3.0"-4.0" / 75-100mm	0.00005"/0.001mm	±0.0002"	7207041	**466.99**

Digital Two & Three Point Internal Micrometers

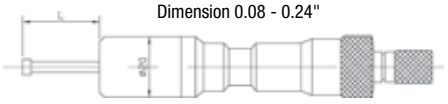
ASIMETO

- Resolution: 0.00005"/0.001mm
- Carbide tipped contact points
- Ratchet Stop
- Protection level IP65
- Setting rings supplied
- Measuring contact points are designed to allow measurements near to the bottom of blind holes
- Models up to 6mm or 0.24" have two measuring points and models over 7mm or 0.275" have three measuring points

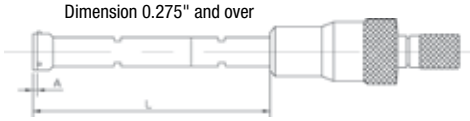
IP 65

Range	Thimble Graduation	Accuracy	Setting Rings	L	A	Extension Rods	Code No.	Price $
0.5 - 0.65"	0.0002"	±0.00016"	0.65"	80mm	0.5mm	150mm	7208241	**908.22**
0.65 - 0.8"	0.0002"	±0.00016"	0.65"	80mm	0.5mm	150mm	7208251	**908.22**
0.8 - 1.0"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7208261	**945.74**
1 - 1.2"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7208271	**945.74**
1.2 - 1.6"	0.0002"	±0.00016"	1.6"	97mm	0.5mm	150mm	7208281	**1,044.85**
1.6 - 2.0"	0.0002"	±0.0002"	1.6"	97mm	0.5mm	150mm	7208291	**1,044.83**
2.0 - 2.5"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7208301	**1,129.11**
2.5 - 3.0"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7208311	**1,266.36**
3.0 - 3.5"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7208321	**1,241.18**
3.5 - 4.0"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7208331	**1,374.55**

Dimension 0.08 - 0.24"



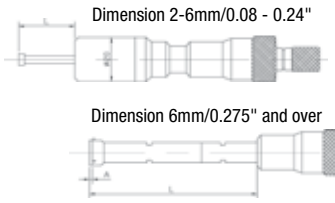
Dimension 0.275" and over



Two & Three Point Internal Micrometers

ASIMETO

- Carbide tipped contact points
- Ratchet stop
- Setting rings supplied (sizes up to 4")
- Measuring contact points are designed to allow measurements near to the bottom of blind holes
- Models up to 6mm or 0.24" have two measuring points and models over 7mm or 0.275" have three measuring points



Range	Graduation	Accuracy	Setting Rings	L	A	Extension Rods	Code No.	Price $
0.5 - 0.65"	0.0002"	±0.00016"	0.65"	80mm	0.5mm	150mm	7209241	**406.19**
0.65 - 0.8"	0.0002"	±0.00016"	0.65"	80mm	0.5mm	150mm	7209251	**406.19**
0.8 - 1.0"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7209261	**570.67**
1 - 1.2"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7209271	**498.46**
1.2 - 1.6"	0.0002"	±0.00016"	1.6"	97mm	0.5mm	150mm	7209281	**613.97**
1.6 - 2.0"	0.0002"	±0.0002"	1.6"	97mm	0.5mm	150mm	7209291	**712.92**
2.0 - 2.5"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7209301	**772.78**
2.5 - 3.0"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7209311	**828.83**
3.0 - 3.5"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7209321	**866.23**
3.5 - 4.0"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7209331	**900.66**

Inside Micrometers — Interchangeable Rod Type

ASIMETO

- Graduation: Inch: 0.001"
- Rods marked with its measuring range
- Satin chrome finish throughout
- All contact points hardened for extra long tool life

Note: individual rods are matched with micrometer and should not be interchanged with other sets.

Range	Head Travel	Grad.	Spacing Collar	Rod Dia.	Notes	Code No.	Price $
1-2"	0.25"	0.001"	0.250"	0.248"	1" Mic head & 2 Rods	7242021	**267.30**
2-12"	0.50"	0.001"	0.500"	0.248"	2" Mic head & 10 Rods	7242121	**294.53**
8-40"	1.00"	0.001"	1", 2"	0.355"	8" Mic head & 8 Rods	7242401	**903.29**

Depth Micrometers

ASIMETO

- 0.157 Dia. interchangeable rod lengths can be adjusted after wear on the measuring tip
- Ratchet stop
- Satin Chrome finish throughout

Range	Grad.	Accuracy	Base Length	Notes	Code No.	Price $
0-4"	0.001"	+0.0002"	2.5"	With Int. Rods: 4pcs	7201041	**183.45**
0-6"	0.001"	+0.0002"	2.5"	With Int. Rods: 6pcs	7201061	**180.85**
0-4"	0.001"	+0.0002"	4.0"	With Int. Rods: 4pcs	7201043	**207.25**
0-6"	0.001"	+0.0002"	4.0"	With Int. Rods: 6pcs	7201063	**221.30**

Wireless Data Transfer

ASIMETO

	Used For	Function	Frequency	Code No.	Price $
	ABS Digital Calipers Digital Micrometers Heavy Duty Digital Calipers	Output	2.4G	7901001	**129.90**
	IP65 Digital Indicators	Output	2.4G	7901002	**129.90**
	ABS Digital Calipers Digital Micrometers Heavy Duty Digital Calipers IP65 Digital Indicators	Input	2.4G	7901003	**75.92**

IP67 Coolant Proof Digital Calipers

ASIMETO

- Absolute function, there is no need to set the zero
- Hold function for easy reading
- Absolute or incremental measuring modes
- Inch/Metric conversion
- Metal Housing, the design will allow the caliper to be used in normal workshop conditions and is resistant to coolant, water, dust or oil
- Auto power on/off
- Power: 3V lithium battery

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"	7305062	**205.37**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"	7305082	**312.50**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"	7305122	**375.20**

IP67 Big Screen Coolant Proof Digital Calipers

ASIMETO

- Absolute function, there is no need to set the zero
- Hold function for easy reading
- Absolute or incremental measuring modes
- Inch/Metric conversion
- Big Screen design allows for very easy reading while also remaining resistant to coolant, water, dust or oil
- Auto power on/off
- Power: 3V lithium battery

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"	7305065	**207.34**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"	7305085	**317.79**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"	7305125	**382.65**

IP67 Coolant Proof Digital Calipers — Sylvac

ASIMETO

- Conforms to IP67 rating
- Inch/Metric conversion
- Auto power on/off
- Sylvac system

SWISS MADE

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"/0.02mm	7301060	**319.04**

Digital Calipers

ASIMETO

- Large LCD readout
- Inch/Metric conversion
- With thumb wheel

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"	7307065	**68.11**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"	7307085	**101.00**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"	7307125	**151.04**

Digital Calipers

STM

- Inside, outside, step and depth measurements
- Inch/Metric conversion
- Auto on, auto shutoff
- 0.0005"/0.01mm resolution
- Zero button

Range (in./mm)	Resolution (in./mm)	Code No.	Price $
0-6" / 150mm	0.0005" x 0.01mm	200645	**50.11**
0-8" / 200mm	0.0005" x 0.01mm	200646	**74.05**
0-12" / 300mm	0.0005" x 0.01mm	200647	**110.96**
0-24" / 600mm	0.0005" x 0.01mm	200648**	**536.48**

**no depth gauge

Large Display Digital Calipers

STM

- Large face for easy reading
- Inside, outside, step and depth measurements
- Inch/Metric conversion
- Auto on, auto shutoff
- 0.0005"/0.01mm resolution
- Zero button

Range (in./mm)	Resolution (in./mm)	Code No.	Price $
0-6" / 150mm	0.0005" / 0.01mm	200540	**50.11**
0-8" / 200mm	0.0005" / 0.01mm	200541	**74.05**

Absolute Digital Calipers

ASIMETO

- Inch/Metric conversion
- The ZERO/ABS changes the measurement mode from absolute to incremental

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"	7307563	**123.00**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"	7307583	**172.00**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"	7307623	**219.20**

Dial Calipers — Stainless Steel

ASIMETO

- Hardened Stainless Steel
- Preloaded dual pinions eliminate backlash and provides better repeatability

Range	Graduation	Range per Rev	Accuracy	Code No.	Price $
0-6"	0.001"	0.100"	±0.001"	7303061	**67.00**
0-8"	0.001"	0.100"	±0.0015"	7303081	**88.00**
0-12"	0.001"	0.100"	±0.0015"	7303121	**155.36**

Dial Calipers — Diecast Aluminum

ASIMETO

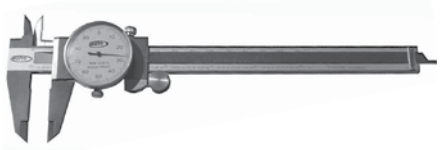
- Sturdy Aluminum diecast housing can be used in the harshest of manufacturing environments, including situations with hot steel chips without damage
- The dual pinion mechanism offers ultra smooth feel
- Preloaded pinion offers better repeatability

Range	Grad.	Range per Rev	Accuracy	Code No.	Price $
0-6"	0.001"	0.100"	±0.001"	7304065	**115.66**
0-12"	0.001"	0.100"	±0.0015"	7304125	**262.94**

Dial Calipers

STM

- Covered rack
- Accurate to 0.001 per 6"
- Made of Stainless Steel
- Clamp for repetitive setting
- Deluxe case
- 0.100" Revolution



Range	Graduation	Code No.	Price $
0-6"	0.001"	200582	**49.55**
0-8"	0.001"	200584	**65.78**
0-12"	0.001"	200586	**115.22**

Vernier Calipers

ASIMETO

- Can measure OD, ID, depth and steps
- Available in Plain, Thumb Clamp and Fine adjustment
- Stainless Steel
- Measuring surfaces allow for the measurement of external diameters, internal diameters, depths, and steps
- Upper and lower scales on the slider are angles to reduce parallax error

Range		Graduation				
Lower	Upper	Lower	Upper	Accuracy	Code No.	Price $
Plain Vernier						
0-150mm	0-6"	0.02mm	0.001"	±0.03mm	7341064	**54.30**
Thumb Clamp						
0-150mm	0-6"	0.02mm	0.001"	±0.03mm	7351064	**79.78**

Vernier Calipers With Fine Adjustment

STM

Precision Stainless Steel Vernier Calipers

- Satin chrome finish
- Extra long vernier to insure accuracy
- Made of fully hardened stainless steel throughout

- Jaws designed for outside, inside, and thread measurement
- All measurements can be read directly from vernier scale 1/1000" x 1/20 mm
- Raised sliding surfaces prevent defacement and wear of graduations: clear black engravings

Range (in x mm)	Graduation (in x mm)	Code No.	Price $
0-6" x 150mm	1/1000" x 1/20mm	200600	**34.10**

ABS Heavy Duty Digital Calipers

ASIMETO

- Resolution: 0.0005" / 0.01mm
- Designed with fine adjustment to allow precise movement of the slider
- Internal measurement jaws are rounded to provide accurate measurement of internal diameters
- Minimum internal diameter measurement capability of 20mm
- Inch/Metric conversion
- Zero setting at any position
- Without upper jaws

Range	Jaw Length	Accuracy	Code No.	Price $
0-12"/0-300mm	90mm	±0.04mm	7315126	**283.90**
0-24"/0-600mm	100mm	±0.05mm	7315246	**798.50**
0-40"/0-1000mm	150mm	±0.10mm	7315406	**1,797.35**

Heavy Duty Vernier Calipers

ASIMETO

- Graduation:
  Lower Scale: 0.001"
  Upper Scale: 0.02mm
- Nib style jaws and fine adjustment

Range		Graduation			Jaw Depth		
Lower	Upper	Lower	Upper	Accuracy		Code No.	Price $
0-12"	0-300mm	0.001"	0.02mm	±0.0015"	75mm	7311121	**214.92**
0-18"	0-450mm	0.001"	0.02mm	±0.002"	100mm	7311181	**370.62**
0-24"	0-600mm	0.001"	0.02mm	±0.002"	100mm	7311241	**423.22**
0-40"	0-1000mm	0.001"	0.02mm	±0.003"	150mm	7311401	**926.27**
0-60"	0-1500mm	0.001"	0.02mm	±0.004"	200mm	7311601	**2,553.39**
0-80"	0-2000mm	0.001"	0.02mm	±0.005"	200mm	7311801	**3,573.36**

Digital Caliper With Adjustable Measuring Jaw

ASIMETO

- Resolution:
  0.0005"/0.01mm
- Stationary jaw on the beam is designed with vertical movement for the purpose of measuring various steps of different heights
- Inch/Metric conversion
- Zero setting at any position

Range	Adjustable Jaw Length	Accuracy	Code No.	Price $
0-6"/150mm	110mm	±0.0015"/0.04mm	7317060	**279.70**
0-12"/300mm	130mm	±0.0020"/0.05mm	7317120	**495.11**

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Digital Indicators

ASIMETO

- Tolerance measurement feature
- Inch/Metric conversion
- The maximum, minimum, or runout value can be displayed during measurement
- Absolute and incremental measuring modes
- SR44 battery
- Flat Back (attached) and Lug Back supplied
- 3/8" stem diameter for inch models and 8mm stem diameter for metric models

Range	Resolution	Accuracy	Code No.	Price $
0-0.5"/0-12.5mm	0.00005"/0.001mm	±0.0003"/±0.007mm	7405955	**419.47**
0-0.5"/0-12.5mm	0.0005"/0.01mm	±0.0008"/±0.02mm	7405951	**184.00**
0-1"/0-25mm	0.0005"/0.01mm	±0.0012"/±0.03mm	7405011	**234.74**
0-2"/0-50mm	0.0005"/0.01mm	±0.0012"/±0.02mm	7405021	**544.90**

IP65 Absolute Digital Indicators

ASIMETO

- Absolute or incremental measuring modes
- Tolerance measurement feature allows for the upper and lower tolerance for maximum and minimum
- Inch/Metric conversion
- Flat back (attached) and lug back supplied
- 3/8" stem diameter
- 360 deg. screen rotation
- Cable data output: 7900070
- Wireless data transfer: 7901002

IP 65

7407013

7407023

Range	Resolution	Accuracy	Code No.	Price $
0-0.5"/0-12.5mm	0.0005"/0.01mm	±0.0008"/±0.02mm	7407013	**145.47**
0-1"/0-25mm	0.0005"/0.01mm	±0.0012"/±0.02mm	7407023	**162.59**
0-2"/0-50mm	0.0005"/0.01mm	±0.0012"/±0.02mm	7407033	**380.80**

AGD1 Dial Indicators

ASIMETO

- Graduation: Inch: 0.001" Metric: 0.01mm
- Dial face dia. 1.65"
- Jeweled bearings
- Lug Back

Range	Dial Reading	Range per Rev	Stem Dia.	Code No.	Price $
0 - 0.25"	0-100	0.1"	3/8	7401061	**51.63**

Dial Indicators

STM

- Reverse counter
- Stainless steel components
- Rotating bezel with clamp
- Lugback (1/4" hole)
- Interchangeable point
- Conforms to AGD 2 standards

Travel Range	Dial Reading	Grad.	Dial Colour	Code No.	Price $
1/2"	0-100"	0.001"	White	200718	**31.32**
1"	0-100"	0.001"	White	200720	**29.76**
1"	0-50"	0.0005"	White	200755	**35.91**
2"	0-100"	0.001"	White	200725	**69.12**
Magnetic Back					
For AGD2 series				200722	**15.97**

Holding Bars

ASIMETO

- Scalloped design
- Black oxide coating for corrosion resistance

Shank Dia.	Length	Code No.	Price $
1/4 x 1/2	4"	7500213	**27.94**
9mm x 9mm	50mm	7500210	**30.75**
9mm x 9mm	100mm	7500212	**23.82**

AGD2 Dial Indicators

ASIMETO

- Dial face dia. 2.20"
- Lug Back
- Easy to read dial face

7402265

7402267

Range	Grad.	Dial Reading	Range per Rev.	Stem Dia.	Code No.	Price $
Inch						
0-0.05"	0.0001"	0-50-0	0.01"	3/8	7402013	**112.66**
0-0.05"	0.0001"	10-0	0.01"	3/8	7402011	**145.77**
0-0.05"	0.0001"	0-5-0	0.01"	3/8	7402015	**156.67**
0-0.25"	0.0005"	0-25-0	0.05"	3/8	7402065	**52.20**
0-0.5"	0.0005"	0-50	0.05"	3/8	7402125	**52.87**
0-1"	0.0005"	0-50	0.05"	3/8	7402265	**54.37**
0-0.25"	0.001"	0-100	0.1"	3/8	7402061	**45.66**
0-0.25"	0.001"	0-50-0	0.1"	3/8	7402063	**68.20**
0-0.5"	0.001"	0-100	0.1"	3/8	7402121	**48.05**
0-0.5"	0.001"	0-50-0	0.1"	3/8	7402123	**54.18**
0-1"	0.001"	0-100	0.1"	3/8	7402261	**40.00**
0-1"	0.001"	0-50-0	0.1"	3/8	7402263	**54.37**
0-2"	0.001"	0-100	0.1"	3/8	7402511	**104.75**
Metric						
0-10mm	0.01mm	0-100	1mm	3/8	7402101	**105.94**
0-25mm	0.01mm	0-50-0	1mm	3/8	7402253	**186.84**
IP54 Water Proof						
0-0.4"	0.001"	0-100	0.1"	3/8	7402267	**101.64**
0-0.4"	0.0005"	0-50	0.05"	3/8	7402269	**101.64**

Test Indicators and Sets

STM

- Available in bezel or dial
- Contact point adjustable through 230°
- Fully jeweled movement
- Extremely light contact pressure
- Clear, easy to read, white face
- Dovetails on top and back for all-around positioning
- Sets include 5/32" and 3/8" mounting shanks and 3/8" bar

Dial Dia. (in.)	Grad. (in.)	Range (in.)	Reading (in.)	Point Length (in.)	Code No.	Price $
1.250"	0.0005"	0.030"	0-15-0	0.700"	200730	**62.50**

Test Indicators

ASIMETO

- Jeweled bearings
- Inch units come with 3/8 & 8mm dovetail stems
- Easy to read yellow face
- 32mm and 40mm face diameters available

Vertical

Full Set

Carbide tipped point DIA. Φ2mm

Steel point DIA. Φ1mm

Stem Dia. Metric 4mm Inch 0.157"

Holding Bar Metric 9x9x100mm Inch 0.25"x0.5"x4"

Swivel Clamp Metric for Ø4mm, & Ø8mm Dia. Inch for 3/8", & 0.157" Dia.

Base Set

Horizontal

Stem Dia. Metric Φ8mm Inch Φ3/8"

Knurled Clamping Ring

Wrench

Grad.	Range	Dial Reading	Accuracy	Type	Code No.	Price $
Inch						
0.0001"	0.008"	0-4-0	±0.0001"	Horizontal	7501783	**125.50**
0.0001"	0.008"	0-4-0	±0.0001"	Vertical	7501785	**165.58**
0.0005"	0.03"	0-15-0	±0.0005"	Horizontal	7501733	**105.00**
0.0005"	0.03"	0-15-0	±0.0005"	Vertical	7501735	**103.02**
0.0005"	0.03"	0-15-0	±0.0005"	Horizontal/Long Point (1.25")	7501736	**158.90**
Inch Sets						
0.0001"	0.008"	0-4-0	±0.0001"	Horizontal	7501787	**117.76**
0.0005"	0.03"	0-15-0	±0.0005"	Horizontal	7501738	**130.09**

Extended Range Dial Test Indicators

ASIMETO

- Jeweled bearing design and resistant to magnetic fields
- Stem diameter: Inch: 3/8", Metric: 8mm
- Carbide contact point swivels 210°

Range	Graduation	Dial Reading	Accuracy	Type	Code No.	Price $
0.060"	0.001"	0-15-0	±0.0012"	Horizontal w/ 30mm dial	7503061	**197.30**
0.060"	0.0005"	0-15-0	±0.0012"	Horizontal w/ 30mm dial	7503561	**197.30**
0.060"	0.0005"	0-15-0	±0.0012"	Horizontal w/ 38mm dial	7504561	**185.00**
0.060"	0.001"	0-15-0	±0.0012"	Vertical w/ 30mm dial	7503063	**200.88**
0.060"	0.0005"	0-15-0	±0.0012"	Vertical w/ 30mm dial	7503563	**151.39**
0.060"	0.0005"	0-15-0	±0.0012"	Vertical w/ 38mm dial	7504563	**176.75**

Centering Indicators

ASIMETO

- Operating speed not to exceed 800rpm
- Range: Internal: 5/32" - 12"
  External: Up to 12"
- Includes: 6pc feeler set, centre locating feeler

Dial Range	Graduation	Accuracy	Stem Dia.	Code No.	Price $
0-0.15"	0.0005"	±0.0002"	0.375"	7469008	**245.50**

Parts

Description	Length	Capacity	Code No.	Price $
ID Feeler	2"/50mm	4"/100mm	7469012	**5.25**
ID Feeler	4"/100mm	8"/200mm	7469013	**5.12**
ID Feeler	6"/150mm	12"/300mm	7469014	**5.25**
OD Feeler	2"/50mm	4"/100mm	7469015	**5.25**
OD Feeler	4"/100mm	8"/200mm	7469016	**5.25**
OD Feeler	6"/150mm	12"/300mm	7469017	**5.12**
Centre Locating Feeler			7469018	**15.97**
Feeling Rod			7469019	**5.67**

Extended Range Dial Test Indicator Sets #1

ASIMETO

- Double the range of most indicators
- Jeweled movement

Standard Accessories:

- Calibration certificate, instruction manual, warranty card, indicator, wrench
- Height gauge bar with swivel clamp w/ 5/32", 7/32", 1/4" holes
- Axial support with 3/8" stem and dovetail
- Reduction sleeve 3/8" to 5/32"
- Two dovetail stems, 3/8" and 5/32"
- Three contact points: 0.4" (hardened steel), 0.08", 0.12" (Tungsten Carbide) x 5/8" long

Range	Graduation	Accuracy	Dial Dia.	Indicator	Code No.	Price $
0.060"	0.0005"	±0.0012"	38mm	Horizontal (7504561)	7504811	**235.45**
0.060"	0.0005"	±0.0012"	30mm	Horizontal (7503561)	7504813	**229.05**
0.060"	0.001"	±0.0012"	30mm	Horizontal (7503061)	7504815	**219.58**

Extended Range Dial Test Indicator Sets #2

ASIMETO

- Double the range of most indicators
- Jeweled movement

Standard Accessories:

- Calibration certificate, instruction manual, warranty card, indicator, wrench
- Xtra-Mag magnetic base with 2 universal ball sockets
- Micro-fine adjustment screw
- 3-9/16" extension arm
- Two dovetail stems, 3/8" and 5/32"
- Three contact points: 0.4" (hardened steel), 0.08", 0.12" (Tungsten Carbide) x 5/8" long

Range	Graduation	Accuracy	Dial Dia.	Indicator	Code No.	Price $
0.060"	0.0005"	±0.0012"	38mm	Horizontal (7504561)	7504821	**230.78**

Dovetail Stem Sets

ASIMETO

- Includes stem and knurled clamping ring
- Used in conjunction with a magnetic base clamp to mount a test indicator with a dovetail

Size	Code No.	Price $
3/8"	7500311	**7.79**
5/32"	7500313	**7.79**

Swivel Clamp

ASIMETO

- Used to mount an indicator via either a dovetail stem or directly by a dovetail
- Clamps directly onto the main post of a magnetic base

Description	Code No.	Price $
For 3/8" & 5/32" Dia. Dovetail Stems	7500251	**38.31**
For 8mm & 6mm Dia. Dovetail Stems	7500252	**37.67**

Centering Holders

ASIMETO

- Allows large diameter cylinder or holes to be centered

Description	Code No.	Price $
8mm Dia. Stem	7500350	**40.26**
0.25" Dia. Stem	7500351	**25.91**

Half Round Combination Holder

STM

- Two-point adjustment
- 1/4" shank
- For dovetail and 5/32" stem indicators

Description	Code No.	Price $
Half Round Combination Holder	200816	**18.34**

Test Indicator Points

ASIMETO

- Carbide, Steel, or Ruby ball

Ball Dia.	Tip Length	Ind. Range/ Resolution	Code No.	Price $
Carbide Ball				
2mm	16.2mm	0.03"/0.0005"	7500622	**9.55**
3mm	16.7mm	0.03"/0.0005"	7500632	**12.17**
3mm	16.7mm	0.008"/0.0001"	7500732	**12.17**
2mm	21.8mm	0.06"/0.0005"	7500822	**6.93**
3mm	22.3mm	0.06"/0.0005"	7500832	**10.23**
2mm	16.2mm	0.2mm/0.002mm	7500722	**14.42**
Steel Ball				
1mm	15.9mm	0.03"/0.0005"	7500611	**9.30**
2mm	16.2mm	0.03"/0.0005"	7500621	**4.71**
3mm	16.7mm	0.03"/0.0005"	7500631	**4.71**
3mm	16.7mm	0.008"/0.0001"	7500731	**4.71**
1mm	21.3mm	0.06"/0.0005"	7500811	**4.44**
2mm	21.8mm	0.06"/0.0005"	7500821	**4.71**
3mm	22.3mm	0.06"/0.0005"	7500831	**4.71**
Ruby Ball				
2mm	16.2mm	0.03"/0.0005"	7500623	**13.55**
2mm	21.8mm	0.06"/0.0005"	7500823	**10.23**

Straight Metric Indicator Stem Bushing

ASIMETO

- Accepts 8mm stem, converts to 3/8" diameter stem
- Straight bushing, no head
- 0.500" length
- Brass, Nickel Plated

Description	Code No.	Price $
Straight Metric Indicator Stem Bushing	7500320	**2.75**

Select-A-Point Kit

STM

The most useful accessory kit for all dial indicators - a complete set of 22 different points, increasing the versatility of your indicators.

- Fits all AGD 1, 2, 3, 4 drop style indicators, 4-48 threads

Description	Code No.	Price $
Select-A-Point Kit	200820	**12.40**

Articulating Arm Magnetic Bases

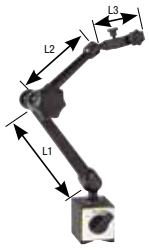
ASIMETO

- Accepts test indicators with dovetail clamping mechanism
- Dial gauges can be held by the 3/8" or 8mm diameter stem or by the lug backing plate
- Arm has 3 articulating joints that can be locked with the single hand knob
- The rotary knob switches natural magnet on or off
- The precision surfaces and the bottom V are securely fastened to the ferrous workpiece or machine table when the rotary knob is in the on position
- Slot: 6.5mm
- Working Angle 150°
- 7602011 does not have fine adjustment

Magnetic Power	Magnetic Base (L x W x H)	Height	Code No.	Price $
30 kg	36 x 30 x 35mm	195mm	7602011	**63.47**
80 kg	60 x 50 x 55mm	350mm	7602021	**176.50**
80 kg	60 x 50 x 55mm	440mm	7602031	**140.00**
130 kg	117 x 50 x 55mm	690mm	7602051	**237.85**

Dimensional Data

L1	L2	L3
65mm	55mm	60mm
120mm	105mm	60mm
160mm	140mm	75mm
345mm	230mm	60mm



Hydraulic Magnetic Base

ASIMETO

- Accepts test indicators with dovetail clamping mechanism
- Dial gauges can be held by the 3/8" or 8mm diameter stem or by the lug backing plate
- The rotary knob switches natural magnet on or off
- The precision surfaces and the bottom V are securely fastened to the ferrous workpiece or machine table when the rotary knob is in the on position
- Working Angle 150°

Magnetic Power	Magnetic Base (L x W x H)	Height	Code No.	Price $
80 kg	60 x 50 x 55mm	385mm	7603010	**179.45**

Permanent Magnetic Base

ASIMETO

- With permanent magnetic base, without On/Off switch
- Dovetail groove included

Magnetic Power	Main Body	Main Stem Length	Dia. of Hole	Slot	Code No.	Price $
17 kg	Ø30 x 25mm	85mm	Ø6mm	6mm	7601120	**35.27**

Standard Magnetic Bases

ASIMETO

- For Indicators with 3/8 stems and or Lug backs with 1/4 hole diameter
- On/Off switch
- 132 lbf Magnetic pull

Model	Pull Action	Code No.	Price $
With 6" Rod and Universal clamp	132 lbf	7601011	**36.20**
With 6" Adjustable Rod / Fine Adjustment	132 lbf	7601021	**36.93**

Standard Magnetic Bases

ASIMETO

Base only with M8 threaded hole for uses limited only by your imagination.

Magnetic Power	Magnetic Base (L x W x H)	Female Thread	Code No.	Price $
60 kg	60 x 50 x 55mm	M8	7600011	**43.02**
80 kg	60 x 50 x 55mm (metal switch)	M8	7600012	**41.41**

STM Magnetic Bases

STM

Standard Model BA-1 Code No.	Price $	Fine Adj. Model BA-1F Code No.	Price $
225705	**27.60**	225700	**25.49**

Universal Magnetic Indicator Holder

STM

- Two universal ball sockets permit adjustment to any angle or position
- Fine adjustment
- Dovetail clamp for test indicators
- 1/4" hole for 1/4" stem indicators

Description	Code No.	Price $
Universal magnetic indicator holder	200825	**16.17**

Single Action Dial Gauge Holder

STM

Articulated arm style magnetic base positions and locks easily; includes ON/OFF switch and central locking knob. One knob mechanically tightens both arms. Dial gauge holder includes fine adjustment and full 360° swivel.

Description	Code No.	Price $
Dial gauge holder	200875	**101.68**

Universal Surface Gauges

STM

Fully hardened and ground base serves as an accurate reference surface. Machined Vee groove in the base allows the gauge to be used conveniently on curved surfaces.

Base Dim. (in.)	Spindle Length (in.)	Scriber Length (in.)	Model No.	Code No.	Price $
2-3/16 x 1-5/8	7" with extra 4" spindle	3	SG/4-7	231246	**53.88**
3-1/8 x 2-1/2	12" with extra 9" spindle	7	SG/9-12	231248	**78.02**

Digital Interchangeable Rod Type Depth Gauges

ASIMETO

- The total measuring range is accomplished with threaded depth rods in 1"
- The base surface is precisely finished and hardened for accurate repeatable measurements
- Inch/Metric conversion
- Stroke 12.7mm
- Includes 10 rods

Range	Resolution	Accuracy	Base Length	Code No.	Price $
0-4"/100mm	0.0005"/0.01mm	±0.001"/0.02mm	63x17mm	7475040	**357.70**

Absolute Digital Depth Calipers

ASIMETO

- Extra large LCD readout
- Inch/Metric conversion
- Precision ground measuring surfaces

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"	7327067	**107.07**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"	7327087	**132.90**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"	7327127	**313.09**

Absolute Digital Depth Calipers With Single Hook

ASIMETO

- Stationary measuring surface on the beam protrudes at right angles (hook) to allow for measurement of depths, internal groove positions, and other intricate measurements
- All measuring surfaces are hardened

Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	0.0005" / 0.01mm	±0.001"/0.02mm	7322067	**142.75**
0-8" / 0-200mm	0.0005" / 0.01mm	±0.0015"/0.03mm	7322087	**174.51**
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"/0.04mm	7322127	**353.60**

Dial Interchangeable Rod Type Depth Gauges

ASIMETO

- The total measuring range is accomplished with threaded depth rods in 1"
- The base surface is precisely finished and hardened for accurate repeatable measurements
- Stroke 1"
- Includes 4 rods

Range	Graduation	Accuracy	Base Length	Code No.	Price $
0-4"	0.001"	±0.002"	2.5"x0.63"	7473041	**233.96**
0-4"	0.001"	±0.002"	4"x0.63"	7473043	**266.66**

Digital Tire Depth Gauge

ASIMETO

- The origin point is retained throughout the life of the battery
- Inch/Metric conversion
- Spherical end anvil

Range	Resolution	Accuracy	Base Length	Code No.	Price $
0-1.2"/0-30mm	0.0005"/0.01mm	±0.0015"/0.03mm	60mm	7321010	**108.20**

Digital Bore Gauges

ASIMETO

- Resolution: 0.00005"
- Dynamic carbide contact point
- 0.24-0.4" range is with fixed anvils
- 0.4-0.7" range is with plate guide and fixed anvils
- 0.7-1.4" range is with canister and fixed anvils
- Over 1.4" range is with wheel guide and inserting anvils

Range	No. Anvils	No. Spacers	No. Sub-anvils	Probe Depth	Code No.	Price $
0.24-0.4"	9	-	-	2"	7485111	**539.93**
0.4-0.7"	9	1	-	4"	7485121	**520.34**
0.7-1.4"	10	2	-	4"	7485211	**520.34**
1.4-2.4"	6	3	-	6"	7485221	**500.05**
2-6"	11	3	1	6"	7485311	**517.70**
6-10"	6	5	1	16"	7485321	**569.77**
10-16"	6	5	2	16"	7485331	**631.65**

Dial Bore Gauges

ASIMETO

- Graduation: 0.0001" / 0.01mm
- Fixed measuring points made of steel
- Movable probe pin with carbide ball

Range	No. Anvils	No. Spacers	No. Sub-Anvils	Probe Depth	Code No.	Price $
Inch						
0.24"-0.4"	9 pcs	-	-	2"	7483111	**282.48**
0.4"-0.7"	9 pcs	1	-	4"	7483121	**254.96**
0.7"-1.5"	10 pcs	2	-	6"	7483211	**234.02**
1.4"-2.4"	6 pcs	4	-	6"	7483221	**211.72**
2.0"-6.0"	11 pcs	4	1	6"	7483311	**223.05**
6.0"-10.0"	6 pcs	6	1	10"	7483321	**277.99**
10.0"-16.0"	6 pcs	6	2	16"	7483331	**353.55**

Note: For 0.0005" Graduation Purchase Code # 7402065 Dial Indicator

Single Beam Digital Height Gauges With Hand Wheel

ASIMETO

- Large LCD display
- Hand wheel design for fine adjustment
- Inch/Metric conversion
- Carbide tipped scriber
- Zero setting on any position

Range	Resolution	Accuracy	Code No.	Price $
0-12" / 0-300mm	0.0005" / 0.01mm	±0.0015"/0.04mm	7626120	**660.00**
0-18" / 0-450mm	0.0005" / 0.01mm	±0.0015"/0.04mm	7626180	**868.68**
0-24" / 0-600mm	0.0005" / 0.01mm	±0.0020"/0.05mm	7626240	**986.00**

Digital Height Gauges

ASIMETO

- Fine adjustment
- Easy to read large LCD display
- Inch/Metric conversion
- Origin memory eliminates the need to zero the reading each time the height gauge is turned on
- The base is designed with a thermal heat isolation hand grip

Range	Resolution	Accuracy	Code No.	Price $
0-12"/0-300mm	0.0005"/0.01mm	±0.0015"	7625120	**523.76**
0-24"/0-600mm	0.0005"/0.01mm	±0.0020"	7625240	**1,121.65**

Double Beam Digital Height Gauges w/ Hand Wheel

ASIMETO

- Large LCD display
- Hand wheel design for fine adjustment
- Inch/Metric conversion
- Carbide tipped scriber
- Zero setting on any position

Range	Resolution	Accuracy	Code No.	Price $
0-12" / 0-300mm	0.001" / 0.01mm	±0.0015"/0.04mm	7627120	**664.00**
0-18" / 0-450mm	0.001" / 0.01mm	±0.0015"/0.04mm	7627180	**1,135.46**
0-24" / 0-600mm	0.001" / 0.01mm	±0.0020"/0.05mm	7627240	**979.50**

Double Beam Digit Counter Height Gauges

ASIMETO

- Graduation: 0.001"
- Dial and digit counter reading
- Hand wheel for easier travel
- Carbide tipped scriber
- The digit counter provides bi-directional positioning and the capability of setting zero at any position

Range	Dial Grad.	Counter Grad.	Accuracy	Code No.	Price $
0-12"	0.001"	0.1" (Dual Reading)	±0.0015"	7623121	**476.93**
0-18"	0.001"	0.1" (Dual Reading)	±0.002"	7623181	**602.33**
0-24"	0.001"	0.1" (Dual Reading)	±0.002"	7623241	**900.72**

Vernier Height Gauges

ASIMETO

- Fine adjustment for easy setting
- Satin chrome finish
- Carbide tipped scriber

Range	Grad.	Accuracy	Code No.	Price $
0-12"/0-300mm	1/128"/0.05mm	±0.0015"	7621120	**305.84**
0-24"/0-600mm	1/128"/0.05mm	±0.002"	7621240	**638.54**

Black Granite Surface Plates 0-Ledge

STM

Imported Precision Toolroom Black Granite Surface Plates
These plates are made of the highest quality – True Black – Fine Grained – Non-porous – Jewel Hardness – Granite available to give years of long lasting service.

Specifications:
Compressive Strength 7329 lbs. / in^2
Water Absorptivity 0.13%

Size (in.)	Thickness (in.)	Shipping Weight (lb)	(±)	Code No.	Price $
Grade B-Tool Room- No Ledge					
9 x 12"	3"	40	±0.0001	255100	**82.42**
12 x 18"	3"	110	±0.0001	255105	**128.18**
18 x 24"	4"	189	±0.00015	255110	**340.10**
24 x 36"	4"	475	±0.0002	255115	**624.47**
36 x 48"	6"	1427	±0.0004	255120	**1,693.87**
Grade A-Inspection					
12 x 18"	3"	110	±0.000050	255130	**196.26**
18 x 24"	3"	145	±0.000075	255135	**317.04**
24 x 36"	4"	475	±0.0001	255140	**688.50**

Steel Surface Plate Stands

STM

- Fabricated from 2" x 2" 1/4" thick angle iron, welded together for extra strength–easily support more than twice the weight of the surface plate
- No assembly required; ready to use
- Gray enamel finish
- For exact height, add stand height listed in chart to surface plate thickness
- Made in Canada

Plate Size (in.)	Weight (lb)	Stand Height (in.)	Code No.	Price $
12 x 18"	80"	33"	255200	**822.50**
18 x 24"	95"	33"	255205	**1,694.20**
24 x 36"	125"	32"	255210	**1,562.50**
36 x 48"	175"	30"	255215	**2,134.90**
48 x 72"	300"	28"	255220	**3,901.40**

Radius Gauges

- Satin Finish Stainless Steel
- No. L300 Series

Model No.	Specifications	Code No.	Price $
L 300 CX	1/64–17/64 x 64ths 9/32–1/2 x 32nds	225005	**160.91**
L 300 MX	0.5mm–13mm x 0.5mm	225010	**289.25**

Radius Gauges

- Size is marked on each gauge leaf
- Gauge profiles have both convex and concave radii

Range	Qty	Composition	Notes	Code No.	Price $
1/32-17/64"	16 pairs	1/32-17/64 x 64ths	90° arc	7605401	**33.47**
1/32-1/4"	15 pairs	1/32-1/4 x 64ths	180° arc	7605411	**29.37**
1/64-1/2"	25 pairs	1/64-17/64 x 64ths, 9/32-1/2x3nd	-	7605441	**79.51**

No. 272 Fillet or Radius Gauges

Model No.	Specifications	Code No.	Price $
272A	1/32–17/64 x 64ths	225230	**33.98**

Feeler Gauge

- 26 tapered leaf thickness gauges
- 3" long

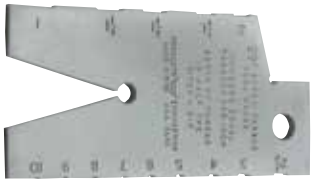
Range (in.)	Code No.	Price $
0.0015 to 0.025"	606050	**36.24**

Centre Gauges

- Satin-chrome finish
- American National Standard

Model	Description	Code No.	Price $
5031	U.S. Standard, 60°	225410	**16.98**
5032	Metric Standard, 60°	225415	**16.98**

Acme Gauge



Description	Code No.	Price $
1-10 TPI (29°)	225450	**45.65**

Telescoping Gauges

- Plunger is spring loaded and expands within the bore, allowing measurement of the internal diameter

Range	Depth	Model	Code No.	Price $
0.315"-0.500"	4.2"	A	7487011	**13.98**
0.500"-0.748"	4.4"	B	7487021	**13.98**
0.748"-1.26"	4.4"	C	7487031	**13.53**
1.26"-2.126"	5.85"	D	7487041	**16.16**
2.126"-3.54"	5.85"	E	7487051	**15.65**
3.54"-5.90"	5.85"	F	7487061	**16.16**
0.315-5.90" Set of 6		A, B, C, D, E, F	7487869	**48.90**
0.315"-0.500"	12"		7487013	**20.12**
0.500"-0.748"	12"		7487023	**19.55**
0.748"-1.26"	12"		7487033	**16.02**
1.26"-2.126"	12"		7487043	**22.21**
2.126"-3.54"	12"		7487053	**23.44**
3.54"-5.90"	12"		7487063	**22.21**

Telescoping Gauge Set

- Plunger is spring loaded and expands within the bore, allowing measurement of the internal diameter

Sizes Consisting of:	Code No.	Price $
5/16–1/2, 1/2–3/4, 3/4–1-1/4, 1-1/4–2-1/8, 2-1/8–3-1/2, 3-1/2–6	200710	**33.60**

Screw Pitch Gauges

- With locking devices

Inch range of pitches:

- 4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 11-1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82 and 84

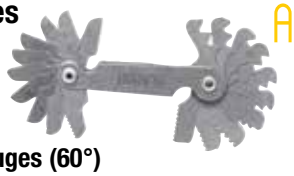
Metric range of pitches:

- 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90, 1, 1.10, 1.20, 1.25, 1.30, 1.40, 1.50, 1.60, 1.70, 1.75, 1.80, 1.90, 2, 2.50, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm

Model No.	No. of Leaves	Ranges of Pitch	Code No.	Price $
5651	51	4 to 84	225315	**70.13**
156m	28	0.25 to 2.50 mm	225320	**37.57**
5628	28	4 to 80	225325	**39.98**
5617	18	0.5 to 7.00mm and 60° angle gauge	225330	**34.48**
5629	28	4 to 56 0.5-6.0mm	225335	**39.98**

Thread Pitch Gauges

ASIMETO



- Each individual gauge is stamped with the thread pitch size

Metric Screw Pitch Gauges (60°)

Range	No. of Leaves	Composition of Leaves	Code No.	Price $
0.25-2.5mm	28	0.25 - 0.90mm by 0.05mm, 1 - 2mm x 0.1mm step, Plus 1.25, 1.75, 2.5mm	7605500	**16.73**
0.35-6mm	22	0.35, 0.4, 0.45, 0.5, 0.6, 0.7, 0.75, 0.8, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6mm, and 60° angle gauge	7605510	**20.06**
0.4-7mm	21	0.4, 0.5, 0.7, 0.75, 0.8, 0.9, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm	7605520	**17.28**
0.4-7mm	18	0.4, 0.5, 0.75, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7mm	7605530	**13.68**

Unified Screw Pitch Gauges (60°)

Range	No. of Leaves	Composition of Leaves	Code No.	Price $
4-42 TPI	30	4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11,11-1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI	7605502	**16.73**
4-84 TPI	51	4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 11-1/2, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30 - 84 by 2 , TPI	7605512	**29.53**

Metric and Unified Screw Pitch Gauges (60°)

Range	No. of Leaves	Composition of Leaves	Code No.	Price $
0.4-7mm 4-42 TPI	51	7605520 and 7605502	7605508	**28.78**

Thread Measuring Wire Set

ASIMETO

- 48 wires - 16 different sizes
- Measures all threads from 3 - 48 threads per inch
- Measures all metric threads from 0.5mm to 6mm
- Also measures ACME threads
- Laminated chart included

Description	Code No.	Price $
Thread Wire Set	7697300	**25.54**

1-60 Drill/Machine Screw Tap Gauge

- Made of high quality steel, satin chrome finish
- Tells at a glance the correct size tap drill for machine screw tap in "NF" National Fine or "NC" National Coarse thread series
- Shows the correct body size drill to use, 60 sizes shown with number and decimal equivalent of drill at each hole

Model No.	Description	Code No.	Price $
5051	1-60 Drill/Machine Screw Tap Gauge	606314	**49.51**

1/16 - 1/2 Drill Gauge

- Made of high quality steel, satin chrome finish
- Gauge has 29 measuring holes for determining twist drill sizes from 1/16" to 1/2" in 1/64" increments
- Shows drill sizes in inches and decimal equivalents

Model No.	Description	Code No.	Price $
5052	1/16-1/2 Drill Gauge	606316	**48.10**

A-Z Drill Gauge

- Made of high quality steel, satin chrome finish
- Used to select or check drill sizes from "A" to "Z"
- Each gauge hole is marked by letter and its decimal equivalent from 0.234 inch diameter through 0.413 inch diameter

Model No.	Description	Code No.	Price $
5053	A-Z Drill Gauge	606318	**48.10**

Rigid and Flexible Scales

Size (in.)	Type		Graduation	Code No.	Price $
6	Flex	4R	1/8, 1/16, 1/32, 1/64"	606001	**17.41**
6	Flex	3R	1/32, 1/64, 1/10, 1/50"	606012	**17.41**
6	Flex	–	1/32, 1/64, 0.5mm, 1mm	606015	**17.41**
6	Rigid	4R	1/8, 1/16, 1/32, 1/64"	606017	**17.77**
12	Flex	4R	1/8, 1/16, 1/32, 1/64"	606002	**31.76**
12	Flex	3R	1/32, 1/64, 1/10, 1/50"	606013	**31.76**
12	Flex	–	1/32, 1/64, 0.5mm, 1mm	606016	**31.76**
12	Rigid	–	1/32, 1/64, 0.5mm, 1mm	606033	**34.90**
12	Rigid	4R	1/8, 1/16, 1/32, 1/64"	606018	**34.94**
24	Flex	3R	1/32, 1/64, 1/10, 1/50"	606014	**73.54**

Narrow Rules & Depth Gauge Rules

Model No.	Description	Graduations	Code No.	Price $
7305-006	6" with clip	32nds one face, 64ths other face	606156	**15.47**
7305-012	12" with clip	32nds one face, 64ths other face	606158	**27.74**
7305-006	6" without clip	32nds one face, 64ths other face	606160	**10.82**
7305-012	12" without clip	32nds one face, 64ths other face	606162	**27.42**
7305-M06	6" with clip	32nds one face, 0.5 mm other face	606164	**15.50**
7305-M12	12" with clip	32nds one face, 0.5 mm other face	606166	**27.74**
7305-M06	6" without clip	32nds one face, 0.5 mm other face	606168	**10.81**
7305-M12	12" without clip	32nds one face, 0.5 mm other face	606170	**20.53**
7305-M15	150 mm with clip	mm one face, 0.5 mm other face	606172	**15.50**
7305-M30	300 mm with clip	mm one face, 0.5 mm other face	606174	**19.73**
7305-M15	150 mm without clip	mm one face, 0.5 mm other face	606176	**10.82**
7305-M30	300 mm without clip	mm one face, 0.5 mm other face	606178	**27.42**

Specialty Rules — Round End

Model No.	Description	Graduations	Code No.	Price $
7202-SS6	6" flex, not plated, round end rule with clip Decimal equivalent chart on back	32nds, 64ths	606180	**6.85**
7203-SS6	6" flex, not plated, round end rule with clip Metric equivalent chart on back	mm, 64ths	606182	**6.85**
7202-C06	6" flex, chrome plated, round end rule with clip Decimal equivalent chart on back	32nds, 64ths	606184	**11.97**
7203-C06	6" flex, chrome plated, round end rule with clip Metric equivalent chart on back	mm, 64ths	606186	**17.09**

6" Pocket Rule

ASIMETO

- Stainless steel, hardened and tempered
- Includes removable pocket clip

Size	Code No.	Price $
6"	7606009	**2.64**

12" Combination Square Set

ASIMETO

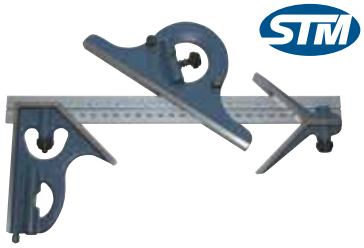
- Graduation: Protractor: 1°
  Blade: 64ths, 32nds, 1mm, 0.5mm (E/M)
  8ths, 16ths, 32nds, 64ths (4R)
- Blade is hardened and tempered
- Heads are hardened cast finish in baked enamel
- 45° Centre Gauge

Description	Blade Length	Code No.	Price $
4pc Set (With E/M rule)	12"/300mm	7490208	**175.00**
4pc Set (With 4R rule)	12"/300mm	7490218	**172.50**
Parts			
12" 4R Stainless Steel Rule		7490210	**24.50**
12"/300mm E/M Stainless Steel Rule		7910051	**23.95**
45° Centre Gauge		7490250	**32.00**
Dial Scale Protractor Head		7490260	**50.39**
Square Head		7490270	**39.78**
Lock Nut		7490220	**8.51**

Combination Set

STM

- Used for layout, set-up, checking heights, depths and setting angles
- Square head, centre head and reversible protractor head
- Hardened cast iron heads



Blade for Combination Set

Graduation	Length of Rule	Code No.	Price $
1/32, 1/64, 0.5 mm, 1 mm	12"	220850	**350.68**
Rules for Combination Set			
1/32, 1/64, 0.5 mm, 1 mm	12"	606044	**68.45**
1/8, 1/16, 1/32, 1/64	24"	606046	**133.38**
Locking Assembly		220851	**8.62**

Centre Finder

STM

- Satin chrome finish
- Accurately and quickly locates centre on round workpieces
- Place tool in drill chuck or collet and line up pointer with line scribed on shaft

Model No.	Size (in.)	Code No.	Price $
4200-100	Centre finder	606340	**30.71**

Depth & Angle Gauge

STM

The ability to measure depths and angles is combined in this versatile tool. The head is made from selected steel and has an attractive black finish. It is graduated both left and right to 15°, 30° and 45° and the rule can be set to any of these angles. A 6" (150mm) steel rule is fitted to the head and can be locked in final position for depth or angular measurements by a knurled nut.

Rule Length	Code No.	Price $
6"	231274	**17.64**

Bore Gauges (Taper Gauges)

STM

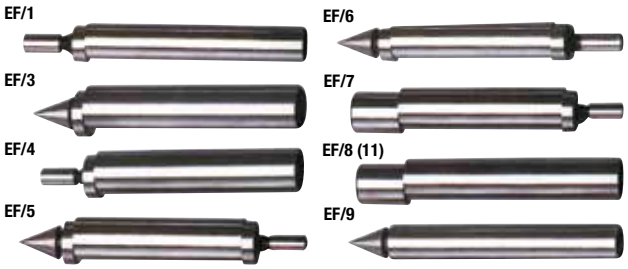
Manufactured from stainless steel, these have permanently engraved graduations. Accurate taper throughout the length of the gauge. Available with imperial or metric graduations.

Range	Model No.	Code No.	Price $
1/32"-5/8"	DG/1-15	231276	**22.07**
1-16mm	BG/1-15	231277	**22.10**

Edge & Centre Finders

STM

Edge and Centre Finders are time saving positioning tools for use on jig boring, milling machines etc. These are used for accurate locating work edges, shoulders, grooves, centre points and scribed lines.



Model	Tip Dia.	Shank Dia.	Code No.	Price $
Centre Finder				
EF/3		1/2"	231302	**16.96**
EF/9		3/8"	231304	**16.38**
Combination Edge & Centre Finder				
EF/6	0.200"	3/8"	231306	**18.19**
EF/5	0.200"	1/2"	231308	**19.32**
Edge Finder				
EF/1	0.200"	3/8"	231310	**14.28**
EF/4	0.200"	1/2"	231312	**16.96**
EF/11	10mm	3/8"	231314	**16.96**
EF/8	1/2"	1/2"	231316	**16.38**
Double Edge Finder				
EF/7	0.200"	1/2"	231318	**18.19**

Wiggler or Centre Finder

STM

Comes with four interchangeable attachments. They can be snapped onto the chuck without removing the collet. Spring tension on the ball of the point.

Description		Code No.	Price $
Centre Finder complete with 4 attachments	WCF/WZ-6	231300	**41.07**

Digital Protractors — Level Type

ASIMETO

- This protractor provides an immediate digital reading of any angle in a full circle with 0°-90°-0°-90°-0° readings
- ABS/ZERO button allows two measuring modes, Standard and Alternate Reference
- Four 90° quadrants for display purposes
- HOLD button for freezing a reading in an unreadable position
- V-grooves on top and bottom for use on curved surfaces
- 7490162 comes with a magnetic bottom for easy fixing

Range	Resolution	Accuracy	Code No.	Price $
360°	0.1°	±0.1°	7490160	**205.21**
360°	0.1°	±0.1°	7490162	**173.52**

STM Universal Bevel Protractor

- Base available for setting up jobs on surface plates, milling machines, etc.
- Dial face and vernier are finished in satin chrome to insure easy reading
- Vernier reading in 5 minutes of the arc
- Blades is fastened by a knurled thumb lock which can be set at any desired point
- An angle attachment for acute angle measuring is also available
- Blade slides full length
- Fine adjustment knob for measuring or setting of minute angles
- Protractor dial is graduated over 360° (in 0° to 90° sectors) and rotates around the full circle
- Hardened stainless steel, rust and wear resistant for long life
- With magnifier glass for easy and faster reading
- Protractor accepts both 6" and 12" blade
- Positive rigid locking clamps
- Includes fitted case

Description	Blade Size	Code No.	Price $
Protractor head with magnifier lens	6 and 12	205610	**96.10**
Magnifier	–	205645	**21.20**

Degree Protractors

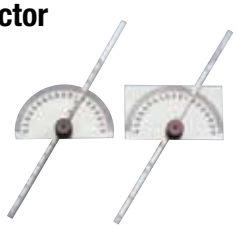
This stainless steel protractor comes with either a semi-circular or a rectangular head. The head has permanently deep etched graduations, 0 to 180° in opposite directions thus permitting reading an angle directly and also its supplement. The 6" (150 mm) blade has a graduation line on one end that permits accurate setting and reading of angles.

Type	Code No.	Price $
Round	231266	**20.67**
Rectangular	231268	**22.38**

Depth Gauge with Protractor

A versatile tool, the Depth Gauge with Protractor allows for measurement of both angles and depths.

- Stainless steel
- Graduations: 0-180° in opposite directions
- 6" (150 mm) steel rule



Type	Code No.	Price $
Round	231270	**22.99**
Rectangular	231272	**25.03**

Protractors

- Measures angles from 0-180°
- Used for drawing radial lines, transferring angles and setting bevels
- Head measures 3-5/16" x 2"
- Features 6" arm and knurled thumb lock nut
- Blade secured firmly by lock nut at any angle
- Made of tempered steel with satin chrome finish

Model No.	Style	Description	Code No.	Price $
5170	Rectangle	Supplied with 6" arm	606150	**55.33**
5180	Semi-Circle	Supplied with 6" arm	606152	**55.33**
5190	Rectangle	With 6" graduated rule	606154	**64.25**

Spring Calipers & Dividers

- Styles include solid nut or quick nut
- Spring joint for precision settings
- Legs pivot on a roller
- Legs tensioned by bow spring

Model No.	USA Solid Nut Code No.	Price $	STM Solid Nut Code No.	Price $	Model No.	STM Quick Nut Code No.	Price $
Inside Calipers							
ID/3			231148	**9.33**	ID/Q-3	231160	**11.82**
ID/4			231150	**9.33**	ID/Q-4	231162	**11.82**
ID/6	606105	**16.44**	231152	**13.00**	ID/Q-6	231164	**15.38**
ID/8			231154	**16.38**	ID/Q-8	231166	**18.64**
ID/10			231156	**21.60**	ID/Q-10	231168	**23.51**
ID/12			231158	**25.61**	ID/Q-12	231170	**27.52**
Outside Calipers							
OD/3			231172	**9.33**	OD/Q-3	231184	**11.82**
OD/4			231174	**9.33**	OD/Q-4	231186	**11.82**
OD/6	606110	**16.44**	231176	**13.00**	OD/Q-6	231188	**15.38**
OD/8			231178	**16.38**	OD/Q-8	231190	**18.64**
OD/10			231180	**21.60**	OD/Q-10	231192	**23.51**
OD/12			231182	**25.61**	OD/Q-12	231194	**27.52**
Spring Dividers							
DD/3			231196	**9.37**	DD/Q-3	231208	**11.81**
DD/4			231198	**9.37**	DD/Q-4	231210	**11.81**
DD/6	606100	**16.70**	231200	**13.04**	DD/Q-6	231212	**15.43**
DD/8			231202	**16.41**	DD/Q-8	231214	**18.63**
DD/10			231204	**21.54**	DD/Q-10	231216	**23.46**
DD/12			231206	**25.60**	DD/Q-12	231218	**27.55**

Jenny Calipers — Hermaphrodite Calipers

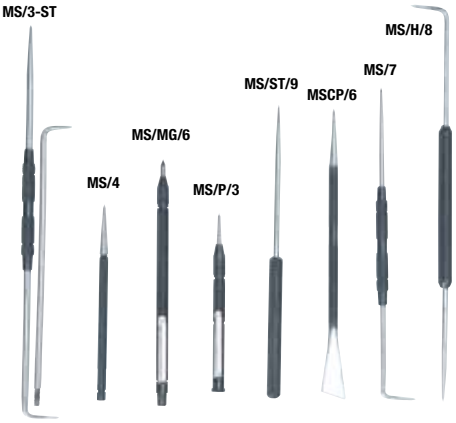
Manufactured from selected steel, the legs are exceptionally rugged and well finished. The leg that holds the adjustable point is offset. The locating lug is incorporated in the straight leg.

Size (in.)	Model No.	Code No.	Price $
6"	JC/6	231244	**10.99**

STM Pen Scriber

Description	Code No.	Price $
STM Pen Scriber c/w carbide point	201060	**9.35**
Replacement carbide point	201065	**2.16**

Scribers



MS/3-ST - 3 interchangeable threaded points, short straight, short bent and long bent

MS/4 - Single ended light duty

MS/MG/6 - Tungsten carbide tip for marking on hard materials. Permanent magnet on the other end for picking up small metal parts

MS/P/3 - Scriber point is held by a knurled chuck and can be reversed when not in use

MS/ST/9 - Single ended heavy duty

MSCP/6 - Double ended – combining a needle point with a chisel end

MS/7 - Double ended with one straight point and one point bent at 90°

MS/H/8 - Double ended heavy duty with one straight point, the other bent at 90°

Overall Length	Model No.	Code No.	Price $
9 & 12"	MS/3-ST	231250	**6.30**
4-1/2"	MS/4	231252	**2.53**
6"	MS/MG/6	231254	**10.70**
3-1/2"	MS/P/3	231256	**5.95**
7"	MS/ST/9	231258	**4.00**
6-3/4"	MSCP/6	231260	**4.71**
7-1/2"	MS/7	231262	**4.00**
9-3/16"	MS/H/8	231264	**4.68**

Engineer's Tool Sets

ETS/1
Contains: Inside Caliper 4", Outside Caliper 4", Screw Cutting Gauge, Steel Rule 6", Pocket Scriber 3-1/2", and Centre Punch 5/32"

ETS/2
Contains: Engineer's Precision Square 4", Jenny Caliper 6", Steel Rule 6", Double Ended Scriber 7-1/2", Centre Punch 5/32", Adjustable Tap and Reamer Wrench, and Spring Divider 4"

ETS/1

ETS/2

Model No.	Code No.	Price $
ETS/1	231278	**58.46**
ETS/2	231280	**82.31**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Steel Squares

ASIMETO

- Made of precision ground hardened stainless steel

Inch Size	Metric Size	Squareness	Style	Code No.	Price $
General Type					
2" x 1.6"	50 x 40mm	00	Bevel	7639210	**53.74**
3" x 2"	75 x 50mm	00	Bevel	7639220	**60.95**
4" x 2.75"	100 x 70mm	00	Bevel	7639230	**68.00**
6" x 4"	150 x 100mm	00	Bevel	7639240	**116.33**
8" x 5"	200 x 130mm	00	Bevel	7639250	**149.14**

Diemaker's Square Set

ASIMETO

- Use for precise miniature layouts
- Hardened and ground with very fine finish, extremely accurate
- Set includes: 3 hardened beveled edge squares; 3/4", 1-1/4", 2-3/8" plus 1- 1/2" triangular straight edge with handle complete in a fitted case
- Straight edge sides are machined in the middle for clearance of burs and dirt

Specifications of Squares:

Beam	Blade
1-15/16"	2-15/16"
1-1/8"	1-9/16"
3/4"	1"

Description	Code No.	Price $
Diemaker's Square Set	7606670	**208.20**

Centre Square

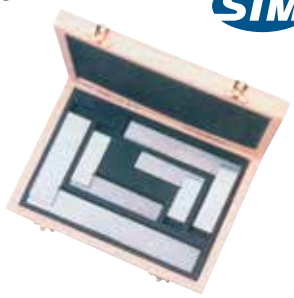
The knife edge is made from Spring Steel and is hardened and ground for extended life.

Work Dia.	Model No.	Code No.	Price $
1-1/2"	CS/1	231320	**22.98**
3"	CS/2	231322	**43.74**

Engineer's Precision Squares

Hardened spring steel blades are permanently fixed to the stock by means of tapered self-locking rivets which ensure complete rigidity. Both the blade and stock are precisely ground to ensure straightness and parallelism.

- Internal and external squareness as per BS939 Grade B



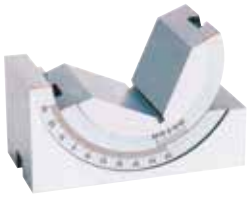
Blade Length (in.)	Model No.	Squareness	Code No.	Price $
2"	SS/A/2	0.00063"	231000	**22.11**
3"	SS/A/3	0.00063"	231010	**22.11**
4"	SS/A/4	0.00063"	231015	**30.71**
6"	SS/A/6	0.00063"	231020	**39.15**
9"	SS/A/9	0.00094"	231030	**97.84**
12"	SS/A/12	0.00094"	231040	**146.95**
Set 1	SS/A/2-3-4-6		231045	**130.43**
Set 2	SS/A/2-4-6		231050	**108.40**

Set 1 contains one each of 2", 3", 4" and 6" Squares
Set 2 contains one each of 2", 4" and 6" Squares

Adjustable Angle Block 0-60°

Made from fully hardened (50-55) HRC and ground tool steel. The block is fully adjustable from 0°-60° and can be set at any desired position by locking of the hex screw located in the base.

- Sold Individually



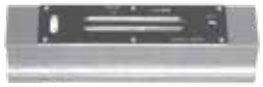
Block Length (in.)	Block Height (in.)	Block Width (in.)	Model No.	Code No.	Price $
3-3/4"	2"	1-3/4"	PAB/01	231096	**219.42**
3-3/4"	2"	1-3/16"	PAB/02	231098	**178.24**
3"	1-11/32"	1"	PAB/03	231100	**144.04**

Precision Square Levels

Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VSL-200A	200 x 200 x 39.5	4.10	230370	**325.05**
VSL-300A	250 x 250 x 44.6	8.83	230380	**478.00**

Horizontal Leveling Instrument

- 0.02mm/100mm tolerance

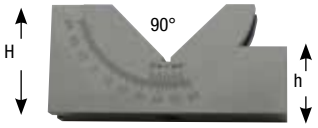


Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VLI-200A	200x50x45	2.1	230390	**317.30**

Precision Angle Plates

YCT-AP Angle Plate

- Material: SK2
- Hardness: 50-54 HRC
- Squareness: within 0.005 mm
- Tolerance of angle: 10"
- Angular measures from 0-60°



Model No.	H	W	L	h	Net Wt.	Code No.	Price $
AP-1	47	46	102	28	1.5 kg	230745	**92.66**
AP-3	32	25	75	22	0.5 kg	230755	**85.70**

STM Universal Angle Block Sets

- Set complete in fitted case
- Hardened steel, precision ground
- Size 3" long by 1/4" thick
- Accuracy ± .0001" per inch

DK33-006

DK32-027

Model No.	Description	Code No.	Price $
DK 32-027	1pc. each 1°, 2°, 3° 4°, 5°, 10°, 15°, 30°	230865	**173.70**
DK 33-006	1pc. each 1°, 2°, 3°, 4°, 5°, 10°, 15°, 20°, 25°, 30°	230867	**67.07**

Rectangular Gauge Block Sets — Inch

ASIMETO

- Individual serial numbers on each block, regardless of grade
- A complete certificate of calibration traceable to the N.I.S.T. showing the deviation of each block
- All sets are supplied in deluxe fitted wooden case
- Mirror polished surfaces provide superior wringing characteristics

Blocks per Set	Blocks In Set	Grade	Former Grade	Code No.	Price $
81	1 Block: 0.050" 10 Blocks: 0.1000"-0.1009" x 0.0001" steps 49 Blocks: 0.101"-0.149" x 0.001" steps 17 Blocks: 0.150"-0.950" x 0.050" steps 4 Blocks: 1.000"-4.000" x 1.000" steps	0 AS-1 AS-2	(2) (3) (B)	7650010 7650011 7650012	**990.00** **699.00** **493.00**
36	1 Block: 0.050" 10 Blocks: 0.1000"-0.1009" x 0.0001" steps 9 Blocks: 0.101"-0.109" x 0.001" steps 9 Blocks: 0.110"-0.190" x 0.010" steps 4 Blocks: 0.200"-0.500" x 0.100" steps 3 Blocks: 1,2,4"	0 AS-1 AS-2	(2) (3) (B)	7650020 7650021 7650022	**566.20** **419.90** **316.35**

Individual Rectangular Gauge Blocks

ASIMETO

- Grade 0
- Individual serial numbers on each block
- Mirror polished surfaces provide superior wringing characteristics

Size (in.)	Code No.	Price $
0.050"	7651010	**25.20**
0.100"	7651150	**25.20**
0.200"	7651800	**25.79**
0.250"	7651820	**25.16**
0.500"	7651870	**28.10**
1.000"	7651970	**29.65**

Rectangular Gauge Block Sets — Metric

ASIMETO

- Individual serial numbers on each block, regardless of grade
- A complete certificate of calibration traceable to the N.I.S.T. showing the deviation of each block
- All sets are supplied in deluxe fitted wooden case
- Mirror polished surfaces provide superior wringing characteristics

Blocks per Set	Blocks In Set	Grade	Former Grade	Code No.	Price $
88	1 Block: 1.0005mm 9 Blocks: 1.001-1.009mm x 0.01mm steps 49 Blocks: 1.01-1.49mm x 0.01mm steps 19 Blocks: 0.5-9.5 x 0.5mm steps 10 Blocks: 10-100mm x 10mm steps	AS-1	(3)	7650181	**923.99**

Standard Rectangular Gauge Block Sets

Workshop Grade B

- All blocks are manufactured to the same high standards as our premium sets
- Each set is supplied with a certificate guaranteeing that each block is manufactured to meet or exceed federal spec GGG-G-15C, and is within tolerance (±0.000050)
- This certificate does not show the individual deviation of each block
- Each set is provided in a fitted wooden case

No. Blocks	Blocks Included	Code No.	Price $
81 piece set	9–0.1001-0.1009 in 0.0001 steps, 49–0.101-0.149 in 0.001 steps 19–0.050-0.950 in 0.050 steps 4–1.000-4.000 in 1.000 steps	200715	**339.90**

Pin Gauge Sets

ASIMETO

- Furnished in molded plastic case

Plus Tolerance +0.0002"/-0

Qty	Range	Finish	Code No.	Price $
50	0.011"-0.060" x 0.001" step	Bright	7697010	**82.85**
190	0.061"-0.250" x 0.001" step	Bright	7697020	**213.35**
250	0.251"-0.500" x 0.001" step	Bright	7697030	**382.35**
125	0.501"-0.625" x 0.001" step	Bright	7697040	**382.35**
125	0.626"-0.750" x 0.001" step	Bright	7697050	**445.81**

Minus Tolerance +0/-0.0002"

Qty	Range	Finish	Code No.	Price $
50	0.011"-0.060" x 0.001" step	Bright	7697012	**89.53**
190	0.061"-0.250" x 0.001" step	Bright	7697022	**199.90**
250	0.251"-0.500" x 0.001" step	Bright	7697032	**358.17**
125	0.501"-0.625" x 0.001" step	Bright	7697042	**382.35**

Ergonomic Pin Gauge Handles

ASIMETO

- Comfortable, ergonomically designed handle for pin gauges
- Can be used with GO pin (green) on one end, NO GO (red) on opposite end

Range	Code No.	Price $
0.011" - 0.060"	7697410	**25.16**
0.061" - 0.250"	7697411	**31.60**
0.251" - 0.500"	7697412	**37.69**
0.501" - 0.625"	7697413	**35.50**
0.626" - 0.750"	7697414	**38.61**

Precision Steel Pin Gauge Sets

STM

- Hardness: heat treated to a hardness of 60-62 Rockwell C Drill Rod
- All members 2" long, centerless lapped
- Size Electro etched in each piece
- Finish: Each gauge inspected and has 10 micron finish or better
- Deluxe box with insert
- Tolerance: Minus -0.0002"/+0.0000"

Gauge Set No.	Range	No. of Gauges	Minus Code No.	Price $
P-1	0.061" - 0.250"	190	255040	**111.40**
P-2	0.251" - 0.500"	250	255045	**220.70**

Precision Inspection Gauge Ball Sets

ASIMETO

- Meets all grade 25 AFBMA standards
- Chrome alloy steel, hardened to 63HRC
- Surface finish to 1.5 micro-inches
- Within 0.0001"/0.0025mm of actual size
- Spherical accuracy within 0.000025"/0.0006mm

Quantity	Description	Code No.	Price $
26 Pair	1/8" - 1"	7679901	**131.22**
25 Pair	1mm to 25mm by 1mm increments	7679900	**131.22**

Rockwell Type Hardness Tester

ASIMETO

- For testing the hardness of various materials to determine the Rockwell hardness to scales A, B, and C
- Unit is designed with mechanical loads for precise hardness readings
- Conform to the requirements of ASTM E18, ISO 6508-2, and GB/T 230.2 standards
- Readings provided to a minimum resolution 0.5HR

Standard Acessories:

• Diamond cone penetrator	1pc
• V-notch anvil	1pc
• Small flat anvil	1pc
• Large flat anvil	1pc
• Rockwell standard	5pcs
• 1/16" steel ball penetrator	1pc
• Instruction manual	1pc

Range	Test Force	Test Height	Throat Depth	Code No.	Price $
20-88 HRA, 20-100 HRB, 20-70 HRC	588.4, 980.7, 1471N (60, 100, 150kgf)	170mm	135mm	7640010	**3,887.35**

Hardness Test Block

ASIMETO

- To be used with Asimeto Impact Hardness Tester

Range of Hardness		Dimensions	Weight	Code No.	Price $
20-30 HRC 35-55 HRC 60-70 HRC	80-88 HRA 85-95 HRB	60 x 40 x 10mm	0.19kg	7640810	**202.79**

Impact Hardness Tester

ASIMETO

Features:

- Used for determining the hardness of ferrous and non-ferrous metals
- Hardness is displayed in an "L" value that can be converted into Brinell, Rockwell, Vickers, and Shore Hardness

Specifications:

- Range: 330-890HL
- Impact capacity: 11 Nmm
- Testing direction: Arbitrary
- Power: DC 6.0 V
- Mass of impact body: 5.5g
- Diameter of carbide ball: 3mm

Description	Code No.	Price $
Impact Hardness Tester	7640171	**1,279.00**

Hardness Tester Penetrators

ASIMETO

Description	Specifications	Code No.	Price $
For Rockwell Hardness Tester	120° diamond cone penetrator Ø1.588mm (1/16") steel ball	7640830	**486.38**
For Brinell Hardness Tester	Ø2.5, 5, 10mm tungsten carbide ball penetrators	7640840	**437.87**

Surface Roughness Standards Set

ASIMETO

- Used for the visual comparison of surface roughness
- Set of 30 specimens, 7/8" x 3/8" electro-formed, solid nickel

Code No.: 7506010 **Price $ 348.64**

Qty.	Desc.	Roughness
2	Flat Lapping	0.05; 0.1µm (2; 4µ")
4	Reaming	0.2; 0.4; 0.8; 1.6µm (8; 16; 32; 63µ")
6	Grinding	0.05; 0.1; 0.2; 0.4; 0.8; 1.6µm (2; 4; 8; 16; 32; 63µ")
6	Horiz. Milling	0.4; 0.8; 1.6; 3.2; 6.3; 12.5µm (16; 32; 63; 125; 250; 500µ")
6	Vert. Milling	0.4; 0.8; 1.6; 3.2; 6.3; 12.5µm (16; 32; 63; 125; 250; 500µ")
6	Turning	0.4; 0.8; 1.6; 3.2; 6.3; 12.5µm (16; 32; 63; 125; 250; 500µ")

Precision Parallel Sets

ASIMETO

- Hardened and ground high grade alloy steel
- Hardness 52-58 HRC
- 6" length
- Absolute heights are nominal
- Supplied in durable plastic case
- Width Accuracy: ±0.0008" Length Accuracy: ±0.0006"

Description	Range	Parallelism	Paired Accuracy	Code No.	Price $
8 Pair 1/2"	7/8" to 1-3/4" x 1/8"	±0.0003"	±0.0003"	7607080	**229.15**
9 Pair 1/4"	3/4" to 1-3/4" x 1/8"	±0.0002"	±0.0002"	7607090	**214.81**
10 Pair 1/8"	1/2" to 1-5/8" x 1/8"	±0.0002"	±0.0002"	7607100	**136.24**
10 Pair 1/32"	1/2" to 1-5/8" x 1/8"	±0.0002"	±0.0002"	7607101	**101.92**

Precision Parallel Sets

- Matched pairs
- Made of high grade steel alloy
- Hardened and ground
- Tolerance ± 0.0003"

Model No.	Dimensions per Pair	Code No.	Price $
DK 32-045	3/16 x 1 x 6, 3/16 x 1-1/4 x 6, 3/16 x 1-1/2 x 6, 3/16 x 1-3/4 x 6	230850	**71.51**
DK 32-012	3/16 x 1 x 6, 3/16 x 1-1/4 x 6, 1/2 x 1-1/2 x 6, 1/2 x 1-3/4 x 6	230853	**67.64**
DK 32-050	1/2 x 1 x 6, 1/2 x 1-1/4 x 6, 1/2 x 1-1/2 x 6, 1/2 x 1-3/4 x 6	230855	**79.93**
DK 32-064	1/4 x 3/4 x 6, 1/4 x 7/8 x 6, 1/4 x 1 x 6, 1/4 x 1-1/8 x 6, 1/4 x 1-3/8 x 6, 1/4 x 1-1/2 x 6, 1/4 x 1-5/8 x 6, 1/4 x 1-3/4 x 6	230857	**131.05**
DK 32-073	1/2 x 7/8 x 6, 1/2 x 1 x 6, 1/2 x 1-1/8 x 6, 1/2 x 1-1/4 x 6, 1/2 x 1-3/8 x 6, 1/2 x 1-5/8 x 6, 1/2 x 1-3/4 x 6	230860	**118.51**

Steel Parallel Set

All 10 Pairs Including Fitted Case

- Thin style, 1/8" thick
- Matched pairs
- Made of high grade steel alloy
- Hardened and ground
- Tolerance ± 0.0003"

Width	Height	Length
1/8"	1/2"	6
1/8"	5/8"	6
1/8"	3/4"	6
1/8"	7/8"	6
1/8"	1"	6
1/8"	1-1/8"	6
1/8"	1-1/4"	6
1/8"	1-3/8"	6
1/8"	1-1/2"	6
1/8"	1-5/8"	6

Code No.: 230863 **Price $: 75.17**

Ultra Precision Wavy Parallel Set

ASIMETO

- Made of high quality spring steel, hardened, stress relieved, and precision ground
- Parallel within ±0.0002", paired ±0.0002"
- Includes 9 pairs 4-1/4" long with the following heights: 1/2, 5/8, 3/4, 7/8, 1, 1-1/8, 1-1/4, 1-3/8, 1-1/2
- Shims can be compressed, useful for the holding of thin parts

Description	Code No.	Price $
Ultra Precision Wavy Parallel Set	7607660	**128.40**

Precision Thin Steel Parallels

- Thin style, 1/8" thick
- Sold in matched pairs
- Made of high grade alloy steel
- Hardened and ground
- 2 holes in each parallel
- Accuracy: ±0.0002" parallelism in height ±0.001" to size in height

W x H x L	Hole Size	Code No.	Price $
1/8 x 1/2 x 6"	13/64"	230200	**10.93**
1/8 x 5/8 x 6"	1/4"	230205	**11.89**
1/8 x 3/4 x 6"	5/16"	230210	**11.89**
1/8 x 7/8 x 6"	5/16"	230215	**11.89**
1/8 x 1 x 6"	5/16"	230220	**11.78**
1/8 x 1-1/8 x 6"	3/8"	230225	**10.50**
1/8 x 1-1/4 x 6"	3/8"	230230	**11.89**
1/8 x 1-3/8 x 6"	7/16"	230235	**11.89**
1/8 x 1-1/2 x 6"	1/2"	230240	**11.89**
1/8 x 1-5/8 x 6"	1/2"	230245	**11.89**

Precision 1-2-3 Blocks

- These blocks are very useful in mounting work for precision grinding, layout work, etc.
- Blocks are hardened to 58-60 HRC and ground to surface finish 6-10 micro inches
- Tolerances are guaranteed to 0.0001" for squareness per inch
- 0.0002" for parallelism
- Blocks are matched and measure 1" x 2" x 3"

Description	Code No.	Price $
2 Piece set	230876	**38.67**

1-2-3 or 2-4-6 Blocks

- Heat treated and case hardened to 55-60 HRC
- Precision ground and case hardened
- Squareness of all sides is within 0.0001"
- Parallel Accuracy 0.0003"
- Surface finish 6–16 micro inches
- 23 holes–5 are tapped in 3/8-16
- Supplied in pairs

Size	Description	Code No.	Price $
1-2-3	23 Holes	230870	**27.38**
2-4-6	23 Holes	230872	**221.51**
1-2-3	No Hole (Pair)	230874	**39.63**

Welcome to the SOWA family!

Sowa Tool began when founder, Gerhard Sowa Sr., immigrated from Germany to Canada to start a new life in 1960. Perceiving the need for quality metalworking solutions, he began to import tools and offer them to local manufacturers. Sowa Tool was born. As the business grew, he opened an office and built a strong team, including his son and current CEO, Gerhard Sowa Jr. Recognizing that their customers ability to compete relied on identifying better solutions, the Sowa team turned their focus to developing their own line of unrivaled tooling through a combination of acquisition and continuous product development.

The Sowa brands include:

G3 TOOLING

Superior performance tool holding and workholding solutions when speed and accuracy matter most.

ASIMETO

High-performance precision measuring and inspecting solutions.

SOWA

High-performance cutting tools including end mills, drills, taps and indexables.

SKODA

High Value production grade live centers.

narex

Exclusive line of value boring heads.

STM

A wide product range of economic tooling for general purpose applications.

With this line-up, Sowa Tool is uniquely qualified to serve all your needs under one roof. Ask us how Sowa can tool your world and provide the competitive edge for your business.

Tool Holding

Tool Holding

END MILL HOLDERS

End Mill Holder Index G3
End Mill Holders G4-10
Retention Knobs G11

SHELL MILL HOLDERS

Shell Mill Holders G13-15
Milling Arbors G15-16

COLLET CHUCKS & SHRINK FIT TOOLING

Collet Chucks & Collets. G18-43
Shrink Fit Tooling G43-46

ANGLE HEADS

GS Driven Tooling G48
Right Angle Heads G48-61

TAPPING CHUCKS & COLLETS

Tapping Chuck & Collets Index G62
Tapping Chucks G63-65
Tap Collets, Reducers & Sets G65
Synchrolize Tapping System G66-67
Air Tapping Units. G67

DRILL CHUCKS & TAP ADAPTERS

Drill Chuck & Taper Adapter Index. G68
Drill Chucks G69-70
Taper Adapters & Arbors. G71-73
Lathe Mandrels. G73
Annular Cutter Holders G73
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BORING HEADS

Narex Boring & Facing Heads G76-81
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MISC

Height Presetters G82
Touch Point Sensors G82
NC/CNC Trolley G82
Draw Bar for Bridgeport Machine G82
Tool Locks G83
Spindle Taper Wipers G83

Which one works best for your application?

NEW

STM PREMIUM

The perfect economic tooling solution for general purpose machining applications.

VS

GS TOOLING

Superior tooling performance when speed and accuracy matter most.

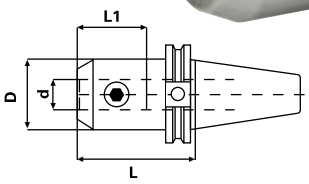
STM PREMIUM		GS TOOLING
42CrMo	**Material Grade**	16NiCr4 (Premium European Alloy Steel)
AT3 or better (0.00024-0.00036in/ft)	**Taper Accuracy**	AT2 or better (0.00012-0.00024in/ft)
0.0002"	**Runout Accuracy**	0.0001"
CAT40 End Mill Holders: Balanced to G2.5 / 8,000rpm CAT50 End Mill Holders: Balanced to G2.5 / 6,000rpm CAT40 Collet Chucks: Balanced to G2.5 / 20,000rpm CAT50 Collet Chucks: Balanced to G2.5 / 15,000rpm	**Balance**	CAT40 End Mill Holders: Balanced to G6.3 / 30,000rpm CAT50 End Mill Holders: Balanced to G6.3 / 25,000rpm CAT40 Collet Chucks: Balanced to G2.5 / 30,000rpm CAT50 Collet Chucks: Balanced to G2.5 / 25,000rpm
AD/B DIN coolant through flange	**Coolant Features**	AD/B DIN coolant through flange
H6 = basic plus 0.0025-0.0030" (standard class of fit)	**Thread Tolerance**	H4 = basic plus 0.0015-0.0020" (premium class of fit)
Limited to the most popular items	**SKU Offering**	Wide selection

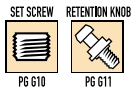
End Mill Holders

CAT40 End Mill Holders G4
CAT40 Dual Contact End Mill Holders G5
CAT40 Direct Coolant End Mill Holders G5
CAT50 End Mill Holders G6
CAT50 Dual Contact End Mill Holders G6
CAT50 Direct Coolant End Mill Holders G7
BT30 End Mill Holders G7
BT30 Direct Coolant End Mill Holders G7
BT40 End Mill Holders G8
BT40 Direct Coolant End Mill Holders G8
BT50 End Mill Holders G8
HSK63A End Mill Holders G9
HSK100A End Mill Holders G9
NMTB40 End Mill Holders G9
NMTB50 End Mill Holders G9
R8 End Mill Holders G10
Straight Shank End Mill Holders G10
Blank Bars G10
Replacement Set Screws G10
HSK Coolant Tubes & Coolant Tube Wrenches G10
Replacement O-Rings For Direct Coolant Holders G10
Retention Knobs G11

CAT40 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole





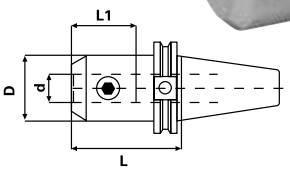
PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/8	1.35*	0.59	0.75	8-32	531069	**118.80**
CT40	1/8	2.50	0.59	0.75	8-32	531070	**104.94**
CT40	1/8	4.00	0.59	0.75	8-32	531071	**160.38**
CT40	3/16	1.38*	0.79	0.75	10-32	531072	**118.80**
CT40	3/16	2.50	0.79	0.75	10-32	531073	**104.94**
CT40	3/16	4.00	0.79	0.75	10-32	531074	**160.38**
CT40	1/4	1.38*	1.18	0.79	1/4-28	531000	**104.94**
CT40	1/4	2.50	1.18	0.79	1/4-28	531002	**104.94**
CT40	1/4	4.00	1.18	0.79	1/4-28	531004	**104.94**
CT40	1/4	9.00	1.18	0.79	1/4-28	531005	**222.75**
CT40	5/16	1.38*	1.18	0.87	5/16-24	531006	**104.94**
CT40	5/16	2.50	1.18	0.87	5/16-24	531008	**104.94**
CT40	5/16	4.00	1.18	0.87	5/16-24	531010	**104.94**
CT40	5/16	9.00	1.18	0.87	5/16-24	531011	**222.75**
CT40	3/8	1.38*	1.57	1.00	3/8-24	531012	**104.94**
CT40	3/8	2.50	1.57	1.00	3/8-24	531014	**104.94**
CT40	3/8	4.00	1.57	1.00	3/8-24	531016	**104.94**
CT40	3/8	5.00	1.57	1.00	3/8-24	531018	**191.07**
CT40	3/8	9.00	1.57	1.00	3/8-24	531031	**222.75**
CT40	7/16	2.50	1.50	1.38	7/16-20	531020	**104.94**
CT40	7/16	4.00	1.50	1.38	7/16-20	531022	**104.94**
CT40	7/16	9.00	1.50	1.38	7/16-20	531033	**222.75**
CT40	1/2	1.75*	2.56	1.38	7/16-20	531024	**104.94**
CT40	1/2	2.50	2.56	1.38	7/16-20	531026	**104.94**
CT40	1/2	4.00	2.56	1.38	7/16-20	531028	**136.62**
CT40	1/2	5.00	3.07	1.38	7/16-20	531030	**163.35**
CT40	1/2	9.00	2.56	1.38	7/16-20	531035	**222.75**
CT40	5/8	1.75*	1.97	1.65	9/16-18	531032	**104.94**
CT40	5/8	3.00	2.76	1.65	9/16-18	531034	**104.94**
CT40	5/8	4.00	2.76	1.65	9/16-18	531036	**118.80**
CT40	5/8	5.50	2.76	1.65	9/16-18	531038	**151.47**
CT40	5/8	9.00	3.50	1.65	9/16-18	531037	**222.75**
CT40	3/4	1.75*	2.01	1.89	5/8-18	531040	**104.94**
CT40	3/4	3.00	2.56	1.75	5/8-18	531042	**104.94**
CT40	3/4	4.00	2.56	1.75	5/8-18	531044	**118.80**
CT40	3/4	5.50	2.56	1.75	5/8-18	531046	**142.56**
CT40	3/4	9.00	3.86	1.75	5/8-18	531039	**222.75**
CT40	7/8	1.75*	2.17	1.94	5/8-18	531048	**118.80**
CT40	7/8	3.50	3.15	2.00	5/8-18	531050	**118.80**
CT40	7/8	6.00	4.22	2.00	5/8-18	531052	**165.33**
CT40	7/8	9.00	4.22	2.00	5/8-18	531041	**252.45**
CT40	1	2.00*	2.32	2.25	3/4-16	531054	**118.80**
CT40	1	4.00	3.54	2.36	3/4-16	531056	**118.80**
CT40	1	6.00	3.54	2.36	3/4-16	531058	**165.33**
CT40	1	9.00	4.50	2.36	3/4-16	531043	**292.05**
CT40	1-1/4	2.00*	2.44	2.25	3/4-16	531060‡	**129.69**
CT40	1-1/4	4.00	3.54	2.48	3/4-16	531062	**129.69**
CT40	1-1/4	6.00	3.54	2.48	3/4-16	531064	**184.14**
CT40	1-1/2	4.50	2.95	2.99	3/4-16	531066	**148.50**
CT40	1-1/2	6.00	3.20	2.99	3/4-16	531068	**193.05**

* Stubby Length ‡ Not DIN Coolant

STM CAT40 End Mill Holders

- DIN coolant option - standard
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0002" OD to ID
- RFID chip hole



BALANCE CERTIFICATE
G2.5 at 8,000rpm
INCLUDED

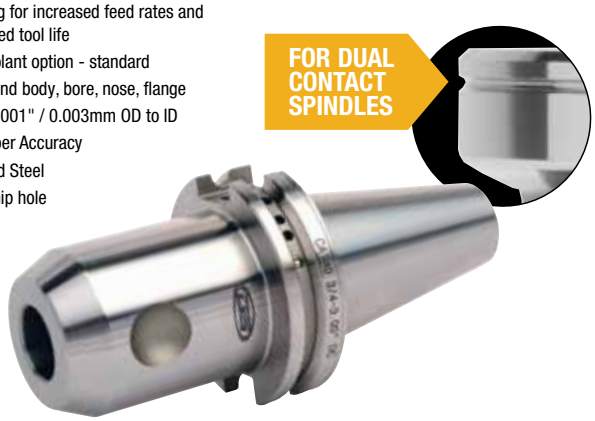
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/8	2.50	0.63	0.75	8-32	525070	**75.00**
CT40	1/8	4.00	0.63	0.75	8-32	525071	**75.00**
CT40	3/16	2.50	0.86	0.75	10-32	525073	**75.00**
CT40	3/16	4.00	0.86	0.75	10-32	525074	**75.00**
CT40	1/4	2.50	1.10	0.79	1/4-28	525002	**75.00**
CT40	1/4	4.00	1.10	0.79	1/4-28	525004	**75.00**
CT40	5/16	2.50	1.26	0.87	5/16-24	525008	**75.00**
CT40	3/8	2.50	1.26	1.00	3/8-24	525014	**75.00**
CT40	3/8	4.00	1.26	1.00	3/8-24	525016	**75.00**
CT40	1/2	1.75*	1.50	1.38	7/16-20	525024	**75.00**
CT40	1/2	2.50	1.50	1.38	7/16-20	525026	**75.00**
CT40	1/2	4.00	1.50	1.38	7/16-20	525028	**75.00**
CT40	5/8	1.75*	1.61	1.65	9/16-18	525032	**75.00**
CT40	5/8	3.00	1.61	1.65	9/16-18	525034	**75.00**
CT40	3/4	1.75*	1.77	1.89	5/8-18	525040	**75.00**
CT40	3/4	3.00	1.77	1.75	5/8-18	525042	**75.00**
CT40	1	2.00*	2.36	2.25	3/4-16	525054	**75.00**
CT40	1	4.00	2.36	2.36	3/4-16	525056	**75.00**
CT40	1-1/4	2.00*	2.28	2.25	3/4-16	525060‡	**75.00**

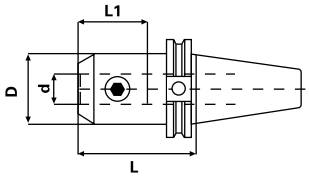
* Stubby Length ‡ Not DIN Coolant

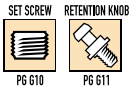
CAT40 DUAL CONTACT End Mill Holders

G3 TOOLING

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole







PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/2	2.50	2.56	1.38	7/16-20	521026	**139.40**
CT40	1/2	4.00	2.56	1.38	7/16-20	521028	**139.40**
CT40	1/2	5.00	2.56	1.38	7/16-20	521030	**174.25**
CT40	5/8	3.00	3.50	1.65	9/16-18	521034	**152.15**
CT40	5/8	4.00	3.50	1.65	9/16-18	521036	**171.70**
CT40	5/8	5.50	3.50	1.65	9/16-18	521038	**187.00**
CT40	3/4	3.00	3.86	1.75	5/8-18	521042	**156.40**
CT40	3/4	4.00	3.86	1.75	5/8-18	521044	**156.40**
CT40	3/4	5.50	3.86	1.75	5/8-18	521046	**248.20**
CT40	1	2.00	2.36	2.36	3/4-16	521054	**172.55**
CT40	1	4.00	4.21	2.36	3/4-16	521056	**172.55**
CT40	1	6.00	4.21	2.36	3/4-16	521058	**297.50**
CT40	1-1/4	2.00*	2.36	2.25	3/4-16	521060‡	**175.95**
CT40	1-1/4	4.00	3.54	2.48	3/4-16	521062	**175.95**
CT40	1-1/4	6.00	3.54	2.48	3/4-16	521064	**297.50**
CT40	1-1/2	4.50	2.95	2.99	3/4-16	521066	**191.25**

* Stubby Length

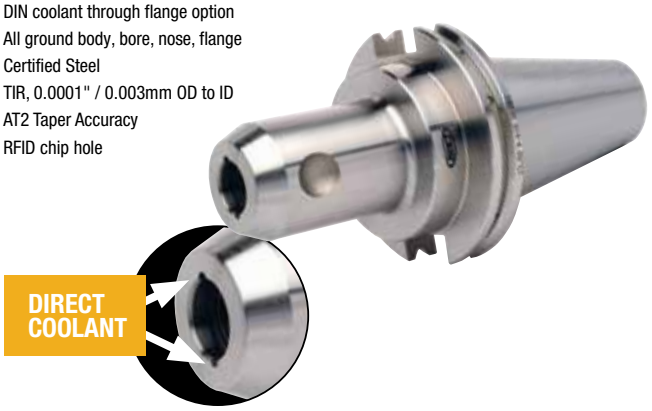
‡ Not DIN Coolant

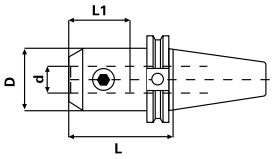
CAT40 DIRECT COOLANT End Mill Holders

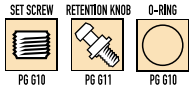
G3 TOOLING

NOW 3 COOLANT OPTIONS ALL IN ONE!

- Coolant through the spindle and body
- DIN coolant through flange option
- All ground body, bore, nose, flange
- Certified Steel
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- RFID chip hole







PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/4	1.38*	1.18	0.79	1/4-28	522014	**144.00**
CT40	1/4	2.50	1.18	0.79	1/4-28	522016	**144.00**
CT40	1/4	4.00	1.18	0.79	1/4-28	522018	**195.84**
CT40	5/16	1.38*	1.18	0.87	5/16-24	522022	**144.00**
CT40	5/16	2.50	1.18	0.87	5/16-24	522024	**144.00**
CT40	5/16	4.00	1.18	0.87	5/16-24	522026	**195.84**
CT40	3/8	1.38*	1.57	1.00	3/8-24	522030	**144.00**
CT40	3/8	2.50	1.57	1.00	3/8-24	522032	**144.00**
CT40	3/8	4.00	1.57	1.00	3/8-24	522034	**195.84**
CT40	3/8	5.00	1.57	1.00	3/8-24	522036	**225.60**
CT40	1/2	1.75*	2.56	1.38	7/16-20	522046	**144.00**
CT40	1/2	2.50	2.56	1.38	7/16-20	522048	**144.00**
CT40	1/2	4.00	2.56	1.38	7/16-20	522050	**195.84**
CT40	1/2	5.00	2.56	1.38	7/16-20	522052	**246.72**
CT40	5/8	1.75*	2.72	1.65	9/16-18	522056	**144.00**
CT40	5/8	3.00	2.56	1.65	9/16-18	522058	**144.00**
CT40	5/8	4.00	2.56	1.65	9/16-18	522060	**144.00**
CT40	3/4	1.75*	2.56	1.89	5/8-18	522066	**144.00**
CT40	3/4	3.00	2.56	1.75	5/8-18	522068	**144.00**
CT40	3/4	4.00	2.56	1.75	5/8-18	522070	**195.84**
CT40	3/4	5.50	2.56	1.75	5/8-18	522072	**246.72**
CT40	1	2.00*	2.36	2.25	3/4-16	522080	**144.00**
CT40	1	4.00	3.54	2.36	3/4-16	522082	**144.00**
CT40	1-1/4	2.00*	2.44	2.25	3/4-16	522088	**144.00**
CT40	1-1/4	4.00	3.54	2.48	3/4-16	522090	**168.00**
CT40	1-1/2	4.50	2.95	2.99	3/4-16	522094	**172.80**

* Stubby Length

Spindle Taper Wipers

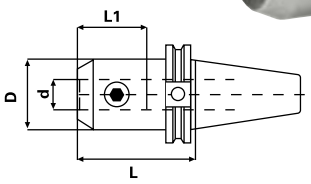
Clean spindle holes easily and quickly!

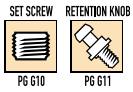
See Page G91

CAT50 End Mill Holders

G3 TOOLING

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole





PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

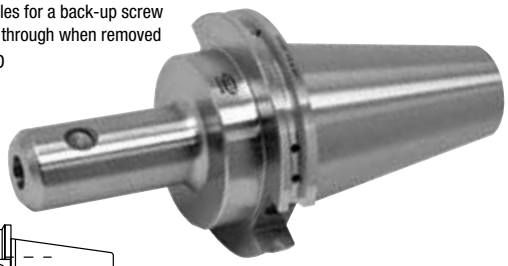
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/4	1.38*	0.71	0.79	1/4-28	531082	**138.60**
CT50	1/4	2.50	1.18	0.79	1/4-28	531084	**138.60**
CT50	1/4	4.00	1.18	0.79	1/4-28	531086	**160.38**
CT50	1/4	6.00	1.18	0.79	1/4-28	531088	**181.17**
CT50	1/4	8.00	1.18	0.79	1/4-28	531090	**241.56**
CT50	5/16	2.50	1.18	0.87	5/16-24	531092	**138.60**
CT50	5/16	4.00	1.18	0.87	5/16-24	531094	**160.38**
CT50	5/16	6.00	1.18	0.87	5/16-24	531096	**181.17**
CT50	3/8	1.38*	1.57	1.00	3/8-24	531098	**138.60**
CT50	3/8	2.50	1.57	1.00	3/8-24	531100	**138.60**
CT50	3/8	4.00	1.57	1.00	3/8-24	531102	**160.38**
CT50	3/8	6.00	1.57	1.00	3/8-24	531104	**181.17**
CT50	3/8	8.00	1.57	1.00	3/8-24	531106	**211.86**
CT50	3/8	14.00	1.57	1.00	3/8-24	531107	**648.45**
CT50	7/16	2.50	1.50	1.38	7/16-20	531108	**138.60**
CT50	7/16	4.00	1.50	1.38	7/16-20	531110	**160.38**
CT50	7/16	6.00	1.50	1.38	7/16-20	531112	**184.14**
CT50	7/16	14.00	1.48	1.38	7/16-20	531113	**648.45**
CT50	1/2	1.75*	1.50	1.38	7/16-20	531116	**138.60**
CT50	1/2	2.63	1.77	1.38	7/16-20	531118	**138.60**
CT50	1/2	4.00	1.77	1.38	7/16-20	531120	**160.38**
CT50	1/2	6.00	1.77	1.38	7/16-20	531122	**184.14**
CT50	1/2	8.00	1.77	1.38	7/16-20	531124	**211.86**
CT50	1/2	14.00	1.77	1.38	7/16-20	531125	**648.45**
CT50	9/16	6.00	1.77	1.65	9/16-18	531133	**184.14**
CT50	5/8	1.75*	1.73	1.65	9/16-18	531126	**160.38**
CT50	5/8	3.00	1.77	1.65	9/16-18	531128	**160.38**
CT50	5/8	4.00	1.77	1.65	9/16-18	531130	**160.38**
CT50	5/8	6.00	1.77	1.65	9/16-18	531132	**184.14**
CT50	5/8	8.00	1.77	1.65	9/16-18	531134	**211.86**
CT50	5/8	14.00	1.57	1.65	9/16-18	531131	**648.45**
CT50	3/4	1.75*	2.76	1.89	5/8-18	531136	**160.38**
CT50	3/4	3.00	2.76	1.89	5/8-18	531138	**160.38**
CT50	3/4	4.00	2.76	1.89	5/8-18	531140	**160.38**
CT50	3/4	6.00	2.76	1.89	5/8-18	531142	**184.14**
CT50	3/4	8.00	2.76	1.89	5/8-18	531144	**211.86**
CT50	3/4	14.00	3.86	1.89	5/8-18	531145	**648.45**
CT50	7/8	1.75*	3.15	2.00	5/8-18	531146	**160.38**
CT50	7/8	3.75	3.15	2.00	5/8-18	531148	**160.38**
CT50	1	2.00*	2.32	2.36	3/4-16	531152	**160.38**
CT50	1	4.00	3.54	2.36	3/4-16	531154	**160.38**
CT50	1	6.00	3.54	2.36	3/4-16	531156	**165.33**
CT50	1	8.00	3.54	2.36	3/4-16	531158	**192.06**
CT50	1-1/4	2.00*	2.56	2.75	3/4-16	531160	**160.38**
CT50	1-1/4	4.00	3.54	2.48	3/4-16	531162	**164.34**
CT50	1-1/4	6.00	3.54	2.48	3/4-16	531164	**191.07**
CT50	1-1/4	8.00	3.54	2.48	3/4-16	531166	**219.78**
CT50	1-1/2	2.25*	2.83	2.75	3/4-16	531168	**164.34**
CT50	1-1/2	4.50	3.15	2.99	3/4-16	531170	**164.34**
CT50	1-1/2	7.00	3.15	2.99	3/4-16	531172	**297.00**
CT50	1-1/2	9.00	3.15	2.99	3/4-16	531174	**509.85**
CT50	2	3.63*	3.66	3.74	1-14	531176	**227.70**
CT50	2	5.37	4.13	3.74	1-14	531178	**272.25**
CT50	2	8.00	4.13	3.74	1-14	531180	**504.90**
CT50	2	10.00	4.13	3.74	1-14	531182	**509.85**
CT50	2-1/2	6.00	3.94	4.25	1-14	531184	**306.90**

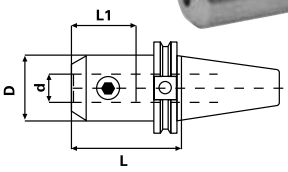
* Stubby Length

STM CAT50 End Mill Holders

STM PREMIUM

- DIN coolant option - standard
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0002" OD to ID
- RFID chip hole





BALANCE CERTIFICATE
G2.5 at 6,000rpm
INCLUDED

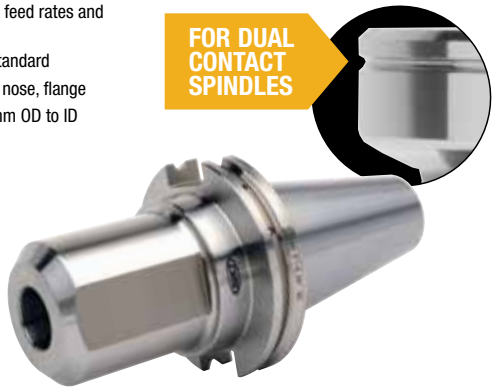
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/2	4.00	1.50	1.38	7/16-20	525120	**109.00**
CT50	3/4	4.00	1.77	1.89	5/8-18	525140	**109.00**
CT50	1	4.00	2.36	2.36	3/4-16	525154	**109.00**
CT50	1-1/4	4.00	2.55	2.48	3/4-16	525162	**119.00**

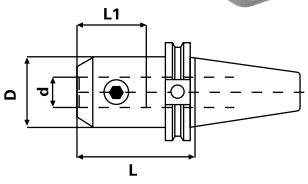
CAT50 DUAL CONTACT End Mill Holders

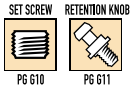
G3 TOOLING

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

FOR DUAL CONTACT SPINDLES







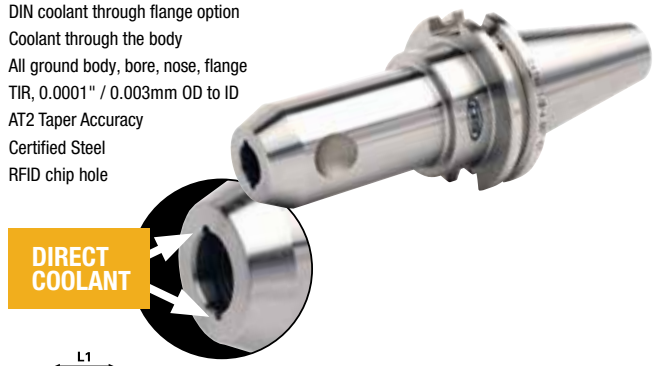
PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

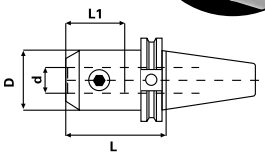
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/2	4.00	1.77	1.38	7/16-20	521120	**246.50**
CT50	1/2	6.00	1.77	1.38	7/16-20	521122	**243.95**
CT50	5/8	4.00	1.77	1.65	9/16-18	521130	**238.00**
CT50	5/8	6.00	1.77	1.65	9/16-18	521132	**297.50**
CT50	3/4	3.00	3.86	1.89	5/8-18	521138	**229.50**
CT50	3/4	4.00	3.86	1.89	5/8-18	521140	**242.25**
CT50	3/4	6.00	3.86	1.89	5/8-18	521142	**246.50**
CT50	1	4.00	4.21	2.36	3/4-16	521154	**246.50**
CT50	1	6.00	4.21	2.36	3/4-16	521156	**251.60**
CT50	1	8.00	4.21	2.36	3/4-16	521158	**289.00**
CT50	1-1/4	4.00	3.54	2.48	3/4-16	521162	**263.50**
CT50	1-1/4	6.00	3.54	2.48	3/4-16	521164	**266.90**
CT50	1-1/4	8.00	3.54	2.48	3/4-16	521166	**301.75**
CT50	1-1/2	4.50	3.15	2.99	3/4-16	521170	**263.50**
CT50	1-1/2	7.00	3.15	2.99	3/4-16	521172	**435.20**
CT50	2	5.37	4.13	3.74	1-14	521178	**284.75**

CAT50 DIRECT COOLANT End Mill Holders

NOW 3 COOLANT OPTIONS ALL IN ONE!

- Coolant through the spindle
- DIN coolant through flange option
- Coolant through the body
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole





SET SCREW PG G10 | RETENTION KNOB PG G11 | O-RING PG G10

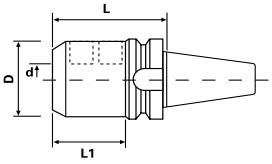
PREMIUM BALANCE G6.3 at 25,000rpm CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/4	2.50	1.18	0.79	1/4-28	522102	**175.68**
CT50	1/4	4.00	1.18	0.79	1/4-28	522104	**208.32**
CT50	5/16	4.00	1.26	0.87	5/16-24	522112	**208.32**
CT50	3/8	2.50	1.57	1.00	3/8-24	522118	**175.68**
CT50	3/8	4.00	1.57	1.00	3/8-24	522120	**208.32**
CT50	3/8	6.00	1.57	1.00	3/8-24	522122	**229.44**
CT50	3/8	8.00	1.26	1.00	3/8-24	522124	**257.28**
CT50	7/16	4.00	1.50	1.38	7/16-20	522130	**208.32**
CT50	1/2	1.75*	1.50	1.38	7/16-20	522134	**175.68**
CT50	1/2	2.63	1.77	1.38	7/16-20	522136	**175.68**
CT50	1/2	4.00	1.77	1.38	7/16-20	522138	**216.00**
CT50	1/2	6.00	1.77	1.38	7/16-20	522140	**224.64**
CT50	1/2	8.00	1.48	1.38	7/16-20	522142	**257.28**
CT50	5/8	1.75*	1.77	1.65	9/16-18	522148	**175.68**
CT50	5/8	3.00	1.77	1.65	9/16-18	522150	**196.80**
CT50	5/8	4.00	1.77	1.65	9/16-18	522152	**224.64**
CT50	5/8	6.00	1.61	1.65	9/16-18	522154	**224.64**
CT50	3/4	1.75*	2.76	1.89	5/8-18	522158	**196.80**
CT50	3/4	3.00	2.76	1.89	5/8-18	522160	**196.80**
CT50	3/4	4.00	2.76	1.89	5/8-18	522162	**224.64**
CT50	3/4	6.00	2.76	1.89	5/8-18	522164	**224.64**
CT50	3/4	8.00	2.76	1.89	5/8-18	522166	**257.28**
CT50	1	2.00*	2.32	2.36	3/4-16	522176	**196.80**
CT50	1	4.00	3.54	2.36	3/4-16	522178	**224.64**
CT50	1	6.00	3.54	2.36	3/4-16	522180	**224.64**
CT50	1	8.00	3.54	2.36	3/4-16	522182	**232.32**
CT50	1	12.00	2.36	2.36	3/4-16	522183	**561.60**
CT50	1-1/4	2.00*	2.56	2.75	3/4-16	522186	**196.80**
CT50	1-1/4	4.00	3.54	2.48	3/4-16	522188	**229.44**
CT50	1-1/4	6.00	3.54	2.48	3/4-16	522190	**232.32**
CT50	1-1/2	2.25*	2.83	2.75	3/4-16	522196	**196.80**
CT50	1-1/2	4.50	3.15	2.99	3/4-16	522198	**240.96**
CT50	2	3.63*	3.66	3.74	1-14	522204	**229.44**
CT50	2	5.37	4.13	3.74	1-14	522206	**240.96**
CT50	2	8.00	4.13	3.74	1-14	522208	**561.60**
CT50	2	10.00	4.13	3.74	1-14	522210	**624.00**

* Stubby Length

BT30 End Mill Holders

- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



SET SCREW PG G10 | RETENTION KNOB PG G11

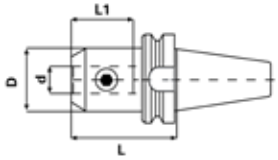
PREMIUM BALANCE G6.3 at 30,000rpm CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT30	1/8	2.36	0.59	0.75	8-32	532001	**101.97**
BT30	3/16	2.36	0.79	0.75	10-32	532003	**101.97**
BT30	1/4	2.36	1.18	0.79	1/4-28	532000	**101.97**
BT30	5/16	2.36	1.18	0.87	5/16-24	532002	**101.97**
BT30	3/8	2.36	1.18	1.00	3/8-24	532004	**101.97**
BT30	7/16	2.36	1.50	1.38	7/16-20	532006	**101.97**
BT30	1/2	2.36	2.95	1.38	7/16-20	532008	**101.97**
BT30	5/8	2.50	1.61	1.65	9/16-18	532010	**101.97**
BT30	3/4	3.00	1.77	1.88	5/8-18	532012	**101.97**
BT30	7/8	3.54	2.09	2.00	5/8-18	532014	**113.85**
BT30	1	3.54	2.32	2.36	3/4-16	532016	**113.85**

BT30 DIRECT COOLANT End Mill Holders

NOW 2 COOLANT OPTIONS ALL IN ONE!

- Coolant through the spindle
- Coolant through the body
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



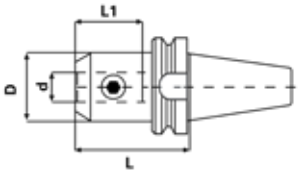
SET SCREW PG G10 | RETENTION KNOB PG G11 | O-RING PG G10

PREMIUM BALANCE G6.3 at 30,000rpm CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT30	1/4	2.36	1.10	0.79	1/4-28	522218	**112.51**
BT30	5/16	2.36	1.26	0.87	5/16-24	522220	**112.51**
BT30	3/8	2.36	1.26	1.00	3/8-24	522222	**112.51**
BT30	1/2	2.36	1.50	1.38	7/16-20	522224	**112.51**
BT30	3/4	3.00	1.77	1.88	5/8-18	522228	**112.51**

BT40 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



SET SCREW PG G10 | RETENTION KNOB PG G11

PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

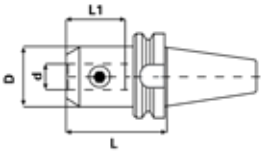
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT40	1/8	1.38*	0.59	1.75	8-32	531019	**104.94**
BT40	1/8	2.50	0.59	0.75	8-32	531021	**126.72**
BT40	1/8	4.00	0.59	0.75	8-32	531023	**160.38**
BT40	3/16	1.38*	0.79	0.75	10-32	531025	**104.94**
BT40	3/16	2.50	0.79	0.75	10-32	531027	**126.72**
BT40	3/16	4.00	0.79	0.75	10-32	531029	**160.38**
BT40	1/4	1.38*	1.18	0.79	1/4-28	532018	**126.72**
BT40	1/4	2.50	1.18	0.79	1/4-28	532020	**126.72**
BT40	1/4	4.00	1.18	0.79	1/4-28	532022	**160.38**
BT40	5/16	1.38*	1.18	0.87	5/16-24	532024	**126.72**
BT40	5/16	2.50	1.18	0.87	5/16-24	532026	**126.72**
BT40	5/16	4.00	1.18	0.87	5/16-24	532028	**160.38**
BT40	3/8	1.38*	1.57	1.00	3/8-24	532030	**126.72**
BT40	3/8	2.50	1.57	1.00	3/8-24	532032	**126.72**
BT40	3/8	4.00	1.57	1.00	3/8-24	532034	**160.38**
BT40	7/16	2.50	1.50	1.38	7/16-20	532036	**126.72**
BT40	1/2	1.75*	1.50	1.38	7/16-20	532038	**126.72**
BT40	1/2	2.50	2.56	1.38	7/16-20	532040	**126.72**
BT40	1/2	4.00	2.56	1.38	7/16-20	532042	**160.38**
BT40	5/8	1.75*	1.97	1.65	9/16-18	532044	**126.72**
BT40	5/8	2.50	2.76	1.65	9/16-18	532046	**126.72**
BT40	5/8	4.00	3.50	1.65	9/16-18	532048	**160.38**
BT40	3/4	1.75*	2.01	1.89	5/8-18	532050	**126.72**
BT40	3/4	2.50	2.56	1.89	5/8-18	532052	**126.72**
BT40	3/4	4.00	2.56	1.89	5/8-18	532054	**160.38**
BT40	7/8	3.38	4.06	2.00	5/8-18	532056	**164.34**
BT40	7/8	6.00	2.08	2.00	5/8-18	532058	**170.28**
BT40	1	2.00*	2.32	2.25	3/4-16	532060	**164.34**
BT40	1	3.56	3.54	2.36	3/4-16	532062	**164.34**
BT40	1	6.00	3.54	2.36	3/4-16	532064	**170.28**
BT40	1-1/4	2.00*	2.36	2.25	3/4-16	532066‡	**170.28**
BT40	1-1/4	3.56	3.54	2.48	3/4-16	532068	**170.28**
BT40	1-1/4	6.00	3.54	2.48	3/4-16	532070	**207.90**
BT40	1-1/2	4.50	3.15	2.99	3/4-16	532072	**170.28**
BT40	1-1/2	6.00	3.15	2.99	3/4-16	532074	**207.90**

* Stubby Length ‡ Not DIN Coolant

BT40 DIRECT COOLANT End Mill Holders

NOW 3 COOLANT OPTIONS ALL IN ONE!

- Coolant through the spindle
- DIN coolant through flange option
- Coolant through the body
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



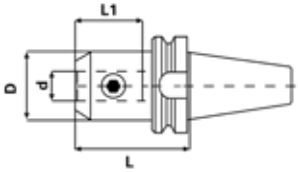
SET SCREW PG G10 | RETENTION KNOB PG G11 | O-RING PG G10

PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT40	1/4	4.00	1.10	0.79	1/4-28	522246	**181.29**
BT40	3/8	2.50	1.57	1.00	3/8-24	522256	**179.80**
BT40	3/8	4.00	1.57	1.00	3/8-24	522258	**181.29**
BT40	1/2	2.50	2.56	1.38	7/16-20	522264	**181.29**
BT40	1/2	4.00	2.56	1.38	7/16-20	522266	**181.29**
BT40	3/4	2.50	2.56	1.89	5/8-18	522276	**181.29**
BT40	3/4	4.00	2.56	1.89	5/8-18	522278	**181.29**
BT40	1	2.00*	2.32	2.25	3/4-16	522282	**179.80**

BT50 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



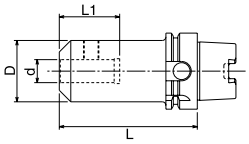
SET SCREW PG G10 | RETENTION KNOB PG G11

PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT50	3/8	2.50	1.57	1.00	3/8-24	532075	**291.06**
BT50	3/8	5.31	1.57	1.00	3/8-24	532076	**420.75**
BT50	1/2	2.75	1.77	1.38	7/16-20	532077	**291.06**
BT50	1/2	5.31	1.77	1.38	7/16-20	532078	**420.75**
BT50	5/8	3.00	1.77	1.65	9/16-18	532079	**291.06**
BT50	5/8	5.31	1.77	1.65	9/16-18	532081	**420.75**
BT50	3/4	3.00	2.76	1.75	5/8-18	532083	**291.06**
BT50	3/4	6.00	3.82	1.75	5/8-18	532085	**420.75**
BT50	1	4.00	4.21	2.36	3/4-16	532087	**291.06**
BT50	1	6.00	3.54	2.36	3/4-16	532089	**440.55**
BT50	1-1/4	4.00	3.54	2.48	3/4-16	532091	**291.06**
BT50	1-1/4	6.00	3.54	2.48	3/4-16	532093	**450.45**
BT50	1-1/2	4.13	3.15	2.99	3/4-16	532095	**460.35**
BT50	1-1/2	7.00	3.15	2.99	3/4-16	532097	**519.75**
BT50	2	4.72	4.13	3.86	1-14	532099	**460.35**

HSK63A End Mill Holders

- High rigidity and torque transmission
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole



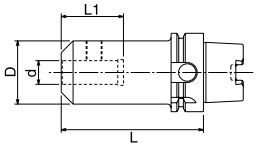
SET SCREW PG G10

PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
HSK63A	3/16	3.00	0.866	0.748	10-32X1/4	536002	**365.31**
HSK63A	3/16	5.00	0.866	0.748	10-32X1/4	536004	**365.31**
HSK63A	1/4	3.00	1.102	0.787	1/4-28X1/4	536006	**365.31**
HSK63A	1/4	5.00	1.102	0.787	1/4-28X1/4	536008	**365.31**
HSK63A	5/16	3.00	1.417	0.874	5/16-24X1/4	536010	**365.31**
HSK63A	5/16	5.00	1.417	0.874	5/16-24X1/4	536012	**365.31**
HSK63A	3/8	3.50	1.574	1.00	3/8-24X5/16	536014	**365.31**
HSK63A	3/8	5.00	1.574	1.00	3/8-24X5/16	536016	**365.31**
HSK63A	7/16	5.00	1.771	1.378	7/16-20X3/8	536020	**365.31**
HSK63A	1/2	4.00	1.771	1.378	7/16-20X3/8	536022	**365.31**
HSK63A	1/2	5.00	1.771	1.378	7/16-20X3/8	536024	**365.31**
HSK63A	5/8	4.00	1.889	1.654	9/16-18X1/2	536026	**365.31**
HSK63A	3/4	4.50	1.968	1.889	5/8-18X1/2	536030	**365.31**
HSK63A	3/4	6.00	1.968	1.889	5/8-18X1/2	536032	**365.31**
HSK63A	1	4.50	2.755	2.363	3/4-16X11/16 (2)	536034	**365.31**
HSK63A	1-1/4	4.50	2.952	2.88	3/4-16X11/16 (2)	536038	**365.31**

HSK100A End Mill Holders

- High rigidity and torque transmission
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole



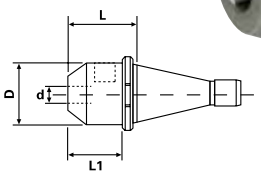
SET SCREW PG G10

PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
HSK100A	3/16	4.00	0.867	0.748	10-32X1/4	536042	**445.50**
HSK100A	3/16	6.00	0.867	0.748	10-32X1/4	536044	**487.08**
HSK100A	1/4	4.00	1.102	0.787	1/4-28X1/4	536046	**445.50**
HSK100A	1/4	6.00	1.102	0.787	1/4-28X1/4	536048	**487.08**
HSK100A	5/16	4.00	1.220	0.866	5/16-24X1/4	536050	**445.50**
HSK100A	5/16	6.00	1.220	0.866	5/16-24X1/4	536052	**487.08**
HSK100A	3/8	4.00	1.260	1.00	3/8-24X5/16	536054	**445.50**
HSK100A	3/8	6.00	1.260	1.00	3/8-24X5/16	536056	**487.08**
HSK100A	1/2	4.00	1.575	1.378	7/16-20X3/8	536062	**445.50**
HSK100A	1/2	6.00	1.575	1.378	7/16-20X3/8	536064	**487.08**
HSK100A	5/8	4.00	1.693	1.654	9/16-18X1/2	536066	**445.50**
HSK100A	3/4	4.00	2.56	1.890	5/8-18X1/2	536070	**445.50**
HSK100A	3/4	6.00	1.969	1.890	5/8-18X1/2	536072	**487.08**
HSK100A	1	4.00	2.559	2.362	3/4-16X11/16 (2)	536074	**445.50**
HSK100A	1	6.00	2.559	2.362	3/4-16X11/16 (2)	536076	**487.08**
HSK100A	1-1/4	4.00	2.559	2.480	3/4-16X11/16 (2)	536078	**445.50**
HSK100A	1-1/4	6.00	2.559	2.480	3/4-16X11/16 (2)	536080	**487.08**

NMTB40 End Mill Holders

- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel

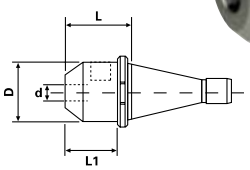


SET SCREW PG G10

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
NMTB40	1/4	2.31	1.97	0.79	1/4-28	534000	**117.88**
NMTB40	5/16	2.31	1.18	0.87	5/16-24	534002	**117.88**
NMTB40	3/8	2.31	1.57	1.00	3/8-24	534004	**117.88**
NMTB40	1/2	2.31	2.56	1.38	7/16-20	534008	**117.88**
NMTB40	5/8	2.31	2.76	1.65	9/16-18	534010	**117.88**
NMTB40	3/4	2.31	2.76	1.89	5/8-18	534012	**117.88**
NMTB40	7/8	2.94	3.15	2.01	5/8-18	534014	**117.88**
NMTB40	1	3.37	3.54	2.36	3/4-16	534016	**117.88**
NMTB40	1-1/4	3.69	3.54	2.48	3/4-16	534018	**117.88**
NMTB40	1-1/2	3.95	2.95	2.99	3/4-16	534019	**121.32**

NMTB50 End Mill Holders

- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel

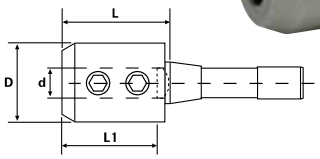


SET SCREW PG G10

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
NMTB50	1/4	2.75	1.57	0.79	1/4-28	534020	**162.17**
NMTB50	3/8	2.75	1.57	1.00	3/8-24	534022	**162.17**
NMTB50	1/2	2.75	1.50	1.38	7/16-20	534026	**162.17**
NMTB50	1/2	4.50	1.50	1.38	7/16-20	534028	**170.18**
NMTB50	5/8	2.75	1.77	1.65	9/16-18	534030	**162.17**
NMTB50	3/4	2.88	1.77	1.89	5/8-18	534034	**162.17**
NMTB50	3/4	4.50	2.76	1.89	5/8-18	534036	**170.18**
NMTB50	7/8	2.88	2.17	2.01	5/8-18	534038	**168.36**
NMTB50	1	3.50	2.36	2.36	3/4-16	534042	**173.28**
NMTB50	1-1/4	3.50	2.56	2.48	3/4-16	534046	**194.45**
NMTB50	2	4.69	4.13	3.74	1-14	534054	**232.10**

R8 End Mill Holders

- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel

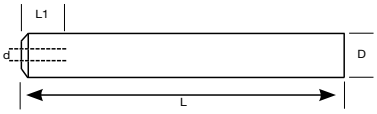


SET SCREW
PG G10

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
R8	1/4	1.33	1.18	0.79	1/4-28	534056	**66.50**
R8	5/16	1.75	1.26	0.87	5/16-24	534058	**66.50**
R8	3/8	1.33	1.26	1.00	3/8-24	534060	**66.50**
R8	1/2	1.33	2.56	1.38	7/16-20	534064	**66.50**
R8	5/8	1.50	1.61	1.65	9/16-18	534066	**66.50**
R8	3/4	2.37	1.77	1.89	5/8-18	534068	**76.22**
R8	1	3.25	2.76	2.36	3/4-16	534072	**84.81**
R8	1-1/4	3.25	3.15	2.48	3/4-16	534074	**88.92**

Straight Shank End Mill Holders

- Can be used to extend the reach of the cutting tool as well as machining within tight clearances
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel



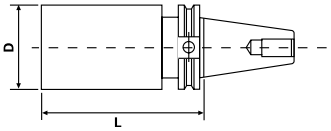
SET SCREW
PG G10

Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
1/4	6.00	1.18	0.750	1/4-28	534078	**85.27**
5/16	6.00	1.18	0.750	5/16-24	534080	**80.80**
3/8	6.00	1.57	1.00	3/8-24	534082	**86.18**
1/2	6.00	1.77	1.00	1/4-28	534084	**86.18**

Blank Bars

Blank bars are suitable for all applications, including deep boring. While the tapers are ground and hardened, the projections are not.

- Traverse ground shank to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- Material to be machined - SNCM 415H

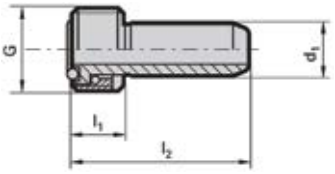


RETENTION KNOB
PG G11

Taper	L	D	Code No.	Price $
CAT Taper				
CAT 40	13	2.50	531592	**306.96**
CAT 50	13	3.88	531594	**345.41**
NMTB Taper				
NMTB50	13	3.88	534602	**317.14**

HSK Coolant Tubes

- Designed specifically to be used with HSK holders
- Leak-proof screwed connection



Used with Taper	d1	G	l1	l2	Code No.	Price $
HSK63A	12	M18x1	36.5	11.5	536600	**31.00**
HSK100A	16	M24x1.5	44.0	15.5	536602	**34.00**

Coolant Tube Wrenches

- Designed to lock and unlock the HSK coolant supply units

Description	Used with Taper	Code No.	Price $
Coolant Tube Wrench	HSK63A	536604	**46.00**
Coolant Tube Wrench	HSK100A	536606	**49.50**

Replacement O-Rings For DIRECT COOLANT Holders

- Can be used in all tapers of Direct Coolant Holders

Holder Size	Code No.	Price $
1/4	522390	**1.72**
5/16	522391	**1.72**
3/8	522392	**1.72**
1/2	522393	**1.72**
5/8	522394	**1.72**
3/4	522395	**1.72**
1	522396	**1.72**
1-1/4	522397	**1.72**

Replacement Set Screws

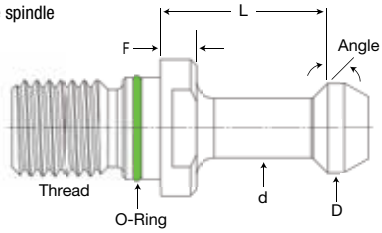
Size	Size of Holder	Code No.	Price $
8-32 x 5/16	1/8	534109	**0.58**
10-32 x 5/16	3/16	534111	**0.58**
1/4-28 x 1/4	1/4	534110	**2.64**
5/16-24 x 1/4	5/16	534112	**2.64**
3/8-24 x 5/16	3/8, 7/16	534114	**4.01**
7/16-20 x 3/8	1/2	534116	**4.81**
9/16-18 x 1/2	5/8	534118	**3.78**
5/8-18 x 1/2	3/4, 7/8	534120	**6.52**
3/4-16 x 9.5mm	1, 1-1/4, 1-1/2	534119	**6.23**
3/4-16 x 11/16	1, 1-1/4, 1-1/2	534122	**7.10**
1-14 x 7/8	2	534124	**23.35**

Retention Knobs

- Ground Pilot
- O-Ring on Pilot to prevent coolant penetration into the spindle

Can't find your retention knob?
We invite your inquiries.
Please have ready the following information when calling:

- Taper of Machine
- Make and Model No. of the Machine
- Draw Bar Thread Diameter and Pitch
- Taper Angle required underneath head of stud



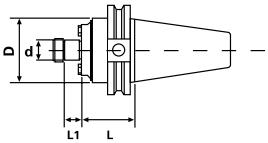
Taper	Model	Coolant Through	D	d	L	F	Angle	Thread	Code No.	Price $
BT30	GS585X45	N	0.433	0.276	0.709	0.197	45	M12x1.75	366000	**23.54**
BT30	GS585X60	N	0.433	0.276	0.709	0.197	60	M12x1.75	366002	**24.01**
BT40	PS444X15	N	0.748	0.551	0.905	0.275	15	M16x2	366003	**30.19**
BT40	GSC444X15	Y	0.748	0.551	0.905	0.275	15	M16x2	366004	**32.02**
BT40	GS444X45	N	0.590	0.390	1.102	0.236	45	M16x2	366006	**23.54**
BT40	GS444X60	N	0.590	0.390	1.102	0.236	60	M16x2	366008	**24.01**
BT40	PS444X90	N	0.590	0.390	1.102	0.236	90	M16x2	366010	**23.54**
BT40	GSC444X45	Y	0.590	0.390	1.102	0.236	45	M16x2	366012	**25.51**
BT40	GSC444X60	Y	0.590	0.390	1.102	0.236	60	M16x2	366014	**26.02**
BT40	PSC444X90	Y	0.590	0.390	1.102	0.236	90	M16x2	366016	**27.80**
BT40	PS477	N	0.740	0.490	0.552	0.236	45	M16X2	366018	**26.49**
BT40	PSC478	Y	0.740	0.490	0.440	0.120	45	M16x2	366020	**25.51**
BT40	PSC479	Y	0.740	0.490	0.552	0.120	45	M16x2	366022	**30.19**
BT40	GSC477	Y	0.740	0.490	0.552	0.236	45	M16x2	366024	**30.19**
BT40	PSC480X15	Y	0.748	0.551	0.900	0.157	15	M16x2	366026	**31.83**
BT40	PS534X45	N	0.590	0.390	0.990	0.236	45	M16x2	366028	**28.67**
BT40	PS554	N	0.594	0.406	1.250	0.187	45	M16x2	366030	**28.67**
BT40	PSC554	Y	0.594	0.406	1.250	0.187	45	M16x2	366032	**34.99**
CT40	GSC470X15	Y	0.748	0.551	0.787	0.157	15	5/8x11	366034	**19.62**
CT40	GS474	N	0.740	0.490	0.440	0.118	45	5/8x11	366036	**19.62**
CT40	GSC474	Y	0.740	0.490	0.440	0.118	45	5/8x11	366038	**19.62**
CT40	GSC475	Y	0.740	0.490	0.440	0.120	45	5/8x11	366040	**19.62**
CT40	GS475	N	0.740	0.490	0.440	0.120	45	5/8x11	366042	**19.62**
CT40	PS498	N	0.590	0.390	0.777	0.200	90	5/8x11	366044	**25.51**
CT40	PS531X45	N	0.590	0.390	1.000	0.236	45	5/8x11	366046	**21.80**
CT40	GS532X15	N	0.748	0.551	0.792	0.275	15	5/8x11	366048	**20.01**
CT40	GS532X45	N	0.590	0.390	0.990	0.236	45	5/8x11	366050	**19.62**
CT40	GS532X60	N	0.590	0.390	0.990	0.236	60	5/8x11	366052	**20.01**
CT40	GS532X90	N	0.590	0.390	0.990	0.236	90	5/8x11	366054	**20.01**
CT40	GSC532X15	Y	0.748	0.551	0.792	0.275	15	5/8x11	366056	**19.62**
CT40	GSC532X45	Y	0.590	0.390	0.990	0.236	45	5/8x11	366058	**19.62**
CT40	GSC532X60	Y	0.590	0.390	0.990	0.236	60	5/8x11	366060	**20.01**
CT40	GSC532X90	Y	0.590	0.390	0.990	0.236	90	5/8x11	366062	**20.01**
CT40	PS552	N	0.594	0.406	1.139	0.187	45	5/8x11	366064	**27.03**
CT40	PSC552	Y	0.594	0.406	1.139	0.187	45	5/8x11	366066	**33.46**
CT40	GS572X45	N	0.590	0.390	0.990	0.120	45	5/8x11	366068	**19.62**
CT40	PS572X60	N	0.590	0.390	0.990	0.120	60	5/8x11	366070	**28.45**
CT40	PS572X90	N	0.590	0.390	0.990	0.120	90	5/8x11	366072	**21.80**
CT40	PSC572X45	Y	0.590	0.390	0.990	0.120	45	5/8x11	366074	**26.60**
CT40	PSC572X60	Y	0.590	0.390	0.990	0.120	60	5/8x11	366076	**32.37**
CT40	PSC572X90	Y	0.590	0.390	0.990	0.120	90	5/8x11	366078	**21.80**
CT45	PSC375	Y	0.940	0.605	0.580	0.160	45	3/4x10	366080	**25.51**
BT50	PSC278	Y	1.140	0.820	0.700	0.200	45	M24x3	366082	**33.46**
BT50	GS446X45	N	0.906	0.669	1.378	0.394	45	M24x3	366084	**47.03**
BT50	PS446X60	N	0.906	0.669	1.378	0.394	60	M24x3	366086	**46.11**
BT50	PS446X90	N	0.906	0.669	1.378	0.394	90	M24x3	366088	**35.32**
BT50	GSC446X45	Y	0.906	0.669	1.378	0.394	45	M24x3	366090	**49.03**
CT50	GS275	N	1.140	0.820	0.700	0.200	45	1x8	366092	**25.02**
CT50	PSC274	Y	1.140	0.820	0.700	0.200	45	1x8	366094	**34.99**
CT50	GSC275	Y	1.140	0.820	0.700	0.200	45	1x8	366096	**24.53**
CT50	GS536X45	N	0.906	0.669	1.386	0.394	45	1x8	366098	**25.02**
CT50	GS536X60	N	0.906	0.669	1.386	0.394	60	1x8	366100	**24.53**
CT50	GS536X90	N	0.906	0.669	1.386	0.394	90	1x8	366102	**25.02**
CT50	GSC536X45	Y	0.906	0.669	1.386	0.394	45	1x8	366104	**24.53**
CT50	GSC536X60	Y	0.906	0.669	1.386	0.394	60	1x8	366106	**24.53**
CT50	GSC536X90	Y	0.906	0.669	1.386	0.394	90	1x8	366108	**24.53**

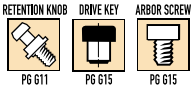
Shell Mill Holders & Milling Arbors

CAT40 Shell Mill Holders. G13
CAT40 Dual Contact Shell Mill Holders G13
CAT50 Shell Mill Holders. G13
CAT50 Dual Contact Shell Mill Holders G13
CAT50 Face Mill Holders. G14
BT Taper Shell Mill Holders. G14
HSK63 Shell Mill Holders G14
HSK100 Shell Mill Holders G14
NMTB Taper Shell Mill & Face Mill Holders G14
R8 Shell Mill Holders G14
Replacement Drive Keys & Arbor Screws G15
Shell End Mill Arbors For MT Spindles G15
STM Face Mill Holders G15
CAT & BT Taper Stub Arbors G15
Slitting Saw Arbor. G15
Milling Machine Arbors. G16
Arbor Spacers & Bushings With Keyways G16
Arbor Nuts G16

CAT40 Shell Mill Holders

- DIN coolant option - standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

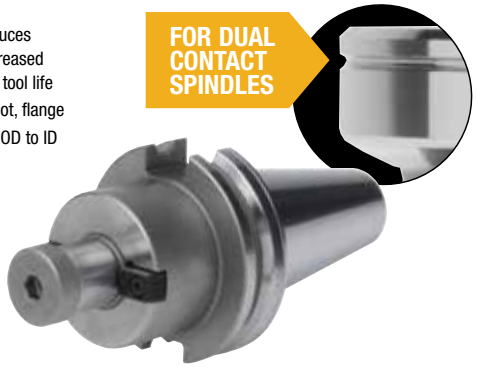


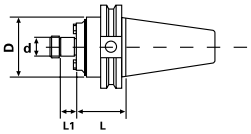


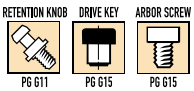
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT40	1/2	1.75	1.38	0.57	1/4	1/4-28	531190	**157.41**
CT40	3/4	1.75	1.75	0.67	5/16	3/8-24	531192	**142.56**
CT40	3/4	4.00	1.75	0.67	5/16	3/8-24	531194	**191.07**
CT40	3/4	6.00	1.75	0.67	5/16	3/8-24	531195	**214.83**
CT40	1	1.75	2.38	0.67	3/8	1/2-20	531196	**142.56**
CT40	1	4.00	2.38	0.67	3/8	1/2-20	531198	**191.07**
CT40	1	6.00	2.38	0.67	3/8	1/2-20	531199	**214.83**
CT40	1-1/4	2.00	2.88	0.67	1/2	5/8-18	531200	**151.47**
CT40	1-1/4	4.00	2.88	0.67	1/2	5/8-18	531202	**214.83**
CT40	1-1/4	6.00	2.88	0.67	1/2	5/8-18	531203	**220.77**
CT40	1-1/2	2.00	3.80	0.93	5/8	3/4-16	531204	**167.31**
CT40	1-1/2	4.00	3.80	0.93	5/8	3/4-16	531206	**239.58**

CAT40 DUAL CONTACT Shell Mill Holders

- DIN coolant through the flange option - Standard
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



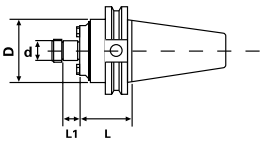


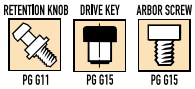


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT40	3/4	1.75	1.75	0.67	5/16	3/8-24	521192	**170.85**
CT40	3/4	4.00	1.75	0.67	5/16	3/8-24	521194	**248.20**
CT40	3/4	6.00	1.75	0.67	5/16	3/8-24	521195	**277.10**
CT40	1	1.75	2.38	0.67	3/8	1/2-20	521196	**174.25**
CT40	1	4.00	2.38	0.67	3/8	1/2-20	521198	**248.20**
CT40	1	6.00	2.38	0.67	3/8	1/2-20	521199	**281.35**
CT40	1-1/4	2.00	2.88	0.67	1/2	5/8-18	521200	**187.00**
CT40	1-1/4	4.00	2.88	0.67	1/2	5/8-18	521202	**289.00**
CT40	1-1/2	2.00	3.80	0.93	5/8	3/4-16	521204	**204.00**
CT40	1-1/2	4.00	3.80	0.93	5/8	3/4-16	521206	**306.00**

CAT50 Shell Mill Holders

- DIN coolant option - Standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

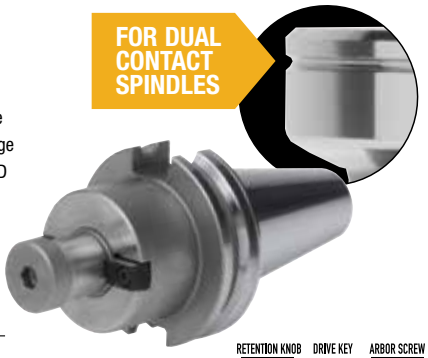


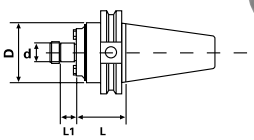


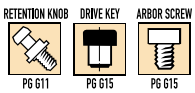
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT50	3/4	1.75	2.00	0.67	5/16	3/8-24	531208	**170.28**
CT50	3/4	4.00	2.00	0.67	5/16	3/8-24	531210	**220.77**
CT50	3/4	6.00	2.00	0.67	5/16	3/8-24	531212	**283.14**
CT50	3/4	8.00	2.00	0.67	5/16	3/8-24	531214	**351.45**
CT50	1	1.75	2.75	0.69	3/8	1/2-20	531216	**177.21**
CT50	1	4.00	2.75	0.69	3/8	1/2-20	531218	**239.58**
CT50	1	6.00	2.75	0.69	3/8	1/2-20	531220	**307.89**
CT50	1	8.00	2.75	0.69	3/8	1/2-20	531222	**351.45**
CT50	1-1/4	1.75	2.88	0.69	1/2	5/8-18	531224	**201.96**
CT50	1-1/4	4.00	2.88	0.69	1/2	5/8-18	531226	**239.58**
CT50	1-1/4	6.00	2.88	0.69	1/2	5/8-18	531228	**307.89**
CT50	1-1/4	8.00	2.88	0.69	1/2	5/8-18	531230	**375.21**
CT50	1-1/2	2.00	3.80	0.93	5/8	3/4-16	531232	**201.96**
CT50	1-1/2	4.00	3.80	0.93	5/8	3/4-16	531234	**239.58**
CT50	1-1/2	6.00	3.80	0.93	5/8	3/4-16	531236	**307.89**
CT50	1-1/2	8.00	3.80	0.93	5/8	3/4-16	531238	**400.95**
CT50	2	2.00	4.38	0.93	3/4	1-14	531240	**253.44**
CT50	2	4.00	4.38	0.93	3/4	1-14	531242	**452.43**
CT50	2	6.00	4.38	0.93	3/4	1-14	531244	**544.50**

CAT50 DUAL CONTACT Shell Mill Holders

- DIN Coolant through the flange option - Standard
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



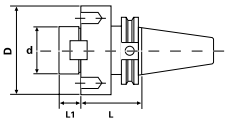


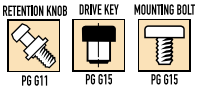


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT50	3/4	1.75	2.00	0.67	5/16	3/8-24	521208	**226.10**
CT50	3/4	4.00	2.00	0.67	5/16	3/8-24	521210	**285.60**
CT50	3/4	6.00	2.00	0.67	5/16	3/8-24	521212	**357.00**
CT50	1	1.75	2.75	0.69	3/8	1/2-20	521216	**207.40**
CT50	1	4.00	2.75	0.69	3/8	1/2-20	521218	**306.00**
CT50	1	6.00	2.75	0.69	3/8	1/2-20	521220	**382.50**
CT50	1	8.00	2.75	0.69	3/8	1/2-20	521222	**474.30**
CT50	1-1/4	1.75	2.88	0.69	1/2	5/8-18	521224	**207.40**
CT50	1-1/4	4.00	2.88	0.69	1/2	5/8-18	521226	**306.00**
CT50	1-1/4	6.00	2.88	0.69	1/2	5/8-18	521228	**382.50**
CT50	1-1/4	8.00	2.88	0.69	1/2	5/8-18	521230	**474.30**
CT50	1-1/2	2.00	3.80	0.93	5/8	3/4-16	521232	**226.10**
CT50	1-1/2	4.00	3.80	0.93	5/8	3/4-16	521234	**306.00**
CT50	1-1/2	6.00	3.80	0.93	5/8	3/4-16	521236	**382.50**
CT50	1-1/2	8.00	3.80	0.93	5/8	3/4-16	521238	**474.30**
CT50	2	2.00	4.38	0.93	3/4	1-14	521240	**388.45**
CT50	2	4.00	4.38	0.93	3/4	1-14	521242	**546.55**

CAT50 Face Mill Holders

- All ground body
- 4 bolts, 5/8-11
- 4" bolt circle
- AT2 Taper Accuracy
- RFID chip hole

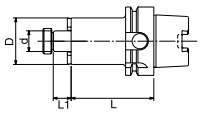


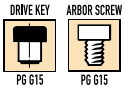


Taper	d	L	D	L1	Key Size	Code No.	Price $
CT50	2	2.95	5.06	0.86	3/4	531246	**289.67**
CT50	2-1/2	2.95	5.00	1.18	1	531248	**298.25**

HSK63A Shell Mill Holders

- High rigidity and torque transmission
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole

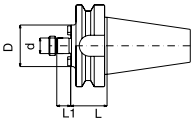


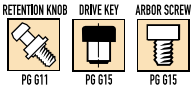


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
HSK63A	3/4	3.00	1.693	0.669	5/16	3/8-24	536082	**420.75**
HSK63A	3/4	5.00	1.693	0.669	5/16	3/8-24	536084	**420.75**
HSK63A	1	3.00	2.165	0.669	3/8	1/2-20	536086	**420.75**
HSK63A	1	5.00	2.165	0.669	3/8	1/2-20	536088	**420.75**
HSK63A	1-1/4	3.00	2.756	0.669	1/2	5/8-18	536090	**420.75**
HSK63A	1-1/4	5.00	2.756	0.669	1/2	5/8-18	536092	**420.75**

BT Taper Shell Mill Holders

- DIN coolant option - standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole



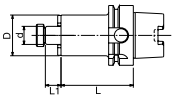


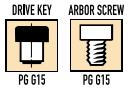
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
BT30								
BT30	1/2	1.19	1.38	0.57	1/4	1/4-28	532080‡	**154.44**
BT30	3/4	1.19	2.00	0.67	5/16	3/8-24	532082‡	**139.59**
BT30	1	1.77	2.38	0.69	3/8	1/2-20	532084‡	**121.77**
BT40								
BT40	1/2	1.75	1.38	0.57	1/4	1/4-28	532086	**173.25**
BT40	3/4	1.75	1.75	0.67	5/16	3/8-24	532088	**164.34**
BT40	3/4	4.00	1.75	0.67	5/16	3/8-24	532111	**197.01**
BT40	3/4	6.00	1.75	0.67	5/16	3/8-24	532114	**272.25**
BT40	1	1.75	2.38	0.67	3/8	1/2-20	532090	**164.34**
BT40	1	4.00	2.38	0.67	3/8	1/2-20	532115	**184.14**
BT40	1	6.00	2.38	0.67	3/8	1/2-20	532117	**237.60**
BT40	1-1/4	2.00	2.88	0.67	1/2	5/8-18	532092	**202.95**
BT40	1-1/4	4.00	2.88	0.67	1/2	5/8-18	532119	**259.38**
BT40	1-1/4	6.00	2.88	0.67	1/2	5/8-18	532121	**267.30**
BT40	1-1/2	2.00	3.80	0.92	5/8	3/4-16	532094	**259.38**
BT50								
BT50	1	1.75	2.75	0.69	3/8	1/2-20	532101	**329.67**
BT50	1-1/4	1.75	2.88	0.69	1/2	5/8-18	532103	**329.67**
BT50	1-1/2	1.75	3.80	0.92	5/8	3/4-16	532105	**277.20**
BT50	2	1.75	4.38	0.92	3/4	1-14	532107	**396.99**

‡ Not DIN Coolant

HSK100A Shell Mill Holders

- High rigidity and torque transmission
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole

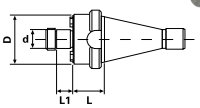


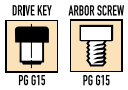


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
HSK100A	3/4	4.00	1.693	0.669	5/16	3/8-24	536094	**490.05**
HSK100A	3/4	6.00	1.693	0.669	5/16	3/8-24	536096	**525.69**
HSK100A	1	4.00	2.165	0.669	3/8	1/2-20	536098	**490.05**
HSK100A	1	6.00	2.165	0.669	3/8	1/2-20	536100	**525.69**
HSK100A	1-1/2	4.00	3.504	0.902	5/8	3/4-16	536106	**508.86**
HSK100A	1-1/2	6.00	3.504	0.902	5/8	3/4-16	536108	**569.25**

NMTB Taper Shell Mill Holders

- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel

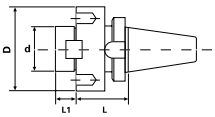


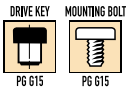


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
NMTB40								
NMTB40	1/2	0.87	1.38	0.57	1/4	1/4-28	534130	**145.35**
NMTB40	3/4	0.87	1.94	0.67	5/16	3/8-24	534132	**145.35**
NMTB40	1	1.31	2.38	0.67	3/8	1/2-20	534134	**145.35**
NMTB40	1-1/4	1.50	2.88	0.67	1/2	5/8-18	534136	**145.35**
NMTB40	1-1/2	1.63	3.50	0.93	5/8	3/4-16	534138	**145.35**
NMTB50								
NMTB50	3/4	1.25	2.00	0.67	5/16	3/8-24	534140	**183.00**
NMTB50	1	1.88	2.38	0.67	3/8	1/2-20	534142	**188.50**
NMTB50	1-1/4	1.88	2.88	0.67	1/2	5/8-18	534144	**192.05**
NMTB50	1-1/2	1.88	3.50	0.93	5/8	3/4-16	534146	**211.05**
NMTB50	2	1.88	4.38	0.93	3/4	1-14	534148	**212.99**

NMTB50 Taper Face Mill Holders

- All ground body
- 4 bolts, 5/8-11
- 4" bolt circle

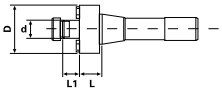


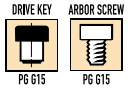


Taper	d	L	D	L1	Key Size	Code No.	Price $
NMTB50	2-1/2	3.00	5.00	1.18	1	534152	**212.99**

R8 Shell Mill Holders

- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel





Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
R8	1/2	1.00	1.38	0.57	1/4	1/4-28	534154	**87.21**
R8	3/4	1.00	2.00	0.69	5/16	3/8-24	534156	**87.21**
R8	1	1.00	2.38	0.69	3/8	1/2-20	534158	**91.21**
R8	1-1/4	1.00	2.88	0.69	1/2	5/8-18	534160	**93.62**
R8	1-1/2	1.75	3.50	0.94	5/8	3/4-16	534162	**104.61**

Replacement Drive Keys

Spigot Dia.	Description	Code No.	Price $
1/2	Two 1/4 Drive keys	534164	**14.42**
3/4	Two 5/16	534166	**17.63**
1	Two 3/8	534168	**20.83**
1-1/4	Two 1/2	534170	**23.01**
1-1/2	Two 5/8	534172	**24.95**
2	Two 3/4	534174	**30.67**
2-1/2	Two 1	534176	**26.32**

Replacement Arbor Screws

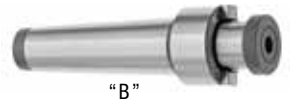
Thread Size	Size of Holder	Code No.	Price $
5/8-11	Face Mill Mounting Bolt	534178	**13.50**
1/4-28	1/2	534180	**13.50**
3/8-24	3/4	534182	**14.65**
1/2-20	1	534184	**16.25**
5/8-18	1-1/4	534186	**18.43**
3/4-16	1-1/2	534188	**29.64**
1-14	2	534190	**42.00**

Shell End Mill Arbors For Morse Taper Spindles

Style "B" with Draw Bar End
Style "A" with Tang End
Machined from one piece forgings, hardened and precisely ground; hardness 52-56 HRC. Maximum misalignment of taper in shank, in which the tool is fixed: 0.0006". The drive keys are pressed in.

- Draw bar threads for #4 MT: 1/2"-13
- Draw bar threads for #5 MT: 5/8"-11

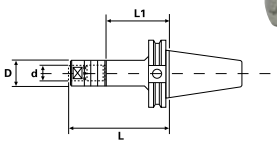
"A"

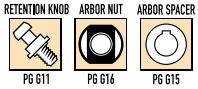

"B"

Draw Bar Arbor No.	M.T.	For Bore Dia.	Dia. for Range of Shell End Mill	Style "B" Draw Bar End Code No.	Price $	Style "A" Tang End Code No.	Price $
MT4–1/2	4	1/2	1-1/4 to 1-1/2	410405	**209.08**	410305	**267.78**
MT4–3/4	4	3/4	1-3/4 to 2	410410	**219.98**	410310	**308.43**
MT4–1	4	1	2-1/4 to 2-3/4	-	-	410315	**329.31**
MT4–1-1/4	4	1-1/4	3 to 3-1/2	-	-	410320	**372.43**
MT4–1-1/2	4	1-1/2	4 to 5	-	-	410325	**392.04**
MT5–1-1/4	5	1-1/4	3 to 3-1/2	410435	**302.93**	410335	**390.41**
MT5–1-1/2	5	1-1/2	4 to 5	-	-	410340	**417.06**

CAT Taper Stub Arbors

- Each arbor equipped with 1/8, 1/4, 3/8, 1/2 spacers





Taper	d	L	D	L1	Code No.	Price $
CAT40						
CT40	1	6.17	1.50	4.00	531580	**163.32**
CT40	1-1/4	6.29	1.75	4.00	531582	**166.87**
CT40	1-1/2	6.60	2.12	4.00	531584	**171.91**
CAT50						
CT50	1	6.17	1.50	4.00	531586	**243.32**
CT50	1-1/4	6.28	1.75	4.00	531588	**248.36**
CT50	1-1/2	6.60	2.12	4.00	531590	**255.80**

Face Mill Holders

Made of selected steel, hardened and precision ground

- These holders have 4 mounting holes and bolts with 5/8-11 threads on a 4" bolt circle

Taper	Fore Bore Dia.	Length of Arbor	Screw Size	Code No.	Price $
ISA40	2	6.20	5/8-11	410190	**890.01**
ISA40	2-1/2	6.20	5/8-11	410192	**883.09**
ISA50	2	7.56	5/8-11	410194	**1,002.42**
ISA50	2-1/2	7.56	5/8-11	410196	**995.82**
MT 5	2	9.57	5/8-11	410202	**1,477.05**
MT 5	2-1/2	9.57	5/8-11	410204	**1,471.24**
MT 6	2	13.58	5/8-11	410206	**1,625.48**
MT 6	2-1/2	13.58	5/8-11	410208	**1,840.10**

Replacement Stub Arbor Spacers

Description	Code No.	Price $
1/8" Spacer for 3/4" Holder	534568	**10.30**
1/4" Spacer for 3/4" Holder	534570	**10.30**
3/8" Spacer for 3/4" Holder	534572	**10.30**
1/2" Spacer for 3/4" Holder	534574	**10.30**
1/8" Spacer for 1" Holder	534576	**10.53**
3/8" Spacer for 1" Holder	534580	**10.53**
1/8" Spacer for 1-1/4" Holder	534584	**11.45**
3/8" Spacer for 1-1/4" Holder	534588	**11.45**
1/8" Spacer for 1-1/2" Holder	534592	**11.91**
3/8" Spacer for 1-1/2" Holder	534596	**11.91**
1/2" Spacer for 1-1/2" Holder	534598	**11.91**

Slitting Saw Arbor

Diameter of Arbor (in.)	Length (in.)	Fits Following Hole Size (in.)	Code No.	Price $
1/2	2-9/16	1/2, 5/8, 3/4, 7/8, 1	400150	**90.97**

R8 Stub Milling Machine Arbor

To fit Bridgeport and other popular machines. Furnished complete with assorted spacers.

Arbor No.	Arbor Dia. (in.)	Length of Shoulder to Nut (in.)	Thread of Nut	Code No.	Price $
R8S1	1	2	1 - 14	400350	**426.48**

Milling Machine Arbors

For 30-40-50 National Standard Taper Spindles

Milling Machine Arbors are made of top quality one piece forgings. Carefully heat treated and surfaces ground with extremely narrow tolerances assure a rigid setup and accurate machining operations. All threads are ground. Arbors are equipped with assorted width solid spacers and necessary running bushings with standard keyways and threaded arbor nut.

Drawbar Threads for #30 Taper - 1/2" - 13
Drawbar Threads for #40 Taper - 5/8" - 11
Drawbar Threads for #50 Taper - 1" - 8

* Style A

Style B

Arbor No.	Taper	Arbor Dia. (in.)	Length of Shoulder to Nut (in.)	Dimensions of Running Bushing Dia. x L (in.)	Bushing Furnished	Code No.	Price $
31-B2	30	1	2	None	None	400205	**660.03**
41-A8	40	1	8	None	None	400030*	**897.54**
40-7/8-B14-3	40	7/8	14	1-7/8 x 3-1/8	1	400210	**880.45**
40-7/8-B16-3	40	7/8	16	1-7/8 x 3-1/8	1	400215	**1,181.14**
41-B3	40	1	3	None	None	400220	**669.51**
41-B14-3	40	1	14	1-7/8 x 3-1/8	1	400225	**1,404.99**
41-B20-3	40	1	20	1-7/8 x 3-1/8	1	400230	**1,584.88**
41-1/4-B3	40	1-1/4	3	None	None	400235	**681.09**
41-1/4-B14-3	40	1-1/4	14	1-7/8 x 3-1/8	1	400240	**1,394.02**
41-1/4-B20-3	40	1-1/4	20	1-7/8 x 3-1/8	1	400245	**1,707.56**
41-1/2-B20-4	40	1-1/2	20	2-1/8 x 3-3/4	1	400250	**2,049.96**
51-B3-1/2	50	1	3-1/2	None	None	400255	**755.40**
51-B15-4	50	1	15	2-1/8 x 3-3/4	1	400260	**1,394.02**
51-B18-4	50	1	18	2-1/8 x 3-3/4	2	400265	**1,709.01**
51-B24-4	50	1	24	2-1/8 x 3-3/4	2	400270	**2,004.58**
51-1/4-B3-1/2	50	1-1/4	3-1/2	None	None	400275	**918.77**
51-1/4-B15-4	50	1-1/4	15	2-1/8 x 3-3/4	1	400280	**1,730.42**
51-1/4-B18-4	50	1-1/4	18	2-1/8 x 3-3/4	2	400285	**1,837.55**
51-1/4-B24-4	50	1-1/4	24	2-1/8 x 3-3/4	2	400290	**2,133.07**
51-1/4-B30-4	50	1-1/4	30	2-1/8 x 3-3/4	2	400295	**2,681.31**
51-1/2-B3-1/2	50	1-1/2	3-1/2	None	None	400300	**828.08**
51-1/2-B18-4	50	1-1/2	18	2-1/8 x 3-3/4	2	400305	**1,985.33**
51-1/2-B24-5	50	1-1/2	24	2-3/4 x 4-1/4	2	400310	**2,364.33**
51-1/2-B30-5	50	1-1/2	30	2-3/4 x 4-1/4	2	400315	**2,882.65**
51-1/2-B36-5	50	1-1/2	36	2-3/4 x 4-1/4	2	400320	**1,782.84**
52-B24-5	50	2	24	2-3/4 x 4-1/4	2	400325	**2,872.08**
52-B30-5	50	2	30	2-3/4 x 4-1/4	2	400330	**3,026.96**
52-B36-5	50	2	36	2-3/4 x 4-1/4	2	400335	**3,103.16**
52-1/2 - B36-6	50	2-1/2	36	3-3/8 x 4-1/4	2	400340	**4,771.56**

* Style A

Arbor Running Bushings With Keyways

Standard keyways on bushing allow fixed mounting on arbor and prevent rotation.

Bushing No.	Bushing O.D.	Hole Dia.	Bushing Length	Code No.	Price $
2 - 7/8	1-5/8	7/8	2-5/8	400900	**91.31**
2 - 1	1-5/8	1	2-5/8	400905	**109.15**
2 - 1-1/4	1-7/8	1-1/4	2-5/8	400910	**115.66**
3 - 1	1-7/8	1	3-1/8	400920	**136.99**
3 - 1-1/4	1-7/8	1-1/4	3-1/8	400925	**145.01**
4 - 7/8	2-1/8	7/8	3-3/4	400930	**153.26**
4 - 1	2 -1/8	1	3-3/4	400935	**155.45**
4 - 1-1/4	2-1/8	1-1/4	3-3/4	400940	**136.54**
4 - 1-1/2	2-1/8	1-1/2	3-3/4	400945	**138.97**
5 - 1	2-3/4	1	4-1/4	400955	**170.44**
5 - 1-1/4	2-3/4	1-1/4	4-1/4	400960	**190.95**
5 - 1-1/2	2-3/4	1-1/2	4-1/4	400965	**204.61**
5 - 2	2-3/4	2	4-1/4	400970	**174.02**

Arbor Nuts

Arbor nuts are hardened and have a ground thread and shoulder.

Thread Size	For Arbor Diameter	Code No.	Price $
7/8 - 14RH	7/8	405105	**78.40**
1 - 14RH	1	405110	**103.29**
1-1/4 - 12RH	1-1/4	405115	**117.92**
1-1/2 - 12RH	1-1/2	405120	**204.30**
2 - 12RH	2	405125	**269.52**
2-1/2 - 12RH	2-1/2	405130	**391.58**

Arbor Solid Spacers With Keyways

Spacers are hardened and have parallel and perpendicular surfaces precisely ground to ensure precise operation of cutters on milling machine arbors.

Width of Spacer	7/8" Hole 1-3/8" O.D. Code No.	Price $	1" Hole 1-1/2" O.D. Code No.	Price $	1-1/4" Hole 1-3/4" O.D. Code No.	Price $	1-1/2" Hole 2-1/8" O.D. Code No.	Price $	2" Hole 2-3/4" O.D Code No.	Price $
1/16	400405	**25.10**	400490	**29.34**	400575	**28.41**	400660	**37.09**	400745	**16.04**
3/32	400410	**24.64**	400495	**26.41**		**-**	400665	**37.71**	400750	**16.04**
1/8	400415	**30.44**	400500	**30.83**	400585	**30.22**	400670	**38.68**	400755	**51.10**
3/16	400420	**7.68**	400505	**32.33**	400590	**31.89**	400675	**37.77**	400760	**47.92**
1/4	400425	**31.27**	400510	**35.64**	400595	**36.43**	400680	**43.92**	400765	**51.00**
5/16	-	**-**	400515	**35.64**	400600	**33.19**	400685	**40.39**	400770	**61.92**
3/8	400435	**31.16**	400520	**38.50**	400605	**39.64**	400690	**47.84**	400775	**56.33**
7/16	400440	**40.84**	-	**-**	400610	**40.19**	400695	**50.61**	-	**-**
1/2	400445	**37.62**	400530	**39.13**	400615	**42.24**	400700	**51.10**	400785	**70.30**
5/8	400450	**35.23**	400535	**43.21**	400620	**40.94**	-	**-**	400790	**51.12**
3/4	400455	**41.33**	400540	**49.56**	400625	**51.76**	400710	**60.39**	400795	**82.28**
7/8	400460	**49.96**	400545	**52.52**	400630	**47.53**	-	**-**	400800	**60.81**
1	400465	**48.28**	400550	**52.07**	400635	**56.03**	400720	**66.95**	400805	**92.72**
1-1/4	400470	**55.72**	400555	**55.50**	400640	**66.56**	400725	**64.95**	400810	**111.53**
1-1/2	400475	**59.14**	-	**-**	400645	**62.95**	400730	**35.10**	400815	**78.98**
2	400480	**60.33**	400565	**74.05**	400650	**80.96**	400735	**106.73**	400820	**132.90**
3	400485	**35.10**	400570	**89.40**	400655	**87.05**	400740	**127.05**	400825	**162.28**

Collet Chucks

ER Collet Chucks - CAT, BT, HSK, NMTB & R8 Taper G18-21
Dual Contact ER Collet Chucks G18-19
ER Collet Chuck Extensions G21
ER Collets G22-32
ER Collet Chuck Sets G23
ER Collet Sets G31-32
ER Chuck Nuts, Wrenches, Backup Screws G32
SA Collet Chucks G33
SA Collets G33-34
TG Collet Chucks G34-35
TG 75, 100, 150 Collets & Sets G35-37
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Shrink Fit Tooling

Introduction to GS Shrink Fit Tooling G43
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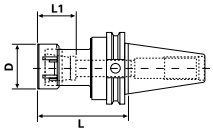
CAT50 Shrink Fit Holders G44
BT30 Shrink Fit Holders G45
BT40 Shrink Fit Holders G45
HSK63 Shrink Fit Holders G46
HSK100 Shrink Fit Holders G46

CAT40 ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- RFID Chip Hole
- Wrench not included
- AT2 Taper Accuracy



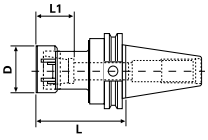
PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT40	ER11**	0.019-0.275	2.50	0.65	0.75	29.8	531400	**181.17**
CT40	ER11**	0.019-0.275	4.00	0.65	0.75	29.8	531402	**181.17**
CT40	ER11**	0.019-0.275	6.00	0.65	0.75	29.8	531404	**237.60**
CT40	ER16**	0.019-0.406	2.50	0.87	1.26	56.9	531406	**181.17**
CT40	ER16**	0.019-0.406	3.50	0.87	1.26	56.9	531408	**183.15**
CT40	ER16**	0.019-0.406	4.00	0.87	1.26	56.9	531405	**183.15**
CT40	ER16**	0.019-0.406	6.00	0.87	1.26	56.9	531410	**202.95**
CT40	ER16**	0.019-0.406	9.00	0.87	1.26	56.9	531411	**226.71**
CT40	ER20**	0.039-0.511	2.50	1.06	1.38	81.3	531412	**181.17**
CT40	ER20**	0.039-0.511	4.00	1.06	1.38	81.3	531414	**183.15**
CT40	ER20**	0.039-0.511	6.00	1.06	1.38	81.3	531416	**210.87**
CT40	ER20**	0.039-0.511	9.00	1.06	1.38	81.3	531417	**278.19**
CT40	ER25	0.039-0.629	2.50	1.18	1.65	128.8	531418	**181.17**
CT40	ER25	0.039-0.629	4.00	1.18	1.65	128.8	531420	**197.01**
CT40	ER25	0.039-0.629	6.00	1.18	1.65	128.8	531422	**202.95**
CT40	**ER32**	**0.078-0.787**	**0.750**				**531401***	**160.38**
CT40	ER32	0.078-0.787	2.50	1.34	1.97	169.5	531421	**195.03**
CT40	ER32	0.078-0.787	3.13	1.34	1.97	169.5	531424	**195.03**
CT40	ER32	0.078-0.787	4.00	1.34	1.97	169.5	531423	**195.03**
CT40	ER32	0.078-0.787	5.00	1.34	1.97	169.5	531426	**219.78**
CT40	ER32	0.078-0.787	6.00	1.34	1.97	169.5	531425	**219.78**
CT40	ER32	0.078-0.787	9.00	1.34	1.97	169.5	531419	**245.52**
CT40	ER40	0.118-1.023	2.50	1.50	2.48	219.6	531427	**202.95**
CT40	ER40	0.118-1.023	3.13	1.50	2.48	219.6	531428	**202.95**
CT40	ER40	0.118-1.023	4.00	1.50	2.48	219.6	531429	**197.01**
CT40	ER40	0.118-1.023	5.00	1.50	2.48	219.6	531430	**239.58**
CT40	ER40	0.118-1.023	6.00	1.50	2.48		531431	**239.58**

* ER Shorty collet chuck, Not DIN coolant ** Hex Nut

CAT40 DUAL CONTACT ER Collet Chucks

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant option - standard
- All ground body
- TIR, 0.0003" at 4xDia.
- AT2 Taper Accuracy
- RFID Chip Hole



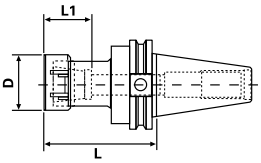
PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT40	ER11**	0.019-0.275	2.50	0.65	0.75	29.8	521630	**226.95**
CT40	ER11**	0.019-0.275	4.00	0.65	0.75	29.8	521632	**233.75**
CT40	ER11**	0.019-0.275	6.00	0.65	0.75	29.8	521634	**251.60**
CT40	ER16**	0.019-0.406	2.50	0.87	1.26	56.9	521406	**226.95**
CT40	ER16**	0.019-0.406	4.00	0.87	1.26	56.9	521405	**194.65**
CT40	ER16**	0.019-0.406	6.00	0.87	1.26	56.9	521410	**251.60**
CT40	ER20**	0.039-0.511	4.00	1.06	1.38	81.3	521646	**223.55**
CT40	ER32	0.078-0.787	2.50	1.34	1.97	169.5	521656	**243.95**
CT40	ER32	0.078-0.787	3.13	1.34	1.97	169.5	521424	**243.95**
CT40	ER32	0.078-0.787	4.00	1.34	1.97	169.5	521423	**233.75**
CT40	ER32	0.078-0.787	6.00	1.34	1.97	169.5	521425	**240.55**
CT40	ER40	0.118-1.023	2.50	1.50	2.48	219.6	521666	**237.15**

** Hex Nut

STM CAT40 ER Collet Chucks

- DIN coolant option - standard
- Factory balanced to save spindle life, tool life and increased productivity
- TIR, 0.0002" at 4xDia.
- Wrench not included
- AT2 Taper Accuracy
- RFID Chip Hole



BALANCE CERTIFICATE
G2.5 at 20,000rpm
INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT40	ER11*	0.019-0.275"	2.50"	0.65"	0.75"	525400	**84.00**
CT40	ER11*	0.019-0.275"	4.00"	0.65"	0.75"	525402	**89.00**
CT40	ER11*	0.019-0.275"	6.00"	0.65"	0.75"	525404	**109.00**
CT40	ER16*	0.019-0.413"	2.50"	0.87"	1.26"	525406	**84.00**
CT40	ER16*	0.019-0.413"	3.50"	0.87"	1.26"	525408	**88.00**
CT40	ER16*	0.019-0.413"	4.00"	0.87"	1.26"	525405	**89.00**
CT40	ER16*	0.019-0.413"	6.00"	0.87"	1.26"	525410	**109.00**
CT40	ER20*	0.019-0.551"	2.50"	1.06"	1.38"	525412	**84.00**
CT40	ER20*	0.019-0.551"	4.00"	1.06"	1.38"	525414	**89.00**
CT40	ER20*	0.019-0.551"	6.00"	1.06"	1.38"	525416	**109.00**
CT40	ER25	0.059-0.675"	2.50"	1.18"	1.65"	525418	**84.00**
CT40	ER25	0.059-0.675"	4.00"	1.18"	1.65"	525420	**89.00**
CT40	ER32	0.078-0.787"	2.50"	1.34"	1.97"	525421	**84.00**
CT40	ER32	0.078-0.787"	3.13"	1.34"	1.97"	525424	**88.00**
CT40	ER32	0.078-0.787"	4.00"	1.34"	1.97"	525423	**89.00**
CT40	ER32	0.078-0.787"	6.00"	1.34"	1.97"	525425	**109.00**

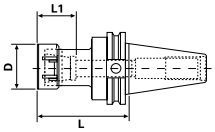
* Hex Nut

Grab a Tool Trolley with 4 Tool Trays and Inserts for all your Holders.

See Page G90

CAT50 ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- Wrench not included
- AT2 Taper Accuracy
- RFID Chip Hole



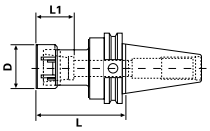
PREMIUM BALANCE
G2.5 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT50	ER16**	0.019-0.406	4.12	0.87	1.26	56.9	531432	**220.77**
CT50	ER16**	0.019-0.406	6.00	0.87	1.26	56.9	531434	**239.58**
CT50	ER16**	0.019-0.406	8.00	0.87	1.26	56.9	531436	**315.81**
CT50	ER16**	0.019-0.406	12.00	0.87	1.26	56.9	531437	**579.15**
CT50	ER20**	0.039-0.511	2.50	1.06	1.38	81.3	531438	**226.71**
CT50	ER20**	0.039-0.511	4.00	1.06	1.38	81.3	531440	**226.71**
CT50	ER20**	0.039-0.511	6.00	1.06	1.38	81.3	531442	**226.71**
CT50	ER20**	0.039-0.511	8.00	1.06	1.38	81.3	531444	**315.81**
CT50	ER20**	0.039-0.511	12.00	1.06	1.38	81.3	531445	**579.15**
CT50	ER25	0.039-0.629	2.50	1.18	1.65	128.8	531446	**214.83**
CT50	ER25	0.039-0.629	4.00	1.18	1.65	128.8	531448	**214.83**
CT50	ER25	0.039-0.629	6.00	1.18	1.65	128.8	531450	**238.59**
CT50	ER25	0.039-0.629	8.00	1.18	1.65	128.8	531452	**315.81**
CT50	**ER32**	**0.078-0.787**	**0.750**				**531403***	**207.90**
CT50	ER32	0.078-0.787	4.00	1.34	1.97	169.5	531454	**214.83**
CT50	ER32	0.078-0.787	6.00	1.34	1.97	169.5	531456	**251.46**
CT50	ER32	0.078-0.787	8.00	1.34	1.97	169.5	531458	**283.14**
CT50	ER32	0.078-0.787	12.00	1.34	1.97	169.5	531459	**579.15**
CT50	ER40	0.118-1.023	4.00	1.50	2.48	219.6	531460	**226.71**
CT50	ER40	0.118-1.023	6.00	1.50	2.48	219.6	531462	**264.33**
CT50	ER40	0.118-1.023	8.00	1.50	2.48	219.6	531464	**325.71**

* ER Shorty collet chuck, Not DIN coolant ** Hex Nut

CAT50 DUAL CONTACT ER Collet Chucks

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant option - standard
- All ground body
- TIR, 0.0003" at 4xDia.
- AT2 Taper Accuracy
- RFID Chip Hole



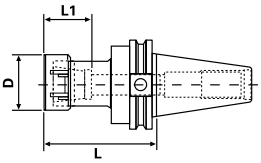
PREMIUM BALANCE
G2.5 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT50	ER16**	0.019-0.406	4.12	0.87	1.26	56.9	521432	**317.90**
CT50	ER16**	0.019-0.406	6.00	0.87	1.26	56.9	521434	**332.35**
CT50	ER16**	0.019-0.406	8.00	0.87	1.26	56.9	521436	**383.35**
CT50	ER32	0.078-0.787	4.00	1.34	1.97	169.5	521454	**311.95**
CT50	ER32	0.078-0.787	6.00	1.34	1.97	169.5	521456	**378.25**
CT50	ER32	0.078-0.787	8.00	1.34	1.97	169.5	521458	**364.65**

** Hex Nut

STM CAT50 ER Collet Chucks

- DIN coolant option - standard
- Factory balanced to save spindle life, tool life and increased productivity
- TIR, 0.0002" at 4xDia.
- Wrench not included
- AT2 Taper Accuracy
- RFID Chip Hole



BALANCE CERTIFICATE
G2.5 at 15,000rpm
INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT50	ER16*	0.019-0.413"	4.12"	0.87"	1.26"	525432	**147.00**
CT50	ER16*	0.019-0.413"	6.00"	0.87"	1.26"	525434	**160.00**
CT50	ER20*	0.019-0.551"	4.00"	1.06"	1.38"	525440	**147.00**
CT50	ER20*	0.019-0.551"	6.00"	1.06"	1.38"	525442	**160.00**
CT50	ER32	0.078-0.787"	4.00"	1.34"	1.97"	525454	**147.00**
CT50	ER32	0.078-0.787"	6.00"	1.34"	1.97"	525456	**160.00**

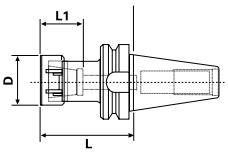
* Hex Nut

From simple to deluxe, we have a Tool Setting Stand to suit your needs.

See Page G91

BT Taper ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- Wrench not included
- AT2 Taper Accuracy
- RFID Chip Hole



RETENTION KNOB PG G11 | NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

PREMIUM BALANCE G2.5 at 30,000rpm CERTIFICATE INCLUDED BT30 & BT40

PREMIUM BALANCE G2.5 at 25,000rpm CERTIFICATE INCLUDED BT50

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
BT30								
BT30	ER11**	0.019-0.275	2.00	0.65	0.75	29.8	532150*	**157.41**
BT30	ER11**	0.019-0.275	4.00	0.65	0.75	29.8	532152*	**159.39**
BT30	ER16**	0.019-0.406	2.36	0.87	1.26	56.9	532154*	**157.41**
BT30	ER16**	0.019-0.406	4.00	0.87	1.26	56.9	532156*	**159.39**
BT30	ER16**	0.019-0.406	5.00	0.87	1.26	56.9	532158*	**164.34**
BT30	ER16**	0.019-0.406	6.00	0.87	1.26	56.9	532160*	**183.15**
BT30	ER20**	0.039-0.511	2.50	1.06	1.38	81.3	532162*	**157.41**
BT30	ER20**	0.039-0.511	4.00	1.06	1.38	81.3	532164*	**183.15**
BT30	ER25	0.039-0.629	2.00	1.18	1.65	128.8	532166*	**191.07**
BT30	ER25	0.039-0.629	4.00	1.18	1.65	128.8	532168*	**191.07**
BT30	ER32	0.078-0.787	3.00	1.34	1.97	169.5	532170*	**161.37**
BT30	ER32	0.078-0.787	5.00	1.34	1.97	169.5	532172*	**196.02**
BT40								
BT40	ER11**	0.019-0.275	4.00	0.65	0.75	29.8	532176	**177.21**
BT40	ER11**	0.019-0.275	6.00	0.65	0.75	29.8	532178	**199.98**
BT40	ER16**	0.019-0.406	3.50	0.87	1.26	56.9	532180	**177.21**
BT40	ER16**	0.019-0.406	5.00	0.87	1.26	56.9	532182	**195.03**
BT40	ER20**	0.039-0.511	2.50	1.06	1.38	81.3	532184	**177.21**
BT40	ER20**	0.039-0.511	4.00	1.06	1.38	81.3	532186	**177.21**
BT40	ER20**	0.039-0.511	6.00	1.06	1.38	81.3	532188	**202.95**
BT40	ER25	0.039-0.629	2.25	1.18	1.65	128.8	532190	**183.15**
BT40	ER25	0.039-0.629	4.00	1.18	1.65	128.8	532192	**148.50**
BT40	ER25	0.039-0.629	6.00	1.18	1.65	128.8	532194	**206.91**
BT40	**ER32**	**0.078-0.787**	**1.06**				‡532191*	**160.38**
BT40	ER32	0.078-0.787	3.13	1.34	1.97	169.5	532196	**177.21**
BT40	ER32	0.078-0.787	5.00	1.34	1.97	169.5	532198	**202.95**
BT40	ER40	0.118-1.023	3.13	1.50	2.50	219.6	532200	**202.95**
BT40	ER40	0.118-1.023	5.00	1.50	2.50	219.6	532202	**226.71**
BT50								
BT50	ER16**	0.019-0.406	2.50	0.87	1.26	56.9	532203	**239.58**
BT50	ER25	0.039-0.629	4.00	1.18	1.65	128.8	532206	**239.58**

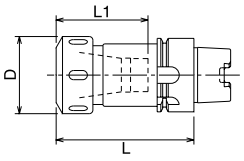
* Not DIN Coolant
** Hex Nut
‡ ER Shorty Collet Chuck

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

HSK63A ER Collet Chucks

- All ground body
- High rigidity and torque transmission
- Wrench not included
- AT2 Taper Accuracy
- RFID chip hole



NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

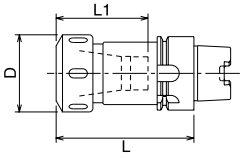
PREMIUM BALANCE G2.5 at 30,000rpm CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
HSK63A	ER16**	0.019-0.393	3.00	0.866	1.260	56.9	536114	**345.51**
HSK63A	ER16**	0.019-0.393	5.00	0.866	1.260	56.9	536116	**345.51**
HSK63A	ER20**	0.039-0.511	3.00	1.062	1.378	81.3	536118	**345.51**
HSK63A	ER20**	0.039-0.511	5.00	1.062	1.378	81.3	536120	**345.51**
HSK63A	ER25	0.039-0.629	3.00	1.181	1.654	128.8	536122	**345.51**
HSK63A	ER25	0.039-0.629	5.00	1.181	1.654	128.8	536124	**345.51**
HSK63A	ER32	0.078-0.787	4.00	1.260	1.969	169.5	536126	**345.51**
HSK63A	ER32	0.078-0.787	6.00	1.260	1.969	169.5	536128	**402.93**
HSK63A	ER40	0.118-1.023	4.00	1.496	2.480	219.6	536130	**371.25**

** Hex Nut

HSK100A ER Collet Chucks

- All ground body
- High rigidity and torque transmission
- Wrench not included
- AT2 Taper Accuracy
- RFID chip hole



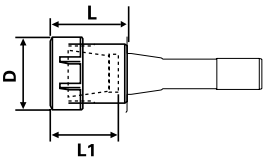
NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

PREMIUM BALANCE G2.5 at 25,000rpm CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
HSK100A	ER16**	0.019-0.393	4.00	0.866	1.260	56.9	536134	**396.00**
HSK100A	ER16**	0.019-0.393	6.00	0.866	1.260	56.9	536136	**499.95**
HSK100A	ER20**	0.039-0.511	4.00	1.062	1.378	81.3	536138	**396.00**
HSK100A	ER20**	0.039-0.511	6.00	1.062	1.378	81.3	536140	**499.95**
HSK100A	ER25	0.039-0.629	6.00	1.181	1.654	128.8	536144	**499.95**
HSK100A	ER32	0.078-0.787	4.00	1.260	1.969	169.5	536146	**508.86**
HSK100A	ER32	0.078-0.787	6.00	1.260	1.969	169.5	536148	**545.49**
HSK100A	ER40	0.118-1.023	6.00	1.496	2.480	219.6	536152	**623.70**

** Hex Nut

R8 Taper ER Collet Chucks

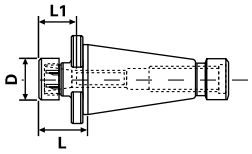


NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
R8	ER16	0.019-0.406	1.25	2.83	1.25	56.9	534360	**109.76**
R8	ER20	0.039-0.511	2.00	1.50	1.38	81.3	534362	**109.76**
R8	ER25	0.039-0.629	2.50	1.64	1.66	128.8	534364	**113.88**

NMTB Taper ER Collet Chucks

- Wrench not included

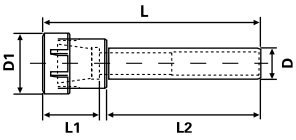


NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
NMTB40								
NMTB40	ER16	0.019-0.406	1.77	0.87	1.26	56.9	534352	**143.41**
NMTB40	ER25	0.039-0.629	2.00	1.18	1.65	128.8	534354	**149.81**
NMTB40	ER32	0.078-0.787	2.00	-	-	-	534260	**136.99**
NMTB50								
NMTB50	ER16	0.019-0.406	2.00	0.87	1.26	56.6	534356	**172.59**

ER Collet Chuck Extensions

- Wrench not included



NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

Collet Series	Collet Range	Shank Dia. (D)	D1	L	L1	L2	Tightening Torque (Nm)	Code No.	Price $
ER11	0.019-0.275	1/2	0.740	6.11	0.091	5.00	29.8	534368	**128.70**
ER11	0.019-0.275	5/8	0.740	6.11	0.091	5.00	29.8	534370	**151.47**
ER11	0.019-0.275	3/4	0.740	5.65	0.091	5.00	29.8	534372	**150.16**
ER16	0.019-0.406	5/8	1.26	6.48	1.28	5.00	56.9	534374	**139.59**
ER16	0.019-0.406	3/4	1.26	6.48	1.28	5.00	56.9	534376	**151.47**
ER16	0.019-0.406	1	1.26	5.89	1.28	5.00	56.9	534378	**160.81**
ER20	0.039-0.511	3/4	1.38	6.67	1.48	5.00	81.3	534380	**118.80**
ER20	0.039-0.511	1	1.38	6.40	1.48	5.00	81.3	534382	**160.38**
ER20	0.039-0.511	1-1/4	1.38	6.40	1.48	5.00	81.3	534384	**160.81**
ER25	0.039-0.629	3/4	1.65	6.85	1.65	5.00	128.8	534386	**161.26**
ER25	0.039-0.629	1	1.65	6.85	1.65	5.00	128.8	534388	**151.47**
ER25	0.039-0.629	1-1/4	1.65	6.00	1.65	5.00	128.8	534390	**161.26**
ER32	0.078-0.787	1	1.97	7.09	1.85	5.00	169.5	534392	**258.39**
ER32	0.078-0.787	1-1/4	1.97	6.30	2.13	4.00	169.5	337805	**200.83**
ER32	0.078-0.787	1-1/4	1.97	7.09	1.85	5.00	169.5	534394	**193.05**

R8 Taper ER Collet Chucks

- Wrench not included

NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

Collet Series	Gauge Length	Nose Dia.	Draw Bar	Code No.	Price $
ER32	40mm	50mm	7/16-20 UNF-3	337815	**200.83**
ER40	70mm	63mm	7/16-20 UNF-3B	337820	**245.42**

NMTB Taper ER Collet Chucks

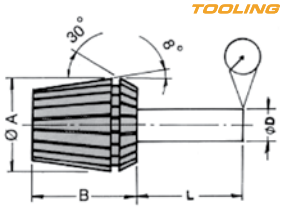
- Wrench not included

NUT PG G32 | WRENCH PG G32 | ER COLLETS PG G22-30

Taper	Collet Series	Gauge Length	Nose Dia.	Draw Bar	Code No.	Price $
NMTB30	ER32	55	50	1/2-13	337825	**200.83**
NMTB30	ER40	85	63	1/2-13	337830	**245.42**
NMTB40	ER40	55	63	5/8-11	337835	**249.87**
NMTB50	ER40	58	63	1-8	337840	**334.69**

ER Spring Collet Dimensional Data

ER collet system is made of special elastic steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

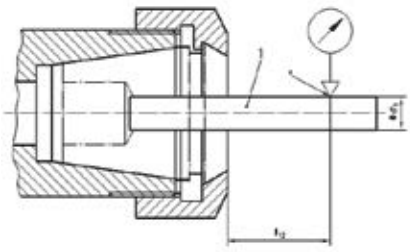


Type	A (mm)	B (mm)	L (mm)	øD (mm)	DIN 6343 Precision	GS Precision
ER11	11.5	18	-	0.5-7	0.02	0.010
ER16	17	27	6	0.5-10	0.02	0.010
ER20	21	31	10	1-14	0.02	0.010
ER25	26	35	16	1-17	0.02	0.010
ER32	33	40	25	2-20	0.02	0.010
ER40	41	46	40	3-26	0.03	0.010
ER50	52	60	50	10-32	0.03	0.010

Mounting Instructions for ER Collets

- Place collet inside nut and rotate the nut to engage with the extractor spiral in collet groove
- Only then mount nut and collet together into the collet holder or machine spindle
  Note: Never use a 11-12mm collet to clamp a 12mm diameter, but rather use a 12-13mm collet

5 Micron AA ER Collet Tolerance Values



Collet Run-Out Tolerance Values

d1 H7 Nominal Diameter		I12	Run-Out Tolerance A	
Above	Up To (included)		Class 1	Class 2
1 (included)	1.6	6	0.005	0.015
1,6	3	10		
3	6	16		
6	10	25		
10	18	40	0.005	0.020
18	26	50		

Introducing...

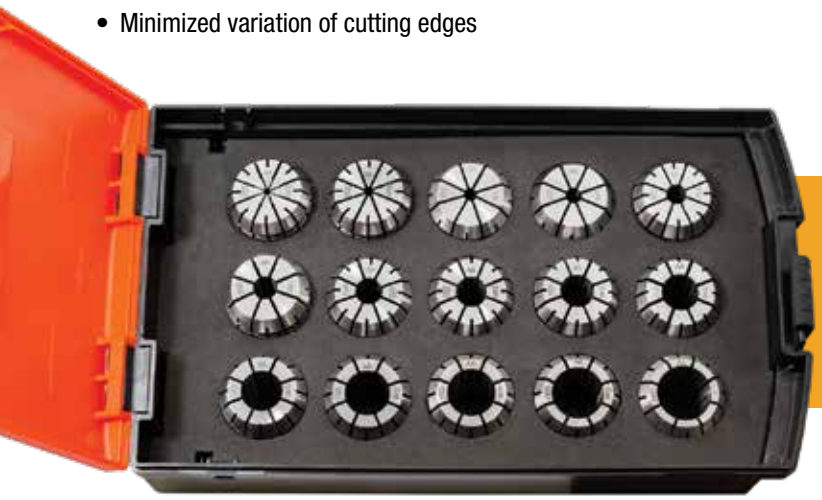
EXTREME PRECISION 5 MICRON COLLETS

Nothing else compares.

DIN 6343 Precision Collets have a runout of 20-30 microns (0.02 - 0.03mm)
GS High Precision Collets have a runout of 10-20 microns (0.01 - 0.02mm)
The new **GS Extreme Precision AA Collets** have a runout of only 5 microns (0.005mm)

Features & Benefits:

- 16 slots allows sufficient collapse while increasing the area of contact with less tendency to distort
- All edges are deburred and rounded to promote good interface with the taper of the chuck without the tendency to damage it. This results in more consistent repeatability
- Collets are polished to eliminate blemishes that promote corrosion. Better corrosion resistance will result in longer product life of both the collet and the holder between the collet and the cutting tool shank
- Minimized variation of cutting edges
- Maximized Concentricity
- Evenly distributed cutting edges for high performance machining
- Highly polished OD surfaces reduce the amount of force absorbed by friction between the collet and the collet chuck seat, increasing the grip force on the cutting tool. The inside bore of the collet is intentionally left unpolished to increase the friction
- Improve system performance and lower cost per piece when used with quality GS chucks
- Consistent cutting profiles ensure the job stays within desired tolerances



The result of an improved AA collet in a quality GS chuck is increased gripping force, improved rigidity, decreased runout, and a renewed confidence in your collet chuck system.

5 Micron AA ER Collet Sets

Series	No. Pcs.	Range	Code No.	Price $
Metric				
ER11	Metric 13pc Set	1-7mm x 0.5mm	336986	**460.46**
ER16	Metric 10pc Set	1-10mm x 1.0mm	336987	**369.60**
ER20	Metric 12pc Set	2-13mm x 1.0mm	336988	**471.24**
ER25	Metric 15pc Set	2-16mm x 1.0mm	336989	**600.60**
ER32	Metric 18pc Set	3-20mm x 1.0mm	336990	**720.72**
ER40	Metric 23pc Set	4-26mm x 1.0mm	336991	**1,009.47**
Inch				
ER11	Inch 7pc Set	1/16-1/4 x 1/32	336992	**247.94**
ER16	Inch 11pc Set	1/16-3/8 x 1/32	336993	**406.56**
ER20	Inch 15pc Set	1/16-1/2 x 1/32	336994	**589.05**
ER25	Inch 18pc Set	3/32-5/8 x 1/32	336995	**720.72**
ER32	Inch 21pc Set	1/8-3/4 x 1/32	336996	**840.84**
ER40	Inch 15pc Set	1/8-1" x 1/16	336997	**658.35**

ER Collet Chuck Sets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- Wrench included

Shank	Collet Set	Code No.	Price $
ER16			
3/4 x 4	10 collets in set (range 0.019 - 0.393)	337700	**386.25**
3/4 x 6	10 collets in set (range 0.019 - 0.393)	337705	**417.15**
R8	10 collets in set (range 0.019- 0.393)	337710	**417.15**
ER20			
3/4 x 4	12 collets in set (range 0.039 - 0.511)	337715	**478.95**
3/4 x 6	12 collets in set (range 0.039 - 0.511)	337720	**509.85**
ER32			
1-1/4 x 4	11 collets in set (range 0.080 - 0.787)	337730	**530.45**
ISO-30	11 collets in set (range 0.080 - 0.787)	337735	**530.45**
R8	11 collets in set (range 0.080 - 0.787)	337740	**684.95**
ER40			
R8	15 collets in set (range 0.120 - 1.020)	337745	**581.95**
ISO-30	15 collets in set (range 0.120 - 1.020)	337750	**726.15**
ISO-40	15 collets in set (range 0.120 - 1.020)	337755	**823.99**
ISO-50	23 collets in set (range 0.120 - 1.020)	337760	**1,071.20**

ER11 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- Size range: 0.5mm - 7mm (0.019" - 0.275")
- ER11 collets collapse approximately 1/64" with full accuracy

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
0.5-1	0.019-0.039	337650*	**28.54**	336700*	**40.04**
1-1.5	0.039-0.059	337652*	**28.54**	336702*	**40.04**
1.5-2	0.059-0.078	337654*	**28.54**	336705*	**40.04**
2-2.5	0.078-0.098	337656*	**28.54**	336707*	**40.04**
2.5-3	0.098-0.118	337658*	**23.65**	336709*	**35.42**
3-3.5	0.118-0.137	337660*	**23.65**	336711*	**35.42**
3.5-4	0.137-0.157	337662*	**23.65**	336714*	**35.42**
4-4.5	0.157-0.177	337664*	**23.65**	336716*	**35.42**
4.5-5	0.177-0.196	337666*	**23.65**	336718*	**35.42**
5-5.5	0.196-0.216	337668*	**23.65**	336720*	**35.42**
5.5-6	0.216-0.236	337670*	**23.65**	336723*	**35.42**
6-6.5	0.236-0.255	337672*	**23.65**	336725*	**35.42**
6.5-7	0.255-0.275	337674*	**23.65**	336727*	**35.42**
13pc Set	**1-7mm**	337379	**309.86**	336986	**460.46**
Inch					
	3/64	337609	**29.36**	336701	**40.04**
	1/16	337610*	**29.36**	336703*	**40.04**
	5/64	337611	**29.36**	336704	**40.04**
	3/32	337613*	**28.54**	336706*	**40.04**
	7/64	337614	**29.36**	336708	**40.04**
	1/8	337615*	**23.65**	336710*	**35.42**
	9/64	337617	**23.65**	336712	**35.42**
	5/32	337618*	**23.65**	336713*	**35.42**
	11/64	337619	**23.65**	336715	**35.42**
	3/16	337651*	**23.65**	336717*	**35.42**
	13/64	337653	**23.65**	336719	**35.42**
	7/32	337655*	**23.65**	336721*	**35.42**
	15/64	337657	**23.65**	336722	**35.42**
	1/4	337659*	**23.65**	336724*	**35.42**
	17/64	337661	**23.65**	336726	**35.42**
	9/32	337627	**28.54**	336728	**40.04**
7pc Set	**1/16-1/4**	337401	**168.79**	336992	**247.94**

* Part of Set

ER8 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- Size range: 0.5mm - 5mm (0.019" - 0.196")
- ER8 collets collapse approximately 0.3mm with full accuracy

Size (mm)	Size (in.)	Code No.	Price $
Metric			
0.5-1.0	0.019-0.039	337635	**29.36**
1.0-1.5	0.039-0.059	337637	**29.36**
2.0-2.5	0.078-0.098	337641	**29.36**
2.5-3.0	0.098-0.118	337643	**29.36**
3.0-3.5	0.118-0.137	337645	**29.36**
3.5-4.0	0.137-0.157	337647	**29.36**
4.0-4.5	0.157-0.177	337648	**29.36**
4.5-5.0	0.177-0.196	337649	**29.36**
Inch			
	1/16	337629	**29.36**
	1/8	337631	**29.36**
	3/16	337625	**29.36**

ER11 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 500 psi
- Size range: 3/6 - 17/64", 4.0 - 7.0mm

Size (in/mm)	Code No.	Price $
Metric		
4.5	337636	**55.25**
5.5	337640	**55.25**
6.0	337642	**55.25**
6.5	337644	**55.25**
7.0	337646	**55.25**
Inch		
3/16	337622	**55.25**
13/64	337624	**55.25**
7/32	337626	**55.25**
15/64	337628	**55.25**
1/4	337630	**55.25**
17/64	337632	**55.25**

ER11 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M1.4 - M1.8	2.5mm	2.1mm	337911	**44.20**
M2 - M2.6	2.8mm	2.1mm	337913	**44.20**
M2 - M2.6	3.0mm	2.5mm	337915	**44.20**
Inch				
#0-#6	0.141"	0.110"	337966	**44.20**
#8	0.168"	0.131"	337967	**44.20**
#10	0.194"	0.152"	337968	**44.20**
#12	0.220"	0.165"	337969	**44.20**

- See page G31, G32 for Sets
- See page G21 for Dimensional Data

ER16 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- Size range: 0.5mm-10mm (0.019" - 0.393")
- ER16 collets collapse approximately 1/32" with full accuracy

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
0.5-1	0.019-0.039	337302*	**33.43**	336729*	**44.66**
1-1.5	0.039-0.059			336730	**44.66**
1-2	0.039-0.078	337304*	**33.43**		
1.5-2	0.059-0.078			336732*	**44.66**
2-2.5	0.078-0.098			336734	**44.66**
2-3	0.078-0.118	337306*	**25.28**		
2.5-3	0.098-0.118			336735*	**36.96**
3-3.5	0.118-0.137			336737	**36.96**
3-4	0.118-0.157	337308*	**25.28**		
3.5-4	0.137-0.157			336740*	**36.96**
4-4.5	0.157-0.177			336741	**36.96**
4-5	0.157-0.196	337310*	**25.28**		
4.5-5	0.177-0.196			336743*	**36.96**
5-5.5	0.196-0.217			336744	**36.96**
5-6	0.196-0.236	337312*	**25.28**		
5.5-6	0.217-0.236			336746*	**36.96**
6-6.5	0.236-0.256			336748	**36.96**
6-7	0.236-0.275	337314*	**25.28**		
6.5-7	0.256-0.275			336749*	**36.96**
7-7.5	0.275-0.295			336751	**36.96**
7-8	0.275-0.314	337316*	**25.28**		
7.5-8	0.295-0.314			336753*	**36.96**
8-8.5	0.314-0.335			336754	**36.96**
8-9	0.314-0.354	337318*	**25.28**		
8.5-9	0.335-0.354			336756*	**36.96**
9-9.5	0.354-0.374			336757	**36.96**
9-10	0.354-0.393	337320*	**25.28**		
9.5-10	0.374-0.393			336759*	**36.96**
10pc Set	**1-10mm**	337380	**230.76**	336987	**369.60**
Inch					
	1/16	337531*	**33.43**	336731*	**44.66**
	3/32	337532*	**25.28**	336733*	**44.66**
	1/8	337533*	**25.28**	336736*	**36.96**
	9/64	337529	**25.28**	336738	**36.96**
	5/32	337534*	**25.28**	336739*	**36.96**
	3/16	337535*	**25.28**	336742*	**36.96**
	7/32	337536*	**25.28**	336745*	**36.96**
	1/4	337537*	**25.28**	336747*	**36.96**
	9/32	337538*	**25.28**	336750*	**36.96**
	5/16	337540*	**25.28**	336752*	**36.96**
	11/32	337541*	**25.28**	336755*	**36.96**
	3/8	337542*	**25.28**	336758*	**36.96**
	13/32	337543	**25.28**	336760	**36.96**
11pc Set	**1/16-3/8**	337403	**278.06**	336993	**406.56**

* Part of Set

ER16 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi

Metric Size	Metric Code No.	Price $	Inch Size	Inch Code No.	Price $
3.0	338290	**45.53**	1/8	337841*	**46.40**
3.5	338291	**46.40**	5/32	337842*	**46.40**
4.0	338292*	**46.40**	3/16	337843*	**46.40**
4.5	338294*	**46.40**	13/64	337826	**46.40**
5.0	338296*	**46.40**	7/32	337844*	**46.40**
5.5	338298*	**46.40**	15/64	337827	**46.40**
6.0	338300*	**46.40**	1/4	337845*	**46.40**
6.5	338302*	**46.40**	17/64	337828	**46.40**
7.0	338304*	**46.40**	9/32	337846*	**46.40**
7.5	338305*	**46.40**	19/64	337829	**46.40**
8.0	338306*	**46.40**	5/16	337847*	**46.40**
8.5	338307*	**46.40**	21/64	337831	**46.40**
9.0	338308*	**46.40**	11/32	337848*	**46.40**
9.5	338309*	**46.40**	23/64	337832	**46.40**
10.0	338310*	**46.40**	3/8	337849*	**46.40**
			25/64	337833	**46.40**
			13/32	337834*	**46.40**
13pc Set	337932	**603.20**	**10pc Set**	337931	**532.06**

* Part of Set

ER16 Tap Collets

- Alloy steel
- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity
- See page G63-64 for rigid tapping holders

Tap	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M1.4-M1.8	2.5mm	2.1mm	338095	**45.90**
M2	2.8mm	2.1mm	338111	**45.90**
M2-M2.6	3.0mm	2.5mm	338096	**45.90**
M3	2.25mm	1.8mm	338097	**45.90**
M3	3.5mm	2.7mm	338113	**45.90**
M3	4mm	3.0mm	338099	**45.90**
M3.5	2.5mm	2.0mm	338098	**45.90**
M4-M5	5mm	4.0mm	338101	**45.90**
M4-M6	4.5mm	3.4mm	338115	**45.90**
M4-M6	5.5mm	4.3mm	338116	**45.90**
M5-M5.5	4.5mm	4.5mm	338103	**45.90**
M5-M5.5	5.5mm	4.5mm	338105	**45.90**
M5-M8	6mm	4.9mm	338117	**45.90**
M6	6mm	4.5mm	338118	**45.90**
M8	6.2mm	5.0mm	338119	**45.90**
M8	8mm	6.2mm	338121	**45.90**
M8-M11	8mm	6.0mm	338107	**45.90**
M10	7mm	5.5mm	338123	**45.90**
M10	10mm	8.0mm	338125	**45.90**
M12	8.5mm	6.5mm	338127	**45.90**
M12	9mm	7.0mm	338129	**45.90**
Inch				
0-6	0.141	0.110	‡ 337850*	**45.90**
8	0.168	0.131	‡ 337851*	**45.90**
10	0.194	0.152	‡ 337852*	**45.90**
12	0.220	0.165	‡ 337853*	**45.90**
1/4	0.255	0.191	‡ 337854*	**45.90**
5/16	0.318	0.238	‡ 337855	**45.90**
3/8	0.381	0.286	‡ 337824	**45.90**
7/16	0.323	0.242	‡ 337839	**45.90**
1/2	0.367	0.275	‡ 337838	**45.90**
5pc Set			337986	**229.50**
9pc Set			337343	**413.10**

* Part of 5pc Set ‡ Part of 9pc Set

ER20 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- Size range: 1mm - 13mm (0.039" - 0.511")
- ER20 collets collapse approximately 1/32" with full accuracy

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
1-1.5	0.039-0.059	337446	**33.43**		
1.5-2	0.059-0.078			336763*	**44.66**
1-2	0.039-0.078	337473*	**33.43**		
2-2.5	0.078-0.098	337447	**33.43**	336765	**44.66**
2-3	0.078-0.118	337474*	**27.72**		
2.5-3	0.098-0.118			336766*	**39.27**
2.5-3.5	0.098-0.137	337471	**27.72**		
3-3.5	0.118-0.137			336768	**39.27**
3-4	0.118-0.157	337475*	**27.72**		
3.5-4	0.137-0.157			336770*	**39.27**
4-4.5	0.157-0.177	337448	**27.72**	336771	**39.27**
4-5	0.157-0.196	337476*	**27.72**		
4.5-5	0.177-0.196			336773*	**39.27**
5-5.5	0.196-0.217	337449	**27.72**	336774	**39.27**
5-6	0.196-0.236	337477*	**27.72**		
5.5-6	0.217-0.236			336776*	**39.27**
6-6.5	0.236-0.256	337451	**27.72**	336778	**39.27**
6-7	0.236-0.275	337478*	**27.72**		
6.5-7	0.256-0.275			336779*	**39.27**
7-7.5	0.275-0.295	337453	**27.72**	336781	**39.27**
7-8	0.275-0.314	337479*	**27.72**		
7.5-8	0.295-0.314			336783*	**39.27**
8-8.5	0.314-0.335	337455	**27.72**	336784	**39.27**
8-9	0.314-0.354	337480*	**27.72**		
8.5-9	0.335-0.354			336786*	**39.27**
9-9.5	0.354-0.374	337457	**27.72**	336787	**39.27**
9-10	0.354-0.393	337481*	**27.72**		
9.5-10	0.374-0.393			336789*	**39.27**
10-10.5	0.393-0.413	337459	**27.72**	336791	**39.27**
10-11	0.393-0.433	337482*	**27.72**		
10.5-11	0.413-0.433			336792*	**39.27**
11-11.5	0.433-0.452	337469	**27.72**	336794	**39.27**
11-12	0.433-0.472	337483*	**27.72**		
11.5-12	0.452-0.472			336796*	**39.27**
12-12.5	0.472-0.492	337463	**27.72**	336797	**39.27**
12-13	0.472-0.511	337484*	**27.72**		
12.5-13	0.492-0.511			336799*	**39.27**
13-13.5	0.511-0.531			336800	**39.27**
13.5-14	0.531-0.551			336801	**39.27**
12pc Set	**2-13mm**	337382	**315.57**	336988	**471.24**
Inch					
	1/16	337621*	**33.43**	336762*	**44.66**
	3/32	337623*	**33.43**	336764*	**44.66**
	1/8	337663*	**27.72**	336767*	**39.27**
	5/32	337665*	**27.72**	336769*	**39.27**
	3/16	337667*	**27.72**	336772*	**39.27**
	7/32	337669*	**27.72**	336775*	**39.27**
	1/4	337671*	**27.72**	336777*	**39.27**
	9/32	337673*	**27.72**	336780*	**39.27**
	5/16	337675*	**27.72**	336782*	**39.27**
	11/32	337676*	**27.72**	336785*	**39.27**
	3/8	337677*	**27.72**	336788*	**39.27**
	13/32	337678*	**27.72**	336790*	**39.27**
	7/16	337679*	**27.72**	336793*	**39.27**
	15/32	337681*	**27.72**	336795*	**39.27**
	1/2	337682*	**27.72**	336798*	**39.27**
15pc Set	**1/16-1/2**	337404	**415.86**	336994	**589.05**

* Part of set

- See page G31, G32 for Sets
- See page G21 for Dimensional Data

ER20 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi

Size (in/mm)	Code No.	Price $
Metric		
4.0	338325**	**49.90**
4.5	338299**	**46.40**
5.0	338330	**49.90**
5.5	338334	**49.90**
6.0	338336	**49.90**
6.5	338337	**49.90**
7.0	338338	**49.90**
7.5	338339	**49.90**
8.0	338340	**49.90**
8.5	338341	**49.90**
9.0	338342	**49.90**
9.5	338343	**49.90**
10.0	338344	**49.90**
10.5	338345	**49.90**
11.0	338346	**49.90**
11.5	338347	**49.90**
12.0	338348	**49.90**
12.5	338349	**49.90**
13.0	338350	**49.90**
17pc Set	337935	**934.31**
Inch		
1/8	337856**	**49.90**
5/32	337857	**49.90**
3/16	337858	**49.90**
7/32	337859	**49.90**
1/4	337860	**49.90**
9/32	337861	**49.90**
5/16	337862	**49.90**
11/32	337863	**49.90**
3/8	337864	**49.90**
13/32	337865	**49.90**
7/16	337866	**49.90**
15/32	337867	**49.90**
1/2	337868	**49.90**
12pc Set	337933	**608.21**

** Not Part of Set

ER20 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M4 -M6	4.5mm	3.4mm	338131	**45.90**
M4-M6	5.5mm	4.3mm	338133	**45.90**
M5-M8	6mm	4.9mm	338135	**45.90**
M8	8mm	6.2mm	338137	**45.90**
M10	7mm	5.5mm	338139	**45.90**
M10	10mm	8.0mm	338141	**45.90**
M12	9mm	7.0mm	338143	**45.90**
M14	11mm	9.0mm	338145	**45.90**
M16	12mm	9.0mm	338147	**45.90**
Inch				
0-6	0.141	0.110	337869*	**45.90**
8	0.168	0.131	337870*	**45.90**
10	0.194	0.152	337871*	**45.90**
12	0.220	0.165	337872*	**45.90**
1/4	0.255	0.191	337873*	**45.90**
5/16	0.318	0.238	337874*	**45.90**
3/8	0.381	0.286	337875*	**45.90**
7/16	0.323	0.242	337876*	**45.90**
1/2	0.367	0.275	337877*	**45.90**
9pc Set			337345	**413.10**

* Part of Set

ER25 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
1-2	0.039-0.078	337330*	**34.25**		
1.5-2	0.059-0.078			336802*	**45.43**
2-2.5	0.078-0.098	337274	**34.25**	336804	**45.43**
2-3	0.078-0.118	337332*	**28.54**		
2.5-3	0.098-0.118			336805*	**40.04**
2.5-3.5	0.098-0.137	337333	**28.54**		
3-3.5	0.118-0.137			336807	**40.04**
3-4	0.118-0.157	337334*	**28.54**		
3.5-4	0.137-0.157			336809*	**40.04**
4-4.5	0.157-0.177	337486	**28.54**	336810	**40.04**
4-5	0.157-0.196	337336*	**28.54**		
4.5-5	0.177-0.196			336812*	**40.04**
5-5.5	0.196-0.217	337487	**28.54**	336813	**40.04**
5-6	0.196-0.236	337338*	**28.54**		
5.5-6	0.217-0.236			336815*	**40.04**
6-6.5	0.236-0.256	337488	**28.54**	336816	**40.04**
6-7	0.236-0.275	337340*	**28.54**		
6.5-7	0.256-0.275			336818*	**40.04**
7-7.5	0.275-0.295	337489	**28.54**	336820	**40.04**
7-8	0.275-0.314	337342*	**28.54**		
7.5-8	0.295-0.314			336822*	**40.04**
8-8.5	0.314-0.335	337490	**28.54**	336823	**40.04**
8-9	0.314-0.354	337344*	**28.54**		
8.5-9	0.335-0.354			336825*	**40.04**
9-9.5	0.354-0.374	337491	**28.54**	336826	**40.04**
9-10	0.354-0.393	337346*	**28.54**		
9.5-10	0.374-0.393			336828*	**40.04**
10-10.5	0.393-0.413	337492	**28.54**	336830	**40.04**
10-11	0.393-0.433	337348*	**28.54**		
10.5-11	0.413-0.433			336831*	**40.04**
11-11.5	0.433-0.452	337349	**28.54**	336833	**40.04**
11-12	0.433-0.472	337350*	**28.54**		
11.5-12	0.452-0.472			336835*	**40.04**
12-12.5	0.472-0.492	337493	**28.54**	336836	**40.04**
12-13	0.472-0.511	337352*	**28.54**		
12.5-13	0.492-0.511			336838*	**40.04**
13-13.5	0.511-0.531	337494	**28.54**	336840	**40.04**
13-14	0.511-0.551	337354*	**28.54**		
13.5-14	0.531-0.551			336841*	**40.04**
14-14.5	0.551-0.571	337495	**28.54**		
14-15	0.551-0.590	337356*	**28.54**		
14.5-15	0.571-0.590			336844*	**40.04**
15-15.5	0.590-0.610	337497	**28.54**	336846	**40.04**
15-16	0.590-0.629	337358*	**28.54**		
15.5-16	0.610-0.629			336848*	**40.04**
16-16.5	0.629-0.650	337499	**51.37**		
16.5-17	0.650-0.669	337301	**51.37**		
15pc Set	**2-16mm**	337383	**402.82**	336989	**600.60**
Inch					
	3/32	337602**	**34.25**	336803**	**45.43**
	1/8	337683	**28.54**	336806	**40.04**
	5/32	337684	**28.54**	336808	**40.04**
	3/16	337685	**28.54**	336811	**40.04**
	7/32	337686	**28.54**	336814	**40.04**
	1/4	337687	**28.54**	336817	**40.04**
	9/32	337688	**28.54**	336819	**40.04**
	5/16	337689	**28.54**	336821	**40.04**
	11/32	337691	**28.54**	336824	**40.04**
	3/8	337692	**28.54**	336827	**40.04**
	13/32	337693	**28.54**	336829	**40.04**
	7/16	337694	**28.54**	336832	**40.04**
	15/32	337696	**28.54**	336834	**40.04**
	1/2	337697	**28.54**	336837	**40.04**
	17/32	337698	**28.54**	336839	**40.04**
	9/16	337699	**28.54**	336842	**40.04**
	19/32	337701	**28.54**	336845	**40.04**
	5/8	337702	**28.54**	336847	**40.04**
17pc Set	**1/8-5/8**	337405	**456.63**	336995	**720.72**

** Not Part of Set

* Part of Set

ER25 Sealed Collets

- Steel sealed for coolant through applications
- Pressure resistance tested to 2000 psi

Metric Size	Metric Code No.	Price $	Inch Size	Inch Code No.	Price $
3.0	338297	**55.16**	1/8	337878	**55.16**
3.5	338326	**55.16**	5/32	337879	**55.16**
4.0	338327	**55.16**	3/16	337880	**55.16**
4.5	338373	**55.16**	7/32	337881	**55.16**
5.0	338329	**55.16**	1/4	337882*	**55.16**
5.5	338331	**55.16**	17/64	338352	**55.16**
6.0	338360*	**55.16**	9/32	337883*	**55.16**
6.5	338362*	**55.16**	19/64	338354	**55.16**
7.0	338364*	**55.16**	5/16	337884*	**55.16**
7.5	338366*	**55.16**	21/64	338356	**55.16**
8.0	338368*	**55.16**	11/32	337885*	**55.16**
8.5	338370*	**55.16**	23/64	338358	**55.16**
9.0	338372*	**55.16**	3/8	337886*	**55.16**
9.5	338374*	**55.16**	25/64	337916	**55.16**
10.0	338376*	**55.16**	13/32	337887*	**55.16**
10.5	338378*	**55.16**	27/64	337917	**55.16**
11.0	338380*	**55.16**	7/16	337888*	**55.16**
11.5	338382*	**55.16**	29/64	337918	**55.16**
12.0	338384*	**55.16**	15/32	337889*	**55.16**
12.5	338386*	**55.16**	31/64	337919	**55.16**
13.0	338388*	**55.16**	1/2	337890*	**55.16**
13.5	338390*	**55.16**	33/64	337920	**55.16**
14.0	338392*	**55.16**	17/32	337891*	**55.16**
14.5	338394*	**55.16**	35/64	337921	**55.16**
15.0	338396*	**58.66**	9/16	337892*	**55.16**
15.5	338398*	**55.16**	37/64	337922	**55.16**
16.0	338400*	**55.16**	19/32	337893*	**55.16**
			39/64	337923	**55.16**
			5/8	337894*	**55.16**
21pc Set	337939	**1,106.70**	**13pc Set**	337938	**767.09**

* Part of Set

ER25 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M4-M6	4.5mm	3.4mm	338149	**45.90**
M4-M6	5.5mm	4.3mm	338151	**45.90**
M4-M8	6mm	4.9mm	338153	**45.90**
M10	7mm	5.5mm	338155	**45.90**
M8	8mm	6.2mm	338157	**45.90**
M10	10mm	8.0mm	338159	**51.85**
M12	9mm	7.0mm	338161	**51.85**
M14	11mm	9.0mm	338162	**51.85**
M16	12mm	9.0mm	338163	**51.85**
M16	12.5mm	10.0mm	338164	**51.85**
M18	14mm	11.0mm	338165	**51.85**
M20	15mm	12.0mm	338166	**51.85**
M20	16mm	12.0mm	338167	**51.85**
Inch				
0-6	0.141	0.110	337895*	**51.85**
8	0.168	0.131	337896*	**51.85**
10	0.194	0.152	337897*	**51.85**
12	0.220	0.165	337898*	**51.85**
1/4	0.255	0.191	337899*	**51.85**
5/16	0.318	0.238	337900*	**51.85**
3/8	0.381	0.286	337901*	**51.85**
7/16	0.323	0.242	337902*	**51.85**
1/2	0.367	0.275	337903*	**51.85**
9/16	0.429	0.322	337904*	**51.85**
5/8	0.480	0.360	337905*	**51.85**
11/16	0.542	0.406	337983	**51.85**
11pc Set			337347	**570.35**
NPT				
1/16, 1/8-SS (small shank)	0.3125	0.234	337909	**51.85**
1/8-LS (large shank)	0.4375	0.328	337910	**51.85**

* Part of Set

ER32 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
2-2.5	0.078-0.098	337415	**28.54**	336852	**40.04**
2-3	0.078-0.118	337361*	**28.54**		
2.5-3	0.098-0.118			336853*	**40.04**
2.5-3.5	0.098-0.137	337359	**28.54**		
3-3.5	0.118-0.137			336855	**40.04**
3-4	0.118-0.157	337362*	**28.54**		
3.5-4	0.137-0.157			336857*	**40.04**
4-4.5	0.157-0.177	337217	**28.54**	336858	**40.04**
4-5	0.157-0.196	337363*	**28.54**		
4.5-5	0.177-0.196			336860*	**40.04**
5-5.5	0.196-0.217	337218	**28.54**	336861	**40.04**
5-6	0.196-0.236	337364*	**28.54**		
5.5-6	0.217-0.236			336863*	**40.04**
6-6.5	0.236-0.256	337219	**28.54**	336864	**40.04**
6-7	0.236-0.275	337365*	**28.54**		
6.5-7	0.256-0.275			336866*	**40.04**
7-7.5	0.275-0.295	337289	**28.54**	336868	**40.04**
7-8	0.275-0.314	337366*	**28.54**		
7.5-8	0.295-0.314			336870*	**40.04**
8-8.5	0.314-0.335	337221	**28.54**	336871	**40.04**
8-9	0.314-0.354	337367*	**28.54**		
8.5-9	0.335-0.354			336873*	**40.04**
9-9.5	0.354-0.374	337222	**28.54**	336874	**40.04**
9-10	0.354-0.393	337368*	**28.54**		
9.5-10	0.374-0.393			336876*	**40.04**
10-10.5	0.393-0.413	337223	**28.54**	336878	**40.04**
10-11	0.393-0.433	337369*	**28.54**		
10.5-11	0.413-0.433			336879*	**40.04**
10.5-11.5	0.413-0.452	337357	**28.54**		
11-11.5	0.433-0.452			336881	**40.04**
11-12	0.433-0.472	337370*	**28.54**		
11.5-12	0.452-0.472			336883*	**40.04**
12-12.5	0.472-0.492	337227	**28.54**	336884	**40.04**
12-13	0.472-0.511	337371*	**28.54**		
12.5-13	0.492-0.511			336886*	**40.04**
13-13.5	0.511-0.531	337229	**28.54**	336888	**40.04**
13-14	0.511-0.551	337372*	**28.54**		
13.5-14	0.531-0.551			336889*	**40.04**
14-14.5	0.551-0.571	337249	**28.54**	336891	**40.04**
14-15	0.551-0.590	337373*	**28.54**		
14.5-15	0.571-0.590			336892*	**40.04**
15-15.5	0.590-0.610	337255	**28.54**	336894	**40.04**
15-16	0.590-0.629	337374*	**28.54**		
15.5-16	0.610-0.629			336896*	**40.04**
16-16.5	0.629-0.650	337256	**28.54**	336897	**40.04**
16-17	0.629-0.669	337375*	**28.54**		
16.5-17	0.650-0.669			336899*	**40.04**
17-17.5	0.669-0.689	337272	**28.54**	336901	**40.04**
17-18	0.669-0.708	337376*	**28.54**		
17.5-18	0.689-0.708			336902*	**40.04**
18-18.5	0.708-0.728	337215	**28.54**	336904	**40.04**
18-19	0.708-0.748	337377*	**28.54**		
18.5-19	0.728-0.748			336905*	**40.04**
18.5-19.5	0.728-0.767	337355	**28.54**		
19-19.5	0.748-0.767			336907	**40.04**
19-20	0.748-0.787	337378*	**28.54**		
19.5-20	0.767-0.787			336909*	**40.04**
18pc Set	**3-20mm**	337384	**477.83**	336990	**720.72**
Inch					
	3/32			336851	**49.28**
	1/8	337703*	**28.54**	336854*	**40.04**
	5/32	337704*	**28.54**	336856*	**40.04**
	3/16	337706*	**28.54**	336859*	**40.04**
	7/32	337707*	**28.54**	336862*	**40.04**
	1/4	337708*	**28.54**	336865*	**40.04**
	9/32	337709*	**28.54**	336867*	**40.04**
	5/16	337711*	**28.54**	336869*	**40.04**
	11/32	337712*	**28.54**	336872*	**40.04**
	3/8	337713*	**28.54**	336875*	**40.04**
	13/32	337714*	**28.54**	336877*	**40.04**
	7/16	337716*	**28.54**	336880*	**40.04**
	15/32	337717*	**28.54**	336882*	**40.04**
	1/2	337718*	**28.54**	336885*	**40.04**
	17/32	337719*	**28.54**	336887*	**40.04**
	9/16	337721*	**28.54**	336890*	**40.04**
	19/32	337722*	**28.54**	336893*	**40.04**
	5/8	337723*	**28.54**	336895*	**40.04**
	21/32	337724*	**28.54**	336898*	**40.04**
	11/16	337725*	**28.54**	336900*	**40.04**
	23/32	337726*	**28.54**	336903*	**40.04**
	3/4	337727*	**28.54**	336906*	**40.04**
	25/32	337605	**28.54**	336908	**40.04**
21pc Set	**1/8-3/4**	337407	**557.75**	336996	**840.84**

* Part of Set

- See page G31, G32 for Sets
- See page G21 for Dimensional Data

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Images are representational only and may not reflect actual product.

ER32 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi

Metric Size	Code No.	Price $	Inch Size	Code No.	Price $
3.0	338335	**58.66**	1/8	338200	**58.66**
3.5	338351	**58.66**	5/32	338201	**58.66**
4.0	338353	**58.66**	3/16	338202	**58.66**
4.5	338333	**58.66**	7/32	338203	**58.66**
5.0	338355	**58.66**	1/4	338204*	**58.66**
5.5	338363	**58.66**	17/64	338301	**58.66**
6.0	338320	**58.66**	9/32	338205*	**58.66**
6.5	338365	**58.66**	19/64	338303	**58.66**
7.0	338357	**58.66**	5/16	338206*	**58.66**
7.5	338367	**58.66**	21/64	338311	**58.66**
8.0	338324	**58.66**	11/32	338207*	**58.66**
8.5	338369	**58.66**	23/64	338312	**58.66**
9.0	338359	**58.66**	3/8	338208*	**58.66**
9.5	338361	**58.66**	25/64	338313	**58.66**
10.0	338328	**58.66**	13/32	338209*	**58.66**
10.5	338404*	**58.66**	27/64	338314	**58.66**
11.0	338406*	**58.66**	7/16	338210*	**58.66**
11.5	338371*	**58.66**	29/64	338315	**58.66**
12.0	338332*	**58.66**	15/32	338211*	**58.66**
12.5	338408*	**58.66**	31/64	338316	**58.66**
13.0	338410*	**58.66**	1/2	338212*	**58.66**
13.5	338412*	**58.66**	33/64	338317	**58.66**
14.0	338414*	**58.66**	17/32	338213*	**58.66**
14.5	338416*	**58.66**	35/64	338318	**58.66**
15.0	338418*	**58.66**	9/16	338214*	**58.66**
15.5	338420*	**58.66**	37/64	338319	**58.66**
16.0	338422*	**58.66**	19/32	338215*	**58.66**
16.5	338424*	**58.66**	39/64	338321	**58.66**
17.0	338426*	**58.66**	5/8	338216*	**58.66**
17.5	338428*	**58.66**	41/64	337924	**58.66**
18.0	338430*	**58.66**	21/32	338217*	**58.66**
18.5	338432*	**58.66**	43/64	337925	**58.66**
19.0	338434*	**58.66**	11/16	338218*	**58.66**
19.5	338436*	**58.66**	45/64	337926	**58.66**
20.0	338438*	**58.66**	23/32	338219*	**58.66**
			47/64	337927	**58.66**
			3/4	338220*	**58.66**
			49/64	337928	**58.66**
			25/32	338322	**58.66**
20pc Set	337942	**1,173.20**	**17pc Set**	337940	**1,066.82**

* Part of set

- See page G31, G32 for Sets
- See page G21 for Dimensional Data

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ER32 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M3	2.5mm	1.8mm	338168	**54.40**
M3.5	2.5mm	2.0mm	338169	**54.40**
M4	2.8mm	2.1mm	338170	**54.40**
M3-M5	3.5mm	2.7mm	338171	**54.40**
M3-M5	4mm	3.0mm	338172	**54.40**
M4-M5	5mm	4.0mm	338197	**54.40**
M4-M6	4.5mm	3.4mm	338173*	**54.40**
M4-M6	5.5mm	4.3mm	338174	**54.40**
M5-M5.5	4.5mm	4.5mm	338198	**54.40**
M5-M5.5	5.5mm	4.5mm	338175	**54.40**
M4-M8	6mm	4.9mm	338176	**54.40**
M5-M8	6mm	4.5mm	338177*	**54.40**
M7-M8	6.2mm	5.0mm	338178	**54.40**
M8	8mm	6.2mm	338179	**54.40**
M9-M10	7mm	5.5mm	338180*	**54.40**
M8-M11	8mm	6.0mm	338181*	**54.40**
M10	10mm	8.0mm	338182*	**54.40**
M12	8.5mm	6.5mm	338199	**54.40**
M12	9mm	7.0mm	338183*	**54.40**
M14	11mm	9.0mm	338184*	**54.40**
M14	10.5mm	8.0mm	338185	**54.40**
M16	12mm	9.0mm	338186*	**54.40**
M16	12.5mm	10.0mm	338187	**54.40**
M18	14mm	11.0mm	338188*	**54.40**
M20	15mm	12.0mm	338189	**54.40**
M20	16mm	12.0mm	338190*	**54.40**
M22	17mm	13.0mm	338191	**54.40**
M22-M24	18mm	14.5mm	338192	**54.40**
M24-M25	19mm	15.0mm	338193	**54.40**
M26-M27	20mm	15.0mm	338194*	**54.40**
M27-M30	20mm	16.0mm	338195	**54.40**
M30	22mm	18.0mm	338196	**54.40**
11pc Set			337992	**598.40**
Inch				
0-6	0.141	0.110	338221*	**54.40**
8	0.168	0.131	338222*	**54.40**
10	0.194	0.152	338223*	**54.40**
12	0.220	0.165	338224*	**54.40**
1/4	0.255	0.191	338225*	**54.40**
5/16	0.318	0.238	338226*	**54.40**
3/8	0.381	0.286	338227*	**54.40**
7/16	0.323	0.242	338228*	**54.40**
1/2	0.367	0.275	338229*	**54.40**
9/16	0.429	0.322	338230*	**54.40**
5/8	0.480	0.360	338231*	**54.40**
11/16	0.542	0.406	338232*	**54.40**
3/4	0.590	0.442	338233*	**54.40**
13/16	0.652	0.489	338234*	**54.40**
NPT				
1/16, 1/8-SS (small shank)	0.3125	0.234	338235*	**54.40**
1/8-LS (large shank)	0.4375	0.328	338236	**54.40**
1/4	0.5625	0.421	338237*	**54.40**
16pc Set			337351	**870.40**

* Part of Set

ER40 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

AA Collets have a runout of only 5 microns (0.005mm)

REGULAR

Size (mm)	Size (in.)	Code No.	Price $	AA Code No.	Price $
Metric					
3.0	0.1181			336985	**43.89**
3-3.5	0.118-0.137	337545	**32.62**	336911	**43.89**
3-4	0.118-0.157	337501*	**32.62**		
3.5-4	0.137-0.157			336913*	**43.89**
4-4.5	0.157-0.177	337546	**32.62**	336914	**43.89**
4-5	0.157-0.196	337502*	**32.62**		
4.5-5	0.177-0.196			336916*	**43.89**
5-5.5	0.196-0.216	337547	**32.62**	336917	**43.89**
5-6	0.196-0.236	337503*	**32.62**		
5.5-6	0.216-0.236			336919*	**43.89**
6-6.5	0.236-0.256	337548	**32.62**	336920	**43.89**
6-7	0.236-0.275	337505*	**32.62**		
6.5-7	0.256-0.275			336922*	**43.89**
7-7.5	0.275-0.295	337549	**32.62**	336924	**43.89**
7-8	0.275-0.314	337506*	**32.62**		
7.5-8	0.295-0.314			336926*	**43.89**
8-8.5	0.314-0.335	337554	**32.62**	336927	**43.89**
8-9	0.314-0.354	337507*	**32.62**		
8.5-9	0.335-0.354			336929*	**43.89**
9-9.5	0.354-0.374	337557	**32.62**	336930	**43.89**
9-10	0.354-0.393	337509*	**32.62**		
9.5-10	0.374-0.393			336932*	**43.89**
10-10.5	0.393-0.413	337558	**32.62**	336934	**43.89**
10-11	0.393-0.433	337510*	**32.62**		
10.5-11	0.413-0.433			336935*	**43.89**
10.5-11.5	0.413-0.452	337498	**32.62**		
11-11.5	0.433-0.452			336937	**43.89**
11-12	0.433-0.472	337511*	**32.62**		
11.5-12	0.452-0.472			336939*	**43.89**
12-12.5	0.472-0.492	337559	**32.62**	336940	**43.89**
12-13	0.472-0.511	337513*	**32.62**		
12.5-13	0.492-0.511			336942*	**43.89**
13-13.5	0.511-0.531	336562	**55.12**	336944	**43.89**
13-14	0.511-0.551	337514*	**32.62**		
13.5-14	0.531-0.551			336945*	**43.89**
14-14.5	0.551-0.571	337563	**32.62**	336947	**43.89**
14-15	0.551-0.590	337515*	**32.62**		
14.5-15	0.571-0.590			336948*	**43.89**
15-15.5	0.590-0.610	337564	**32.62**	336950	**43.89**
15-16	0.590-0.629	337517*	**32.62**		
15.5-16	0.610-0.629			336952*	**43.89**
16-16.5	0.629-0.650	337567	**32.62**	336953	**43.89**
16-17	0.629-0.669	337518*	**32.62**		
16.5-17	0.650-0.669			336955*	**43.89**
17-17.5	0.669-0.689	337568	**32.62**	336957	**43.89**
17-18	0.669-0.708	337519*	**32.62**		
17.5-18	0.689-0.708			336958*	**43.89**
18-18.5	0.708-0.728	337569	**32.62**	336960	**43.89**
18-19	0.708-0.748	337521*	**32.62**		
18.5-19	0.728-0.748			336961*	**43.89**
18.5-19.5	0.728-0.767	337496	**32.62**		
19-19.5	0.748-0.767			336963	**43.89**
19-20	0.748-0.787	337522*	**32.62**		
19.5-20	0.767-0.787			336965*	**43.89**
20-20.5	0.787-0.807	337572	**32.62**	336966	**43.89**
20-21	0.787-0.826	337523*	**32.62**		
20.5-21	0.807-0.826			336968*	**43.89**
21-21.5	0.826-0.846	337573	**32.62**	336970	**43.89**
21-22	0.826-0.866	337524*	**32.62**		
21.5-22	0.846-0.866			336971*	**43.89**
22-22.5	0.866-0.886	337574	**32.62**	336973	**43.89**
22-23	0.866-0.905	337525*	**32.62**		
22.5-23	0.886-0.905			336974*	**43.89**
23-23.5	0.905-0.925	337577	**32.62**	336976	**43.89**
23-24	0.905-0.944	337526*	**32.62**		
23.5-24	0.925-0.944			336978*	**43.89**
24-24.5	0.944-0.965	337578	**32.62**	336979	**43.89**
24-25	0.944-0.984	337527*	**32.62**		
24.5-25	0.965-0.984			336981*	**43.89**
25-25.5	0.984-1.004	337579	**32.62**	336983	**43.89**
25-26	0.984-1.023	337528*	**32.62**		
25.5-26	1.004-1.023			336984*	**43.89**
23pc Set	**3.5-26mm**	337386	**676.80**	336991	**1,009.47**
Inch					
	1/8	337728*	**32.62**	336910*	**43.89**
	5/32	337729*	**32.62**	336912	**43.89**
	3/16	337731*	**32.62**	336915*	**43.89**
	7/32	337732*	**32.62**	336918	**43.89**
	1/4	337733*	**32.62**	336921*	**43.89**
	9/32	337734*	**32.62**	336923	**43.89**
	5/16	337736*	**32.62**	336925*	**43.89**
	11/32	337737*	**32.62**	336928	**43.89**
	3/8	337738*	**32.62**	336931*	**43.89**
	13/32	337739*	**32.62**	336933	**43.89**
	7/16	337741*	**32.62**	336936*	**43.89**
	15/32	337742*	**32.62**	336938	**43.89**
	1/2	337743*	**32.62**	336941*	**43.89**
	17/32	337744*	**32.62**	336943	**43.89**
	9/16	337746*	**32.62**	336946*	**43.89**
	19/32	337747*	**32.62**	336949	**43.89**
	5/8	337748*	**32.62**	336951*	**43.89**
	21/32	337749*	**32.62**	336954	**43.89**
	11/16	337751*	**32.62**	336956*	**43.89**
	23/32	337752*	**32.62**	336959	**43.89**
	3/4	337753*	**32.62**	336962*	**43.89**
	25/32	337754*	**32.62**	336964	**43.89**
	13/16	337756*	**32.62**	336967*	**43.89**
	27/32	337757*	**32.62**	336969	**43.89**
	7/8	337758*	**32.62**	336972*	**43.89**
	29/32	337759*	**32.62**	336975	**43.89**
	15/16	337761*	**32.62**	336977*	**43.89**
	31/32	337762*	**32.62**	336980	**43.89**
	1	337763*	**32.62**	336982*	**43.89**
15pc Set	**1/8-1**			336997	**658.35**
29pc Set	**1/8-1**	337409	**853.74**		

* Part of Set

ER40 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi

Metric Size	Code No.	Price $	Inch Size	Code No.	Price $
6.0	338441	**63.04**	1/8	338238	**63.04**
6.5	338435	**63.04**	5/32	338239	**63.04**
7.0	338443	**63.04**	3/16	338240	**63.04**
7.5	338437	**63.04**	7/32	338241	**63.04**
8.0	338445	**63.04**	1/4	338242	**63.04**
8.5	338439	**63.04**	9/32	338243	**63.04**
9.0	338447	**63.04**	5/16	338244	**63.04**
9.5	338449	**63.04**	11/32	338245	**63.04**
10.0	338440*	**63.04**	3/8	338246	**63.04**
10.5	338442*	**63.04**	13/32	338247	**63.04**
11.0	338444*	**63.04**	7/16	338248	**63.04**
11.5	338446*	**63.04**	15/32	338249	**63.04**
12.0	338448*	**63.04**	1/2	338250	**63.04**
12.5	338450*	**63.04**	17/32	338251	**63.04**
13.0	338452*	**63.04**	9/16	338252	**63.04**
13.5	338454*	**63.04**	19/32	338253	**63.04**
14.0	338456*	**63.04**	5/8	338254	**63.04**
14.5	338458*	**63.04**	21/32	338255	**63.04**
15.0	338460*	**63.04**	11/16	338256	**63.04**
15.5	338462*	**63.04**	23/32	338257	**63.04**
16.0	338464*	**63.04**	3/4	338258	**63.04**
16.5	338468*	**63.04**	25/32	338259	**63.04**
17.0	338470*	**63.04**	13/16	338260	**63.04**
17.5	338472*	**63.04**	27/32	338261	**63.04**
18.0	338474*	**63.04**	7/8	338262	**63.04**
18.5	338476*	**63.04**	29/32	338263	**63.04**
19.0	338478*	**63.04**	15/16	338264	**63.04**
19.5	338480*	**63.04**	31/32	338265	**63.04**
20.0	338482*	**63.04**	1	338266	**63.04**
20.5	338484*	**63.04**			
21.0	338486*	**63.04**			
21.5	338488*	**63.04**			
22.0	338490*	**63.04**			
22.5	338492*	**63.04**			
23.0	338494*	**63.04**			
23.5	338496*	**63.04**			
24.0	338498*	**63.04**			
24.5	338500*	**63.04**			
25.0	338502*	**63.04**			
25.5	338504*	**63.04**			
26.0	338506*	**63.04**			

* Part of set

ER50 Collets

Our ER collet system is made of special alloy steel material under excellent heat treatment and precise grinding process, so it has precise accuracy, powerful clamping ability, and is durable. This collet can clamp for a specific standard size and its next size. It can be widely used for boring, milling, drilling and tapping as well as for grinding operation, and is available for all sizes.

- ER50 collets collapse approximately 5/64" with full accuracy

Size (mm)	Size (in.)	Code No.	Price $
10-12	0.394-0.472	337450*	**56.26**
12-14	0.472-0.551	337452*	**56.26**
14-16	0.551-0.630	337454*	**56.26**
16-18	0.630-0.709	337456*	**56.26**
18-20	0.709-0.789	337458*	**56.26**
20-22	0.789-0.866	337460*	**56.26**
22-24	0.866-0.945	337461*	**56.26**
24-26	0.945-1.024	337462*	**56.26**
26-28	1.024-1.102	337464*	**56.26**
28-30	1.102-1.181	337466*	**56.26**
30-32	1.181-1.260	337468*	**56.26**
11pc Set	**0.394-1.260**	337387	**675.17**

ER40 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap Inch	Shank Dia.	Size of Square	Code No.	Price $
Metric				
M4	2.8mm	2.1mm	338387	**63.75**
M3-M5	3.5mm	2.7mm	338389	**63.75**
M3-M5	4mm	3.0mm	338391	**63.75**
M4-M6	4.5mm	3.4mm	338393	**63.75**
M4-M6	5.5mm	4.3mm	338383	**63.75**
M4-M5	5mm	4.0mm	338395	**63.75**
M5-M5.5	4.5mm	4.5mm	338397	**63.75**
M4-M8	6mm	4.9mm	338385	**63.75**
M5-M8	6mm	4.5mm	338399	**63.75**
M7-M8	6.2mm	5.0mm	338401	**63.75**
M8-M11	8mm	6.0mm	338405	**63.75**
M8	8mm	6.2mm	338409	**63.75**
M10	7mm	5.5mm	338403	**63.75**
M10	10mm	8.0mm	338413	**63.75**
M12	8.5mm	6.5mm	338407	**63.75**
M12	9mm	7.0mm	338411	**63.75**
M14	10.5mm	8.0mm	338415	**63.75**
M14	11mm	9.0mm	338417	**63.75**
M16	12mm	9.0mm	338419	**63.75**
M16	12.5mm	10.0mm	338421	**63.75**
M18	14mm	11.0mm	338423	**63.75**
M20	15mm	12.0mm	338425	**63.75**
M20	16mm	12.0mm	338427	**63.75**
M22	17mm	13.0mm	338429	**63.75**
M22-M24	18mm	14.5mm	338431	**63.75**
M27-M30	20mm	16.0mm	338433	**63.75**
Inch				
0-6	0.141	0.110	338267*	**63.75**
8	0.168	0.131	338268*	**63.75**
10	0.194	0.152	338269*	**63.75**
12	0.220	0.165	338270*	**63.75**
1/4	0.255	0.191	338271*	**63.75**
5/16	0.318	0.238	338272*	**63.75**
3/8	0.381	0.286	338273*	**63.75**
7/16	0.323	0.242	338274*	**63.75**
1/2	0.367	0.275	338275*	**63.75**
9/16	0.429	0.322	338276*	**63.75**
5/8	0.480	0.360	338277*	**63.75**
11/16	0.542	0.406	338278*	**63.75**
3/4	0.590	0.442	338279*	**63.75**
13/16	0.652	0.489	338280*	**63.75**
7/8	0.697	0.523	338281*	**63.75**
15/16	0.760	0.570	338282*	**63.75**
1	0.800	0.600	338283*	**63.75**
NPT				
1/16, 1/8-SS (small shank)	0.3125	0.234	338284*	**63.75**
1/8-LS (large shank)	0.4375	0.328	338285	**63.75**
1/4	0.5625	0.421	338286*	**63.75**
3/8	0.7000	0.531	338287*	**63.75**
1/2	0.6875	0.515	338288*	**63.75**
21pc Set			337353	**1,338.75**

* Part of set

- **See page G31, G32 for Sets**
- **See page G21 for Dimensional Data**

ER Collet Sets

* Case may not be as shown

ER11 / 13 Pieces		ER16 / 10 Pieces		ER20 / 12 Pieces		ER25 / 15 Pieces	
Code No. 337379	Price $ 309.86	Code No. 337380	Price $ 230.76	Code No. 337382	Price $ 315.57	Code No. 337383	Price $ 402.82
Code No.	**Size**	**Code No.**	**Size**	**Code No.**	**Size**	**Code No.**	**Size**
337650	0.019-0.039	337302	0.019-0.039	337473	0.059-0.078	337330	0.059-0.078
337652	0.039-0.059	337304	0.059-0.078	337474	0.098-0.118	337332	0.098-0.118
337654	0.059-0.078	337306	0.098-0.118	337475	0.137-0.157	337334	0.137-0.157
337656	0.078-0.098	337308	0.137-0.157	337476	0.177-0.196	337336	0.177-0.196
337658	0.098-0.118	337310	0.177-0.196	337477	0.217-0.236	337338	0.217-0.236
337660	0.118-0.137	337312	0.217-0.236	337478	0.256-0.275	337340	0.256-0.275
337662	0.137-0.157	337314	0.256-0.275	337479	0.295-0.314	337342	0.295-0.314
337664	0.157-0.177	337316	0.295-0.314	337480	0.335-0.354	337344	0.335-0.354
337666	0.177-0.196	337318	0.335-0.354	337481	0.374-0.393	337346	0.374-0.393
337668	0.196-0.216	337320	0.374-0.393	337482	0.413-0.433	337348	0.413-0.433
337670	0.216-0.236			337483	0.452-0.472	337350	0.452-0.472
337672	0.236-0.255			337484	0.492-0.511	337352	0.492-0.511
337674	0.255-0.275					337354	0.531-0.551
						337356	0.571-0.590
						337358	0.610-0.629

ER Collet Sets

ER32 / 18 Pieces		ER40 / 23 Pieces		ER50 / 11 Pieces	
Code No. 337384	Price $ 477.83	Code No. 337386	Price $ 676.80	Code No. 337387	Price $ 675.17
Code No.	**Size**	**Code No.**	**Size**	**Code No.**	**Size**
337361	0.098-0.118	337501	0.137-0.157	337450	0.394-0.472
337362	0.137-0.157	337502	0.177-0.196	337452	0.472-0.551
337363	0.177-0.196	337503	0.216-0.236	337454	0.551-0.630
337364	0.217-0.236	337505	0.256-0.275	337456	0.630-0.709
337365	0.256-0.275	337506	0.295-0.314	337458	0.709-0.789
337366	0.295-0.314	337507	0.335-0.354	337460	0.789-0.866
337367	0.335-0.354	337509	0.374-0.393	337461	0.866-0.945
337368	0.374-0.393	337510	0.413-0.433	337462	0.945-1.024
337369	0.413-0.433	337511	0.452-0.472	337464	1.024-1.102
337370	0.452-0.472	337513	0.492-0.511	337466	1.102-1.181
337371	0.492-0.511	337514	0.531-0.551	337468	1.181-1.260
337372	0.531-0.551	337515	0.571-0.590		
337373	0.571-0.590	337517	0.610-0.629		
337374	0.610-0.629	337518	0.650-0.669		
337375	0.650-0.669	337519	0.689-0.708		
337376	0.689-0.708	337521	0.728-0.748		
337377	0.728-0.748	337522	0.767-0.787		
337378	0.767-0.787	337523	0.807-0.826		
		337524	0.846-0.866		
		337525	0.886-0.905		
		337526	0.925-0.944		
		337527	0.965-0.984		
		337528	1.004-1.023		

ER Collet Sets

- Shipped as set, no plastic container

Collet	Description	Range	Code No.	Price $
ER16	Inch 11pc Collet Set	1/16-3/8 x 32nds	337440	**262.57**
ER25	Inch 17pc Collet Set	1/8-5/8 x 32nds	337442	**458.15**
ER32	Inch 21pc Collet Set	1/8-3/4 x 32nds	337444	**565.95**

ER Sealed Collet Sets

Collet	Description	Range	Code No.	Price $
ER11	Inch 6pc Sealed Collet Set	3/16-17/64 x 64ths	337929	**331.50**
ER16	Inch 10pc Sealed Collet Set	1/8-13/32 x 32nds	337931	**532.06**
ER16	Metric 13pc Sealed Collet Set	4.0-10.0mm x 0.5mm	337932	**603.20**
ER20	Inch 12pc Sealed Collet Set	5/32-1/2 x 32nds	337933	**608.21**
ER20	Metric 17pc Sealed Collet Set	5.0-13.0mm x 0.5mm	337935	**934.31**
ER25	Inch 13pc Sealed Collet Set	1/4-5/8 x 32nds	337938	**767.09**
ER25	Metric 21pc Sealed Collet Set	6.0-16.0mm x 0.5mm	337939	**1,106.70**
ER32	Inch 17pc Sealed Collet Set	1/4-3/4 x 32nds	337940	**1,066.82**
ER32	Metric 20pc Sealed Collet Set	10.5-20.0mm x 0.5mm	337942	**1,173.20**
ER40	Metric 33pc Sealed Collet Set	10.0-26.0mm x 0.5mm	337944	**2,225.57**

ER Tap Collet Sets

- For synchronous, rigid tapping operations using ER collet chucks
- Collet bore is exact tool diameter with square drive for accuracy and rigidity
- See page G63-67 for rigid tapping holders

Collet	Description	Range	Code No.	Price $
Metric				
ER32	11pc Tap Collet Set	M4 - M26	337992	**598.40**
Inch				
ER16	5pc Tap Collet Set	#6 - 1/4"	337986	**229.50**
ER16	9pc Tap Collet Set	#6 - 1/2	337343	**413.10**
ER20	9pc Tap Collet Set	#6 - 1/2	337345	**413.10**
ER32	16pc Tap Collet Set	#6 - 13/16	337351	**870.40**
ER40	21pc Tap Collet Set	#6 - 1"	337353	**1,338.75**

ER Inch Collet Sets

ER11 / 7 Pieces		ER16 / 11 Pieces		ER20 / 15 Piece		ER25 / 17 Pieces		ER32 / 21 Pieces		ER40 / 29 Pieces	
Code No. 337401	Price $ 168.79	Code No. 337403	Price $ 278.06	Code No. 337404	Price $ 415.86	Code No. 337405	Price $ 456.63	Code No. 337407	Price $ 557.75	Code No. 337409	Price $ 853.74
Code No.	Size	Code No.	Size	Code No.	Size	Code No.	Size	Code No.	Size	Code No.	Size
337610	1/16	337531	1/16	337621	1/16	337683	1/8	337703	1/8	337728	1/8
337613	3/32	337532	3/32	337623	3/32	337684	5/32	337704	5/32	337729	5/32
337615	1/8	337533	1/8	337663	1/8	337685	3/16	337706	3/16	337731	3/16
337618	5/32	337534	5/32	337665	5/32	337686	7/32	337707	7/32	337732	7/32
337651	3/16	337535	3/16	337667	3/16	337687	1/4	337708	1/4	337733	1/4
337655	7/32	337536	7/32	337669	7/32	337688	9/32	337709	9/32	337734	9/32
337659	1/4	337537	1/4	337671	1/4	337689	5/16	337711	5/16	337736	5/16
		337538	9/32	337673	9/32	337691	11/32	337712	11/32	337737	11/32
		337540	5/16	337675	5/16	337692	3/8	337713	3/8	337738	3/8
		337541	11/32	337676	11/32	337693	13/32	337714	13/32	337739	13/32
		337542	3/8	337677	3/8	337694	7/16	337716	7/16	337741	7/16
				337678	13/32	337696	15/32	337717	15/32	337742	15/32
				337679	7/16	337697	1/2	337718	1/2	337743	1/2
				337681	15/32	337698	17/32	337719	17/32	337744	17/32
				337682	1/2	337699	9/16	337721	9/16	337746	9/16
						337701	19/32	337722	19/32	337747	19/32
						337702	5/8	337723	5/8	337748	5/8
								337724	21/32	337749	21/32
								337725	11/16	337751	11/16
								337726	23/32	337752	23/32
								337727	3/4	337753	3/4
										337754	25/32
										337756	13/16
										337757	27/32
										337758	7/8
										337759	29/32
										337761	15/16
										337762	31/32
										337763	1

Replacement ER Chuck Nuts

Collet Nut for ER32 Shorty Collet Chuck

	Steam Oxide		Balanced & Bright	
Description	Code No.	Price $	Code No.	Price $
ER11 Nut (Hex)	337680	46.00	534790	28.00
ER16 Nut (Hex)	337389	46.00	534792	28.00
ER20 Nut (Hex)	337391	46.00	534794	32.00
ER25 Nut (Notched)	337390	50.00	534796	35.00
ER32 Nut (Notched)	337392	49.94	534798	39.00
ER40 Nut (Notched)	337393	53.00	534800	42.00
ER50 Nut (Notched)	337385	120.27		
ER32 Shorty Collet Nut				
Fits ER32 Shorty Chucks (M40 x 1.5 Thread)			337411	83.43

ER Chuck Nut Wrenches

Wrench for ER32 Shorty Collet Chuck

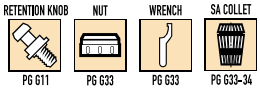
Description	Code No.	Price $
Fits ER11 Chucks (Hex)	337388	19.37
Fits ER16 Chucks (Hex)	337395	19.37
Fits ER20 Chucks (Hex)	337397	28.54
Fits ER25 Chucks (Notched)	337396	28.54
Fits ER32 Chucks (Notched)	337398	28.54
Fits ER40 Chucks (Notched)	337399	33.64
ER32 Shorty Chuck Wrench		
Fits ER32 Shorty Chucks	337381	90.07

Replacement Backup Screws

Description	Code No.	Price $
ER11 Backup Screws	534814	6.93
ER16 Backup Screws	534816	7.92
ER20 Backup Screws	534818	7.92
ER25 Backup Screws	534820	9.90
ER32 Backup Screws	534822	8.81
ER40 Backup Screws	534824	11.88

CAT Taper SA High Precision Collet Chucks

- DIN coolant through the flange at no extra charge
- Run out accuracy is > 5µm at 4xD of the cutting tool shank
- 8° tapered collet seats deeper in the body of the holder providing increased rigidity. This results in concentricity and stronger gripping power
- Wrench not included
- AT2 Taper Accuracy
- RFID chip hole



PREMIUM BALANCE G2.5 at 25,000rpm CERTIFICATE INCLUDED — CAT50

PREMIUM BALANCE G2.5 at 30,000rpm CERTIFICATE INCLUDED — CAT40

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Price $
CAT40					
CT40	SA10	0.069-0.394	3.54	531756	**261.74**
CT40	SA10	0.069-0.394	4.72	531758	**275.48**
CT40	SA16	0.108-0.630	3.54	531762	**274.33**
CT40	SA16	0.108-0.630	5.91	531766	**330.65**
CT40	SA25	0.630-1.00	3.54	531768	**299.29**
CAT50					
CT50	SA10	0.069-0.394	4.13	531776	**361.78**
CT50	SA16	0.108-0.630	4.13	531782	**363.60**
CT50	SA25	0.630-1.00	4.13	531788	**403.44**

Replacement SA Collet Nuts

Description	Code No.	Price $
SA10 Nut (Hex)	536588	**62.49**
SA16 Nut (Notched)	536590	**67.18**
SA25 Nut (Notched)	536592	**69.70**

SA Collet Chuck Wrenches

Description	Code No.	Price $
Fits SA10	536580	**26.44**
Fits SA16	536582	**26.44**
Fits SA25	536584	**26.44**

SA Collet Extractors

Description	Code No.	Price $
SA10	536572	**11.21**
SA16	536574	**14.20**
SA25	536576	**19.57**

SA10 Collets

Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Metric				
2.0mm	1.75-2.0	0.068-0.078	338564	**74.42**
2.25mm	2.0-2.25	0.078-0.088	338566	**74.42**
2.5mm	2.25-2.5	0.088-0.098	338568	**74.42**
3.0mm	2.75-3.0	0.108-0.118	338572	**74.42**
3.5mm	3.0-3.5	0.118-0.137	338574	**74.42**
4.0mm	3.5-4.0	0.137-0.157	338576	**74.42**
4.5mm	4.0-4.5	0.157-0.177	338578	**74.42**
5.0mm	4.5-5.0	0.177-0.196	338580	**74.42**
5.5mm	5.0-5.5	0.196-0.216	338582	**74.42**
6.0mm	5.5-6.0	0.216-0.236	338583	**74.42**
6.5mm	6.0-6.5	0.236-0.255	338584	**74.42**
7.0mm	6.5-7.0	0.255-0.275	338586	**74.42**
7.5mm	7.0-7.5	0.275-0.295	338588	**74.42**
8.0mm	7.5-8.0	0.295-0.314	338590	**74.42**
8.5mm	8.0-8.5	0.314-0.334	338592	**74.42**
9.0mm	8.5-9.0	0.334-0.354	338594	**74.42**
9.5mm	9.0-9.5	0.354-0.374	338596	**74.42**
10.0mm	9.5-10.0	0.374-0.393	338598	**74.42**
Inch				
1/8	-	-	338602	**74.42**
3/16	-	-	338604	**74.42**
1/4	-	-	338606	**74.42**
5/16	-	-	338608	**74.42**
3/8	-	-	338610	**74.42**

SA25 Collets

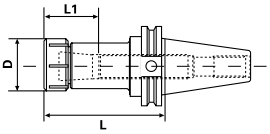
Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Metric				
16.5mm	16.0-16.5	0.629-0.649	338694	**90.85**
17.0mm	16.5-17.0	0.649-0.669	338696	**90.85**
17.5mm	17.0-17.5	0.669-0.688	338698	**90.85**
18.0mm	17.5-18.0	0.688-0.708	338700	**90.85**
18.5mm	18.0-18.5	0.708-0.728	338702	**90.85**
19.0mm	18.5-19.0	0.728-0.748	338704	**90.85**
20.0mm	19.5-20.0	0.767-0.787	338708	**90.85**
20.5mm	20.0-20.5	0.787-0.807	338710	**90.85**
21.0mm	20.5-21.0	0.807-0.826	338712	**90.85**
21.5mm	21.0-21.5	0.826-0.846	338714	**90.85**
22.0mm	21.5-22.0	0.846-0.866	338716	**90.85**
23.0mm	22.5-23.0	0.885-0.905	338720	**90.85**
24.0mm	23.5-24.0	0.925-0.944	338724	**90.85**
24.5mm	24.0-24.5	0.944-0.964	338726	**90.85**
25.0mm	24.5-25.0	0.964-0.984	338728	**90.85**
25.4mm	25.0-25.4	0.984-1.000	338730	**90.85**
Inch				
1/4	-	-	338736	**90.85**
5/16	-	-	338738	**90.85**
3/8	-	-	338740	**90.85**
7/16	-	-	338742	**90.85**
1/2	-	-	338744	**90.85**
5/8	-	-	338746	**90.85**
3/4	-	-	338748	**90.85**

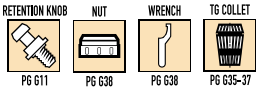
SA16 Collets

Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Metric				
2.0mm			338614	**74.42**
2.5mm			338616	**74.42**
3.0mm	2.75-3.0	0.108-0.118	338618	**74.42**
3.5mm	3.0-3.5	0.118-0.137	338620	**74.42**
4.0mm	3.5-4.0	0.137-0.157	338622	**74.42**
4.5mm	4.0-4.5	0.157-0.177	338624	**74.42**
5.0mm	4.5-5.0	0.177-0.196	338626	**74.42**
5.5mm	5.0-5.5	0.196-0.216	338628	**74.42**
6.0mm	5.5-6.0	0.216-0.236	338630	**74.42**
6.5mm	6.0-6.5	0.236-0.255	338632	**74.42**
7.0mm	6.5-7.0	0.255-0.275	338634	**74.42**
7.5mm	7.0-7.5	0.275-0.295	338636	**74.42**
8.0mm	7.5-8.0	0.295-0.314	338638	**74.42**
8.5mm	8.0-8.5	0.314-0.334	338640	**74.42**
9.0mm	8.5-9.0	0.334-0.354	338642	**74.42**
9.5mm	9.0-9.5	0.354-0.374	338644	**74.42**
10.0mm	9.5-10.0	0.374-0.393	338646	**74.42**
10.5mm	10.0-10.5	0.393-0.413	338648	**74.42**
11.0mm	10.5-11.0	0.413-0.433	338650	**74.42**
11.5mm	11.0-11.5	0.433-0.452	338652	**74.42**
12.0mm	11.5-12.0	0.452-0.472	338654	**74.42**
12.5mm	12.0-12.5	0.472-0.492	338656	**74.42**
13.0mm	12.5-13.0	0.492-0.511	338658	**74.42**
13.5mm	13.0-13.5	0.511-0.531	338660	**74.42**
14.0mm	13.5-14.0	0.531-0.551	338662	**74.42**
14.5mm	14.0-14.5	0.551-0.570	338664	**74.42**
15.0mm	14.5-15.0	0.570-0.590	338666	**74.42**
15.5mm	15.0-15.5	0.590-0.610	338668	**74.42**
16.0mm	15.5-16.0	0.610-0.629	338670	**74.42**
Inch				
1/8	-	-	338674	**74.42**
3/16	-	-	338676	**74.42**
1/4	-	-	338678	**74.42**
5/16	-	-	338680	**74.42**
3/8	-	-	338682	**74.42**
7/16	-	-	338684	**74.42**
1/2	-	-	338686	**74.42**
9/16	-	-	338688	**74.42**
5/8	-	-	338690	**74.42**

CAT Taper TG Collet Chucks

- DIN coolant through the flange
- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- Wrench not included
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0006"
- AT2 Taper Accuracy
- RFID chip hole





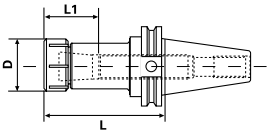
PREMIUM BALANCE G6.3 at 25,000rpm CERTIFICATE INCLUDED — CAT50

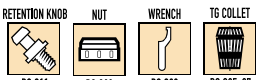
PREMIUM BALANCE G6.3 at 30,000rpm CERTIFICATE INCLUDED — CAT40

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CAT40								
CT40	TG75	3/64-3/4	3.00	1.61	1.89	81.3	531284	**259.38**
CT40	TG75	3/64-3/4	5.00	1.61	1.89	81.3	531286	**132.66**
CT40	TG100	3/64-1	3.00	2.13	2.50	81.3	531288	**191.07**
CT40	TG100	3/64-1	3.50	2.13	2.50	81.3	531290	**191.07**
CT40	TG100	3/64-1	5.50	2.13	2.50	81.3	531292	**191.07**
CT40	TG150	1/2-1-1/2	6.00	2.88	3.50	94.9	531294	**191.07**
CAT50								
CT50	TG75	3/64-3/4	3.50	1.61	1.89	81.3	531296	**183.15**
CT50	TG100	3/64-1	3.50	2.13	2.50	81.3	531300	**183.15**
CT50	TG100	3/64-1	5.50	2.13	2.50	81.3	531302	**249.48**
CT50	TG100	3/64-1	7.50	2.13	2.50	81.3	531304	**345.51**
CT50	TG100	3/64-1	10.00	2.13	3.50	81.3	531306	**391.05**
CT50	TG150	1/2-1-1/2	3.50	2.88	3.50	94.9	531308	**272.25**
CT50	TG150	1/2-1-1/2	6.00	2.88	3.50	94.9	531310	**301.95**

BT Taper TG Collet Chucks

- DIN coolant through the flange
- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- Wrench not included
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0006"
- AT2 Taper Accuracy
- RFID chip hole





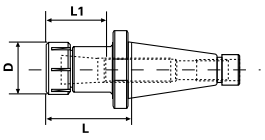
PREMIUM BALANCE G6.3 at 25,000rpm CERTIFICATE INCLUDED — BT50

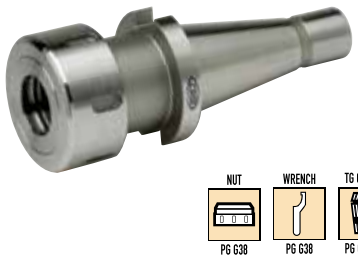
PREMIUM BALANCE G6.3 at 30,000rpm CERTIFICATE INCLUDED — BT30/40

Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
BT30								
BT30	TG75	3/64-3/4	2.50	1.61	1.89	81.3	532128‡	**259.38**
BT30	TG100	3/64-1	3.94	2.24	2.50	81.3	532130‡	**139.59**
BT40								
BT40	TG75	3/64-3/4	3.00	1.61	1.89	81.3	532132	**259.38**
BT40	TG100	3/64-1	3.50	2.13	2.50	81.3	532134	**139.59**
BT40	TG100	3/64-1	5.50	2.13	2.50	81.3	532136	**153.45**
BT50								
BT50	TG100	3/64-1	4.00	2.13	2.50	81.3	532139	**226.71**
BT50	TG100	3/64-1	6.00	2.13	2.50	81.3	532140	**292.05**

‡ Not DIN Coolant

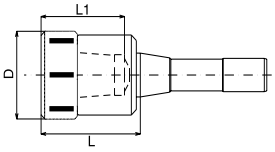
NMTB Taper TG Collet Chucks

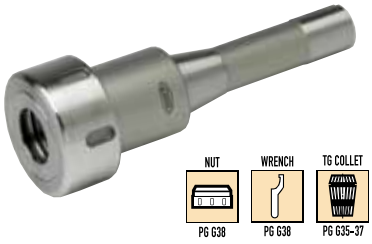




Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
NMTB40	TG100	3/64-1	3.00	2.12	2.50	81.3	534304	**114.91**
NMTB50	TG75	3/64-3/4	3.00	1.61	1.89	81.3	534308	**139.06**
NMTB50	TG100	3/64-1	3.50	2.12	2.50	81.3	534310	**183.70**

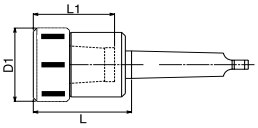
R8 Taper TG Collet Chuck

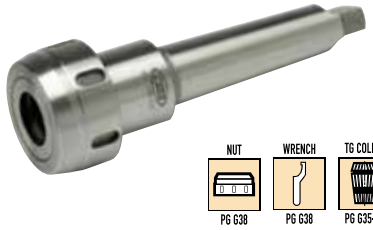




Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
R8	TG100	3/64-1	3.25	2.17	2.50	81.3	534314	**124.75**

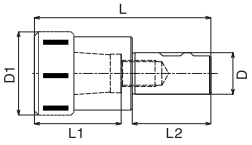
Morse Taper TG Collet Chucks

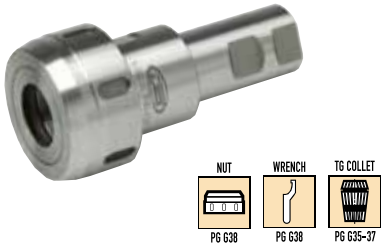




Taper	Collet Series	Collet Range	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
MT3	TG100	3/64-1	3.25	2.73	2.50	81.3	534322	**197.65**
MT4	TG100	3/64-1	3.25	2.73	2.50	81.3	534324	**207.95**

Straight Shank TG Collet Chucks





Shank Dia.	Collet Series	Collet Range	L	L1	L2	D1	Tightening Torque (Nm)	Code No.	Price $
1-1/2	TG100	3/64-1	9.00	2.73	6.00	2.50	81.3	534320	**147.99**

TG75 Standard & Sealed Collets

- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341
- 80 ft/lbs maximum tightening torque

Sealed Collets

- Sealed for coolant-through applications
- Pressure resistance tested to 1000 psi
- Sealed with rubber

REGULAR SEALED

Size (in.)	Regular Code No.	Price $	Sealed Code No.	Price $
3/64	334790	**27.72**	-	-
1/16	334791	**27.72**	-	-
5/64	334792	**27.72**	-	-
3/32	334800	**27.72**	-	-
7/64	334801	**27.72**	-	-
1/8	334802	**26.91**	334843	**52.70**
9/64	334803	**27.72**	334844	**52.70**
5/32	334804	**27.72**	334845	**52.70**
11/64	334805	**26.91**	334846	**52.70**
3/16	334806	**27.72**	334847	**52.70**
13/64	334807	**26.91**	334848	**52.70**
7/32	334808	**27.72**	334849	**52.70**
15/64	334809	**26.91**	334850	**52.70**
1/4	334810	**26.91**	334851	**52.70**
17/64	334811	**26.91**	334852	**52.70**
9/32	334812	**27.72**	334853	**52.70**
19/64	334813	**26.91**	334854	**52.70**
5/16	334814	**27.72**	334855	**52.70**
21/64	334815	**26.91**	334856	**52.70**
11/32	334816	**26.91**	334857	**52.70**
23/64	334817	**27.72**	334858	**52.70**
3/8	334818	**27.72**	334859	**52.70**
25/64	334819	**27.72**	334860	**52.70**
13/32	334820	**26.91**	334861	**52.70**
27/64	334821	**27.72**	334862	**52.70**
7/16	334822	**27.72**	334863	**52.70**
29/64	334823	**27.72**	334864	**52.70**
15/32	334824	**26.91**	334865	**52.70**
31/64	334825	**27.72**	334866	**52.70**
1/2	334826	**26.91**	334867	**52.70**
33/64	334827	**27.72**	334868	**52.70**
17/32	334828	**26.91**	334869	**52.70**
35/64	334829	**27.72**	334870	**52.70**
9/16	334830	**27.72**	334871	**52.70**
37/64	334831	**27.72**	334872	**52.70**
19/32	334832	**26.91**	334873	**52.70**
39/64	334833	**27.72**	334874	**52.70**
5/8	334834	**27.72**	334875	**52.70**
41/64	334835	**27.72**	334876	**52.70**
21/32	334836	**26.91**	334877	**52.70**
43/64	334837	**27.72**	334878	**52.70**
11/16	334838	**26.91**	334879	**52.70**
45/64	334839	**27.72**	334880	**52.70**
23/32	334840	**27.72**	334881	**52.70**
47/64	334841	**27.72**	334882	**52.70**
3/4	334842	**27.72**	334883	**52.70**

• See page G38 for Dimensional Data

TG75 Tap Collets

- For synchronous, rigid tapping operations using TG collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap Inch	Shank Dia. (in.)	Size of Square (in.)	Code No.	Price $
0-6	0.141	0.110	334884	**46.75**
8	0.168	0.131	334885	**46.75**
10	0.194	0.152	334886	**46.75**
12	0.220	0.165	334887	**46.75**
1/4	0.255	0.191	334888	**46.75**
5/16	0.318	0.238	334889	**46.75**
3/8	0.381	0.286	334890	**46.75**
7/16	0.323	0.242	334891	**46.75**
1/2	0.367	0.275	334892	**46.75**
9/16	0.429	0.322	334893	**46.75**
5/8	0.480	0.360	334894	**46.75**
11/16	0.542	0.406	334895	**46.75**
3/4	0.590	0.442	334896	**46.75**
NPT				
1/16, 1/8 NPT-ss*	0.3125	0.234	334897	**46.75**
1/8 NPT-LS*	0.4375	0.328	334898	**46.75**
1/4 NPT	0.5625	0.421	334899	**46.75**

*ss = small shank
*LS = large shank

Standard TG75 Collet Sets

- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341
- 80 ft/lbs maximum tightening torque

No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
43	3/32-3/4	1/64	334900	**1,179.09**
41	1/8-3/4	1/64	334901	**1,124.46**
33	1/4-3/4	1/64	334902	**905.11**
25	3/8-3/4	1/64	334903	**685.77**
22	3/32-3/4	1/32	334904	**601.78**
13	3/8-3/4	1/32	334905	**357.15**
11	1/8-3/4	1/16	334906	**301.70**

• See page G38 for Dimensional Data

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

TG100 Standard & Sealed Collets

- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341
- 90 ft/lbs maximum tightening torque

Sealed Collets
- Sealed for coolant-through applications
- Pressure resistance tested between 650 - 750 psi
- Sealed with rubber

REGULAR SEALED

Size (in.)	Regular Code No.	Price $	Sealed Code No.	Price $
3/64	334418	**27.72**	-	-
5/64	334423	**27.72**	-	-
3/32	334425N	**27.72**	-	-
7/64	334426	**27.72**	-	-
1/8	334427N	**27.72**	-	-
9/64	334428	**27.72**	-	-
5/32	334429N	**27.72**	334907	**56.95**
11/64	334430	**27.72**	334908	**56.95**
3/16	334431N	**27.72**	334909	**56.95**
13/64	334432	**27.72**	334910	**56.95**
7/32	334433N	**27.72**	334911	**56.95**
15/64	334434	**27.72**	334912	**56.95**
1/4	334435N	**27.72**	334913	**56.95**
17/64	334436	**27.72**	334914	**56.95**
9/32	334437N	**27.72**	334915	**56.95**
19/64	334438	**27.72**	334916	**56.95**
5/16	334439N	**27.72**	334917	**56.95**
21/64	334440	**27.72**	334918	**56.95**
11/32	334441N	**27.72**	334919	**56.95**
23/64	334442	**27.72**	334920	**56.95**
3/8	334443N	**27.72**	334921	**56.95**
25/64	334444	**27.72**	334922	**56.95**
13/32	334445N	**27.72**	334923	**56.95**
27/64	334446	**27.72**	334924	**56.95**
7/16	334447N	**27.72**	334925	**56.95**
29/64	334448	**27.72**	334926	**56.95**
15/32	334449N	**27.72**	334927	**56.95**
31/64	334450	**27.72**	334928	**56.95**
1/2	334451N	**27.72**	334929	**56.95**
33/64	334452	**27.72**	334930	**56.95**
17/32	334453N	**27.72**	334931	**56.95**
35/64	334454	**27.72**	334932	**56.95**
9/16	334455N	**27.72**	334933	**56.95**
37/64	334456	**27.72**	334934	**56.95**
19/32	334457N	**27.72**	334935	**56.95**
39/64	334458	**27.72**	334936	**56.95**
5/8	334459N	**27.72**	334937	**56.95**
41/64	334460	**27.72**	334938	**56.95**
21/32	334461N	**27.72**	334939	**56.95**
43/64	334462	**27.72**	334940	**56.95**
11/16	334463N	**27.72**	334941	**56.95**
45/64	334464	**27.72**	334942	**56.95**
23/32	334465N	**27.72**	334943	**56.95**
47/64	334466	**27.72**	334944	**56.95**
3/4	334467N	**27.72**	334945	**56.95**
49/64	334468	**27.72**	334946	**56.95**
25/32	334469N	**27.72**	334947	**56.95**
51/64	334470	**27.72**	334948	**56.95**
13/16	334471N	**27.72**	334949	**56.95**
53/64	334472	**27.72**	334950	**56.95**
27/32	334473N	**27.72**	334951	**56.95**
55/64	334474	**27.72**	334952	**56.95**
7/8	334475N	**27.72**	334953	**56.95**
57/64	334476	**27.72**	334954	**56.95**
29/32	334477N	**27.72**	334955	**56.95**
59/64	334478	**27.72**	334956	**56.95**
15/16	334479N	**27.72**	334957	**56.95**
61/64	334480	**27.72**	334958	**56.95**
31/32	334481N	**27.72**	334959	**56.95**
63/64	334482	**27.72**	334960	**56.95**
1	334483N	**27.72**	334961	**56.95**

TG100 Tap Collets

- For synchronous, rigid tapping operations using TG collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity

Tap Inch	Shank Dia.	Size of Square	Code No.	Price $
0-6	0.141	0.110	334963	**49.30**
8	0.168	0.131	334964	**49.30**
10	0.194	0.152	334965	**49.30**
12	0.220	0.165	334966	**49.30**
1/4	0.255	0.191	334967	**49.30**
5/16	0.318	0.238	334968	**49.30**
3/8	0.381	0.286	334969	**49.30**
7/16	0.323	0.242	334970	**49.30**
1/2	0.367	0.275	334971	**49.30**
9/16	0.429	0.322	334972	**49.30**
5/8	0.480	0.360	334973	**49.30**
11/16	0.542	0.406	334974	**49.30**
3/4	0.590	0.442	334975	**49.30**
13/16	0.652	0.489	334976	**49.30**
7/8	0.697	0.523	334977	**49.30**
15/16	0.760	0.570	334978	**49.30**
1	0.800	0.600	334979	**49.30**
NPT				
1/16, 1/8 NPT-ss*	0.3125	0.234	334980	**49.30**
1/8 NPT-LS*	0.4375	0.328	334981	**49.30**
1/4 NPT	0.5625	0.421	334982	**49.30**
3/8 NPT	0.7000	0.531	334983	**49.30**
1/2 NPT	0.6875	0.515	334984	**49.30**

*ss = small shank
*LS = large shank

Standard TG100 Collet Sets

- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341
- 90 ft/lbs maximum tightening torque

No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
59	3/32-1	1/64	334575	**1,635.73**
41	3/8-1	1/64	334570	**1,136.69**
30	3/32-1	1/32	334565	**831.73**
21	3/8-1	1/32	334560	**582.21**
15	1/8-1	1/16	334561	**415.86**

• See page G38 for Dimensional Data

TG150 Standard Collets

- Unique 8" taper design affords highest gripping power
- True double angle, for extreme concentricity
- 16 jaws giving powerful gripping and parallel clamping
- A unique self releasing system is built into the collet and clamping nut to eliminate cutting tools sticking in collets
- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341

Size (in.)	Code No.	Price $	Size (in.)	Code No.	Price $
1/2	334485N	**39.14**	1-1/64	334518	**39.14**
33/64	334486	**39.14**	1-1/32	334519N	**39.14**
17/32	334487N	**39.14**	1-3/64	334520	**39.14**
35/64	334488	**39.14**	1-1/16	334521N	**39.14**
9/16	334489N	**39.14**	1-5/64	334522	**39.14**
37/64	334490	**39.14**	1-3/32	334523N	**39.14**
19/32	334491N	**39.14**	1-7/64	334524	**39.14**
39/64	334492	**39.14**	1-1/8	334525N	**39.14**
5/8	334493N	**39.14**	1-9/64	334526	**39.14**
41/64	334494	**39.14**	1-5/32	334527N	**39.14**
21/32	334495N	**39.14**	1-11/64	334528	**39.14**
43/64	334496	**39.14**	1-3/16	334529N	**39.14**
11/16	334497N	**39.14**	1-13/64	334530	**39.14**
45/64	334498	**39.14**	1-7/32	334531N	**39.14**
23/32	334499N	**39.14**	1-15/64	334532	**39.14**
47/64	334500	**39.14**	1-1/4	334533N	**39.14**
3/4	334501N	**39.14**	1-17/64	334534	**39.14**
49/64	334502	**39.14**	1-9/32	334535N	**39.14**
25/32	334503N	**39.14**	1-19/64	334536	**39.14**
51/64	334504	**39.14**	1-5/16	334537N	**39.14**
13/16	334505N	**39.14**	1-21/64	334538	**39.14**
53/64	334506	**39.14**	1-11/32	334539N	**39.14**
27/32	334507N	**39.14**	1-23/64	334540	**39.14**
55/64	334508	**39.14**	1-3/8	334541N	**39.14**
7/8	334509N	**39.14**	1-25/64	334542	**39.14**
57/64	334510	**39.14**	1-13/32	334543N	**39.14**
`29/32	334511N	**39.14**	1-27/64	334544	**39.14**
59/64	334512	**39.14**	1-7/16	334545N	**39.14**
15/16	334513N	**39.14**	1-29/64	334546	**39.14**
61/64	334514	**39.14**	1-15/32	334547N	**39.14**
31/32	334515N	**39.14**	1-31/64	334548	**39.14**
63/64	334516	**39.14**	1-1/2	334549N	**39.14**
1	334517N	**39.14**			

Standard TG150 Collet Sets

- Unique 8" taper design affords highest gripping power
- True double angle, for extreme concentricity
- 16 jaws giving powerful gripping and parallel clamping
- A unique self releasing system is built into the collet and clamping nut to eliminate cutting tools sticking in collets
- 1/64" collapse per collet
- 0.0005" in TIR precision per DIN 6341

No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
33	1/2-1-1/2	1/32	334585	**1,291.62**

• See page G38 or Dimensional Data

Replacement TG Chuck Nuts

Description	Tightening Torque (Nm)	Code No.	Price $
*TG75 Nut	81.3	534760	**78.21**
*TG100 Nut	81.3	534762	**51.48**
*TG150 Nut	94.9	534764	**77.60**
TG75 Nut, Solid	81.3	534830	**78.21**
TG100 Nut, Solid	81.3	534832	**51.48**

* Photo Shown / This style is supplied with chuck

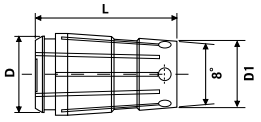
TG Chuck Wrenches

Description	Code No.	Price $
Fits TG75 Chuck	534772	**47.52**
Fits TG100 Chuck	534774	**28.71**
Fits TG150 Chuck	534776	**50.70**

Replacement TG Backup Screws

Description	Code No.	Price $
TG75	534778	**8.36**
TG100	534782	**8.36**
TG150	534786	**9.50**
TG150 Coolant	534788	**10.88**

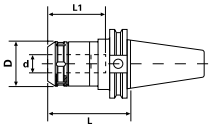
TG Collet Dimensional Data



Style	D	D1	L	Collet Range
TG25	0.425	0.325	0.709	3/64-1/4
TG50	0.760	0.594	1.437	1/8-1/2
TG75	1.063	0.871	1.844	3/64-3/4
TG100	1.278	1.121	2.386	3/64-1
TG150	1.875	1.678	3.000	1/2-1-1/2

CAT40 Milling Chucks

- DIN coolant through the flange at no extra charge
- Rough milling or 'hogging' operations
- Improved tool life over regular end mill holders
- '360°' gripping contact
- Extreme rigidity over taper collets
- TIR, 0.0002"
- AT2 Taper Accuracy
- RFID chip hole



RETENTION KNOB PG G11 | WRENCH PG G39 | COLLETS PG G39

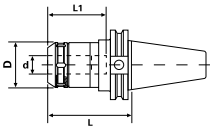
Taper	Collet Series	Collet Range	d	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT40	GS 3/4	0.125-0.750	0.750	3.54	3.15	2.05	50-70	531253	**526.68**
CT40	GS 3/4	0.125-0.750	0.750	4.14	3.15	2.05	50-70	531250	**526.68**
CT40	GS 1	0.125-1.00	1.00	3.54	3.15	2.41	50-70	531255‡	**526.68**
CT40	GS 1	0.125-1.00	1.00	4.14	3.15	2.41	50-70	531254	**526.68**
CT40	GS 1-1/4	0.187-1.25	1.25	3.54	3.34	2.88	60-80	531257‡	**526.68**
CT40	GS 1-1/4	0.187-1.25	1.25	4.14	3.34	2.88	60-80	531256	**526.68**
CT40	GS 1-1/4	0.187-1.25	1.25	5.32	4.73	2.88	60-80	531258	**544.50**

‡ Not DIN Coolant

CAT40 DUAL CONTACT Milling Chucks

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant through the flange at no extra charge
- Rough milling or 'hogging' operations
- '360°' gripping contact
- Improved tool life over regular end mill holders
- Extreme rigidity over taper collets
- TIR, 0.0002"
- RFID chip hole
- AT2 Taper Accuracy

FOR DUAL CONTACT SPINDLES



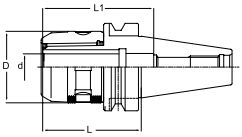
RETENTION KNOB PG G11 | WRENCH PG G39 | COLLETS PG G39

Taper	Collet Series	Collet Range	d	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT40	GS 3/4	0.125-0.750	0.750	3.54	3.15	2.05	50-70	521253	**452.20**
CT40	GS 1	0.125-1.00	1.00	3.54	3.15	2.41	50-70	521255‡	**452.20**
CT40	GS 1-1/4	0.187-1.25	1.25	3.54	3.34	2.88	60-80	521257‡	**452.20**

‡ Not DIN Coolant

BT Taper Milling Chucks

- TIR 0.0004"
- AT2 Taper Accuracy
- RFID chip hole



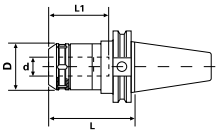
RETENTION KNOB PG G11 | WRENCH PG G39 | COLLETS PG G39

Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
BT30								
BT30	GS 3/4	0.125-0.750	0.750	3.55	3.15	2.05	532096‡	**526.68**
BT40								
BT40	GS 3/4	0.125-0.750	0.750	4.14	3.15	2.05	532098	**526.68**
BT40	GS 3/4	0.125-0.750	0.750	4.73	3.15	2.05	532100	**526.68**
BT40	GS 1	0.125-1.00	1.00	4.14	3.15	2.41	532102	**526.68**
BT40	GS 1-1/4	0.187-1.25	1.25	4.14	3.34	2.88	532104	**526.68**
BT50								
BT50	GS 1-1/4	0.187-1.25	1.25	4.20	3.34	2.88	532113	**677.16**

‡ Not DIN Coolant

CAT50 Milling Chucks

- DIN coolant through the flange at no extra charge
- Rough milling or 'hogging' operations
- Improved tool life over regular end mill holders
- '360°' gripping contact
- Extreme rigidity over taper collets
- TIR, 0.0002"
- AT2 Taper Accuracy
- RFID chip hole



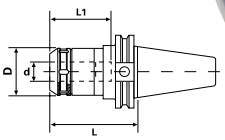
RETENTION KNOB PG G11 | WRENCH PG G39 | COLLETS PG G39

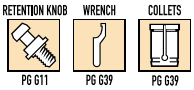
Taper	Collet Series	Collet Range	d	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT50	GS 3/4	0.125-0.750	0.750	4.14	3.15	2.05	50-70	531260	**677.16**
CT50	GS 3/4	0.125-0.750	0.750	5.32	3.15	2.05	50-70	531262	**688.05**
CT50	GS 3/4	0.125-0.750	0.750	6.49	3.15	2.05	50-70	531263	**688.05**
CT50	GS 1	0.125-1.00	1.00	4.14	3.15	2.41	50-70	531264	**677.16**
CT50	GS 1-1/4	0.187-1.25	1.25	3.54	4.73	2.88	60-80	531265	**677.16**
CT50	GS 1-1/4	0.187-1.25	1.25	4.14	4.73	2.88	60-80	531266	**677.16**
CT50	GS 1-1/4	0.187-1.25	1.25	5.32	4.73	2.88	60-80	531268	**688.05**
CT50	GS 1-1/4	0.187-1.25	1.25	6.49	4.73	2.88	60-80	531269	**688.05**

CAT50 DUAL CONTACT Milling Chucks

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life
- DIN coolant through the flange at no extra charge
- Rough milling or 'hogging' operations
- Improved tool life over regular end mill holders
- '360°' gripping contact
- Extreme rigidity over taper collets
- TIR, 0.0002"
- RFID chip hole
- AT2 Taper Accuracy

FOR DUAL CONTACT SPINDLES



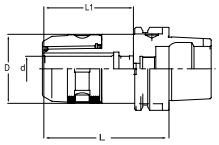


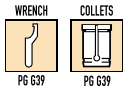
Taper	Collet Series	Collet Range	d	L	L1	D	Tightening Torque (Nm)	Code No.	Price $
CT50	GS 1-1/4	0.187-1.25	1.25	4.14	4.73	2.88	50-70	521266	**581.40**

HSK Milling Chucks

HSK Advantages:

- High rigidity and torque transmission (almost double the rigidity of V-flange holders)
- Extreme concentricity enhance tool life performance
- Coolant through capabilities
- TIR 0.0004"
- RFID chip hole
- AT2 Taper Accuracy





Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
HSK63A								
HSK63A	GS3/4	0.125-0.750	0.750	3.740	2.480	2.047	536154	**520.18**
HSK63A	GS1	0.125-1.000	1.000	5.118	3.150	2.362	536160	**691.05**
HSK63A	GS1-1/4	0.187-1.250	1.250	4.331	3.268	2.717	536162	**682.92**
HSK100A								
HSK100A	GS3/4	0.125-0.750	0.750	5.315	3.150	2.047	536170	**964.35**
HSK100A	GS32	3mm - 32mm	32mm	5.315	4.055	2.717	536180	**704.55**
HSK100A	GS2	1.000-2.000	2.000	4.921	3.543	4.134	536182	**1,262.50**

Milling Chuck Wrenches

Chuck Cap.	Code No.	Price $
3/4	534208	**43.26**
1	534210	**43.26**
1-1/4	534212	**43.26**

GS Milling Collets

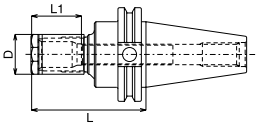
I.D.	GS 3/4" Code No.	Price $	GS 1" Code No.	Price $	GS 11/4" Code No.	Price $
Metric						
6mm	534668	**42.90**	534702	**42.90**	534740	**42.90**
7mm	534670	**42.90**	-	**-**	-	**-**
8mm	534672	**42.90**	534704	**42.90**	534742	**42.90**
10mm	534674	**42.90**	534706	**42.90**	534744	**42.90**
12mm	534676	**42.90**	534708	**42.90**	534746	**42.90**
14mm	534678	**42.90**	534710	**42.90**	534748	**42.90**
16mm	534680	**42.90**	534712	**42.90**	534750	**42.90**
18mm	-	**-**	534714	**42.90**	-	**-**
20mm	-	**-**	534716	**42.90**	534752	**42.90**
25mm	-	**-**	-	**-**	534754	**42.90**
Inch						
1/8	534650	**42.90**	534682	**42.90**	-	**-**
3/16	331469N	**42.90**	534684	**42.90**	331481N	**42.90**
1/4	331470N	**42.90**	534686	**42.90**	331482N	**42.90**
5/16	331472N	**42.90**	534688	**42.90**	331484N	**42.90**
3/8	331474N	**42.90**	534690	**42.90**	331486N	**42.90**
7/16	534660	**42.90**	534692	**42.90**	534726	**42.90**
1/2	331476N	**42.90**	534694	**42.90**	331488N	**42.90**
9/16	331477N	**42.90**			331489N	**42.90**
5/8	331478N	**42.90**	534696	**42.90**	331490N	**42.90**
3/4	-	**-**	534698	**42.90**	331492N	**42.90**
7/8	-	**-**	-	**-**	331494N	**42.90**
1	-	**-**	-	**-**	331496N	**42.90**

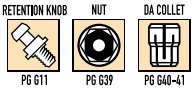
Replacement DA Chuck Nuts

Description	Code No.	Price $
DA100, Complete Replacement	534264	**68.55**
DA180 Nut, Complete Replacement	534270	**71.07**
DA200 Nut, Complete Replacement	534276	**68.21**
DA300 Nut, Complete Replacement	534277	**71.07**

CAT40 DA Collet Chucks

- DIN coolant through the flange
- All ground body
- AT2 Taper Accuracy
- TIR 0.0010"
- RFID chip hole



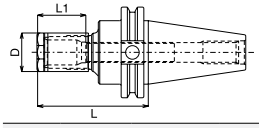


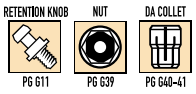
PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Nut Tightening Torque (ft. lbs.)	Code No.	Price $
CT40	DA100	3/64-9/16	3.50	1.15	1.06	35	531270	**164.58**
CT40	DA100	3/64-9/16	6.00	1.15	1.06	35	531272	**177.05**
CT40	DA180	3/64-3/4	4.00	1.50	1.44	40	531273	**164.58**
CT40	DA180	3/64-3/4	6.00	1.50	1.44	40	531274	**177.05**
CT40	DA200	3/64-3/8	3.00	1.03	0.86	30	531275	**164.58**
CT40	DA300	3/64-1/4	3.00	0.84	0.55	25	531276	**158.29**

CAT50 DA Collet Chucks

- DIN coolant through the flange
- All ground body
- AT2 Taper Accuracy
- TIR 0.0010"
- RFID chip hole



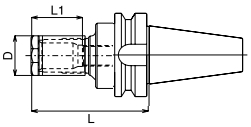


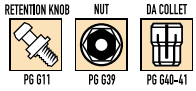
PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Nut Tightening Torque (ft. lbs.)	Code No.	Price $
CT50	DA180	3/64-3/4	4.00	1.50	1.44	40	531278	**231.19**
CT50	DA180	3/64-3/4	6.00	1.50	1.44	40	531280	**231.19**

BT30 DA Collet Chucks

- All ground body
- AT2 Taper Accuracy
- TIR 0.0010"
- RFID chip hole



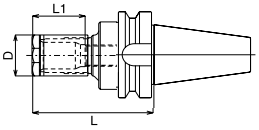


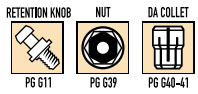
PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Nut Tightening Torque (ft. lbs.)	Code No.	Price $
BT30	DA100	3/64-9/16	3.00	1.15	1.06	35	532108	**156.57**
BT30	DA180	3/64-3/4	3.00	1.51	1.44	40	532110	**156.57**
BT30	DA200	3/64-3/8	3.00	1.03	0.86	30	532112	**156.57**
BT30	DA300	3/64-1/4	3.00	1.04	0.55	25	532125	**158.29**

BT40 DA Collet Chucks

- DIN coolant through the flange
- All ground body
- AT2 Taper Accuracy
- TIR 0.0010"
- RFID chip hole

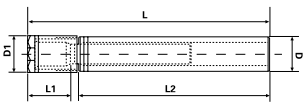




PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	L	L1	D	Nut Tightening Torque (ft. lbs.)	Code No.	Price $
BT40	DA100	3/64-9/16	6.00	1.15	1.06	35	532118	**194.80**
BT40	DA180	3/64-3/4	4.00	1.51	1.44	40	532120	**181.06**
BT40	DA180	3/64-3/4	6.00	1.51	1.44	40	532122	**194.80**
BT40	DA200	3/64-3/8	3.00	1.03	0.86	30	532124	**181.06**

DA Collet Chuck Extensions



Collet Series	Collet Range	Shank Dia. (D)	O.A.L. L	L1	L2	D1	Code No.	Price $
DA100	3/64-9/16	1	5.00	1.66	3.00	1.06	534220	**162.98**
DA100	3/64-9/16	1	7.50	1.66	5.50	1.06	534222	**179.00**
DA180	3/64-3/4	1-1/4	5.00	1.83	3.00	1.44	534224	**160.58**
DA180	3/64-3/4	1-1/4	7.50	1.83	5.50	1.44	534226	**179.00**
DA200	3/64-3/8	3/4	4.50	1.34	3.00	0.86	534228	**164.46**
DA200	3/64-3/8	3/4	7.00	1.34	5.50	0.86	534230	**179.00**
DA300	3/64-1/4	1/2	6.80	1.30	5.50	0.51	534232	**126.53**

Backup Screws For DA Collet Chucks

Description	Code No.	Price $
DA180 Replacement Backup Screws	534288	**17.63**

DA100 Collets

- Collapse - 1/32"
- 0.001" TIR collet accuracy
- Made from 4140 alloy steel for improved strength, hardness, wear resistance, and corrosion resistance
- For most drilling, reaming and tapping applications

Fractional Inch	Decimal (in.)	Code No.	Price $
3/64	0.047	331323	**14.68**
1/16	0.062	331325	**14.68**
5/64	0.078	331327	**14.68**
3/32	0.094	331329	**14.68**
7/64	0.109	331333	**14.68**
1/8	0.125	331335	**14.68**
9/64	0.141	331337	**14.68**
5/32	0.156	331339	**14.68**
11/64	0.172	331341	**14.68**
3/16	0.188	331343	**14.68**
13/64	0.203	331345	**14.68**
7/32	0.219	331347	**14.68**
15/64	0.234	331349	**14.68**
1/4	0.250	331351	**14.68**
17/64	0.266	331353	**14.68**
9/32	0.281	331355	**14.68**
19/64	0.297	331357	**14.68**
5/16	0.312	331359	**14.68**
21/64	0.328	331503	**14.68**
11/32	0.344	331505	**14.68**
23/64	0.359	331507	**14.68**
3/8	0.375	331322	**14.68**
25/64	0.391	331509	**14.68**
13/32	0.406	331324	**14.68**
27/64	0.422	331511	**14.68**
7/16	0.438	331326	**14.68**
29/64	0.453	331513	**14.68**
15/32	0.469	331328	**14.68**
31/64	0.484	331515	**14.68**
1/2	0.500	331330	**14.68**
33/64	0.516	331517	**14.68**
17/32	0.531	331332	**14.68**
35/64	0.547	331519	**14.68**
9/16	0.562	331521	**14.68**

DA100 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA100	8pc	1/8-9/16 x 16ths	331356	**117.42**
DA100	11pc	1/4-9/16 x 32nds	331358	**161.45**
DA100	15pc	1/8-9/16 x 32nds	331362	**220.16**
DA100	17pc	1/16-9/16 x 32nds	331384	**249.52**
DA100	21pc	1/4-9/16 x 64ths	331385	**308.23**
DA100	29pc	1/8-9/16 x 64ths	331386	**425.65**
DA100	33pc	1/16-9/16 x 64ths	331387	**484.36**

DA180 Collets

- Collapse - 1/32"
- 0.001" TIR collet accuracy
- Made from 4140 alloy steel for improved strength, hardness, wear resistance, and corrosion resistance
- For most drilling, reaming and tapping applications

Fractional Inch	Decimal (in.)	Code No.	Price $
3/64	0.046	331523	**18.75**
1/16	0.062	331525	**18.75**
5/64	0.078	331527	**18.75**
3/32	0.094	331529	**18.75**
7/64	0.109	331533	**18.75**
1/8	0.125	331535	**18.75**
9/64	0.141	331537	**18.75**
5/32	0.156	331539	**18.75**
11/64	0.172	331541	**18.75**
3/16	0.188	331543	**18.75**
13/64	0.203	331545	**18.75**
7/32	0.219	331547	**18.75**
15/64	0.234	331549	**18.75**
1/4	0.250	331551	**18.75**
17/64	0.266	331553	**18.75**
9/32	0.281	331555	**18.75**
19/64	0.297	331557	**18.75**
5/16	0.312	331559	**18.75**
21/64	0.328	331561	**18.75**
11/32	0.344	331563	**18.75**
23/64	0.359	331565	**18.75**
3/8	0.375	331567	**18.75**
25/64	0.391	331569	**18.75**
13/32	0.406	331571	**18.75**
27/64	0.422	331573	**18.75**
7/16	0.438	331575	**18.75**
29/64	0.453	331577	**18.75**
15/32	0.469	331579	**18.75**
31/64	0.484	331581	**18.75**
1/2	0.500	331583	**18.75**
33/64	0.516	331585	**18.75**
17/32	0.531	331587	**18.75**
35/64	0.547	331589	**18.75**
9/16	0.562	331334	**18.75**
37/64	0.578	331595	**18.75**
19/32	0.594	331336	**18.75**
39/64	0.609	331597	**18.75**
5/8	0.625	331338	**18.75**
41/64	0.641	331601	**18.75**
21/32	0.656	331340	**18.75**
43/64	0.672	331603	**18.75**
11/16	0.688	331342	**18.75**
45/64	0.703	331605	**18.75**
23/32	0.719	331344	**18.75**
47/64	0.734	331607	**18.75**
3/4	0.750	331346	**18.75**

DA180 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA180	9pc	1/4-3/4 x 16ths	331388	**168.79**
DA180	17pc	1/4-3/4 x 32nds	331389	**318.83**
DA180	21pc	1/8-3/4 x 32nds	331390	**393.85**
DA180	33pc	1/4-3/4 x 64ths	331391	**618.90**
DA180	41pc	1/8-3/4 x 64ths	331392	**768.94**

DA200 Collets

- Collapse - 1/32"
- 0.001" TIR collet accuracy
- Made from 4140 alloy steel for improved strength, hardness, wear resistance, and corrosion resistance
- For most drilling, reaming and tapping applications

Fractional Inch	Decimal (in.)	Code No.	Price $
3/64	0.047	331297	**14.68**
1/16	0.062	331299	**14.68**
5/64	0.078	331301	**14.68**
3/32	0.094	331303	**14.68**
7/64	0.109	331305	**14.68**
1/8	0.125	331307	**14.68**
9/64	0.141	331309	**14.68**
5/32	0.156	331311	**14.68**
11/64	0.172	331313	**14.68**
3/16	0.188	331315	**14.68**
13/64	0.203	331302	**14.68**
7/32	0.219	331304	**14.68**
15/64	0.234	331306	**14.68**
1/4	0.250	331308	**14.68**
17/64	0.266	331310	**14.68**
9/32	0.281	331312	**14.68**
19/64	0.297	331314	**14.68**
5/16	0.312	331316	**14.68**
21/64	0.328	331318	**14.68**
11/32	0.344	331320	**14.68**
23/64	0.359	331317	**14.68**
3/8	0.375	331319	**14.68**
25/64	0.391	331321	**14.68**

DA200 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA200	9pc	1/8-3/8 x 32nds	331393	**132.10**
DA200	11pc	1/16-3/8 x 32nds	331394	**161.45**
DA200	17pc	1/8-3/8 x 64ths	331395	**249.52**
DA200	21pc	1/16-3/8 x 64ths	331396	**308.23**

DA300 Collets

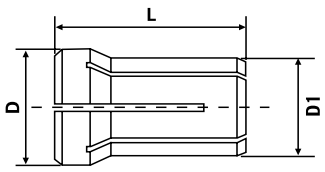
- Collapse - 1/32"
- 0.001" TIR collet accuracy
- Made from 4140 alloy steel for improved strength, hardness, wear resistance, and corrosion resistance
- For most drilling, reaming and tapping applications

Fractional Inch	Decimal (in.)	Code No.	Price $
3/64	0.047	331277	**14.68**
1/16	0.062	331283	**14.68**
5/64	0.078	331285	**14.68**
3/32	0.094	331287	**14.68**
7/64	0.109	331290	**14.68**
1/8	0.125	331292	**14.68**
9/64	0.141	331294	**14.68**
5/32	0.156	331296	**14.68**
11/64	0.172	331298	**14.68**
3/16	0.188	331300	**14.68**
13/64	0.203	331289	**14.68**
7/32	0.219	331291	**14.68**
15/64	0.234	331293	**14.68**
1/4	0.250	331295	**14.68**

DA300 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA300	7pc	1/16-1/4 x 32nds	331397	**102.74**
DA300	13pc	1/16-1/4 x 64ths	331399	**190.81**
DA300	14pc	3/64-1/4 x 64ths	331400	**205.49**

DA Collet Dimensional Data



Collet	D	D1	L	Collet Range
100DA	0.769	0.635	1.441	3/64-9/16
180DA	1.035	0.873	1.637	3/64-3/4
200DA	0.539	0.453	1.193	3/64-3/8
300DA	0.375	0.300	1.000	3/64-1/4

Type 25 & Type 32 Collet Chuck Sets

Set includes:
1 chuck, 1 wrench, 1 each collet and fitted case

Type 25
- 1/8", 3/16", 1/4", 5/16", 3/8", 1/2", 5/8", 3/4", 7/8", 1"

Type 32
- 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16",1", 1-1/8", 1-1/4"

Chuck	Code No.	Price $
COLLET SETS CONSIST OF 10 COLLETS 1/8" - 1" (TYPE 25)		
ISA-30	334600	**478.01**
ISA-40	334605	**478.01**
ISA-50	334608	**588.70**
M.T.3	334610	**478.01**
M.T.4	334615	**478.01**
R-8	334620	**478.01**
COLLET SETS CONSIST OF 15 COLLETS 1/4" - 1-1/4" (TYPE 32)		
ISA-40	334625	**1,159.79**
ISA-50	334630	**1,202.09**
M.T.5	334635	**1,200.24**

Component Parts For 1" Type 25 Sets

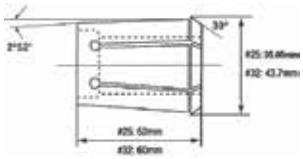
Description	Type 25	Code No.	Price $
Wrench	1 (Type 25)	334650	**11.75**
Nuts	1 (Type 25)	334645	**74.49**
Fitted Case	1 (Type 25)	334640	**22.40**
Chuck ISA-30	1 (Type 25)	334655	**220.95**
Chuck ISA-40	1 (Type 25)	334660	**220.95**
Chuck ISA-50	1 (Type 25)	334663	**303.81**
Chuck MT 3	1 (Type 25)	334665	**220.95**
Chuck MT 4	1 (Type 25)	334670	**220.95**
Chuck R-8	1 (Type 25)	334675	**220.95**

Component Parts For 1-1/4" Type 32 Sets

Description	Type 25	Code No.	Price $
Wrench	1-1/4 (Type 32)	334690	**31.97**
Nuts	1-1/4 (Type 32)	334685	**100.36**
Fitted Case	1-1/4 (Type 32)	334680	**22.40**
Chuck ISA-40	1-1/4 (Type 32)	334695	**303.81**
Chuck ISA-50	1-1/4 (Type 32)	334700	**359.05**
Chuck MT 5	1-1/4 (Type 32)	334705	**345.24**

Type 25 & Type 32 Collets

- Type 25 have a collapsability of 0.2mm
- Type 32 have a collapsability of 0.3mm



Size (in.)	Type 25 Code No.	Price $	Type 32 Code No.	Price $
Metric				
3 mm	336504	**27.07**	-	-
4 mm	336506	**27.07**	-	-
5 mm	336508	**27.07**	336549	**55.12**
6 mm	336510	**27.07**	336550	**55.12**
7 mm	336512	**27.07**	336552	**55.12**
8 mm	336514	**27.07**	336554	**55.12**
9 mm	336516	**27.07**	336556	**55.12**
10 mm	336518	**27.07**	336560	**55.12**
11 mm	336520	**27.07**	336562	**55.12**
12 mm	336522	**27.07**	336564	**55.12**
13 mm	336524	**27.07**	336566	**55.12**
14 mm	336526	**27.07**	336568	**55.12**
15 mm	336528	**27.07**	336570	**55.12**
16 mm	336530	**27.07**	336572	**55.12**
17 mm	336532	**27.07**	336574	**55.12**
18 mm	336534	**27.07**	336576	**55.12**
19 mm	336536	**27.07**	336578	**55.12**
20 mm	336538	**27.07**	336580	**55.12**
21 mm	336540	**27.07**	336582	**55.12**
22 mm	336542	**27.07**	336584	**55.12**
23 mm	336544	**27.07**	336586	**55.12**
24 mm	336546	**27.07**	336588	**55.12**
25 mm	336548	**27.07**	336590	**55.12**
26 mm	-	-	336592	**55.12**
28 mm	-	-	336596	**55.12**
29 mm	-	-	336597	**55.12**
30 mm	-	-	336598	**55.12**
32 mm	-	-	336600	**55.12**
Inch				
1/8	336400	**27.07**	-	-
3/16	336402	**27.07**	-	-
1/4	336404	**27.07**	336430	**55.12**
5/16	336406	**27.07**	336432	**55.12**
3/8	336408	**27.07**	336434	**55.12**
7/16	336409	**27.07**	336436	**55.12**
1/2	336410	**27.07**	336438	**55.12**
9/16	336411	**27.07**	336440	**55.12**
5/8	336412	**27.07**	336442	**55.12**
11/16	-	-	336444	**55.12**
3/4	336414	**27.07**	336446	**55.12**
13/16	-	-	336448	**55.12**
7/8	336416	**27.07**	336450	**55.12**
15/16	-	-	336452	**55.12**
1	336418	**27.07**	336454	**55.12**
1-1/8	-	-	336456	**55.12**
1-1/4	-	-	336458	**55.12**

Collet Rack

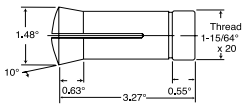
- Holds 5C, C32, or Type 25 collets
- 220x110x6mm
- Plastic

* Collets not included

Model	Code No.	Price $
VMS-5	325305	**28.09**

5C Collets

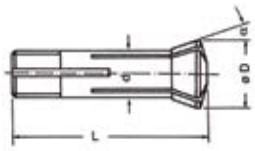
- Made of tool steel, hardened and ground to maintain original accuracy



Size (in.)	GS Code No.	Price $	STM Code No.	Price $
1/8	325317	**23.42**	325315	**11.27**
3/16	325322	**23.42**	325320	**11.27**
1/4	325327	**23.42**	325325	**11.27**
5/16	325332	**23.42**	325330	**11.27**
3/8	325337	**23.42**	325335	**11.27**
7/16	325342	**23.42**	325340	**11.27**
1/2	325347	**23.42**	325345	**11.27**
9/16	325354	**23.42**	325350	**11.27**
5/8	325357	**23.42**	325355	**11.27**
11/16	325362	**23.42**	325360	**11.27**
3/4	325367	**23.42**	325365	**11.27**
13/16	325372	**23.42**	325370	**11.27**
7/8	325377	**23.42**	325375	**11.27**
15/16	325382	**23.42**	325380	**11.27**
1	325387	**23.42**	325385	**11.27**

Emergency Type Collet

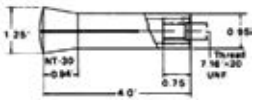
- Nylon
- Can be bored to custom internal diameters to hold unusual sized workpieces



Model	Length (mm)	D (mm)	d (mm)	Head Angle α	Code No.	Price $
VE-5CN	87	37.5	31.75	10°	325312	**51.18**

R8 Collets & Set

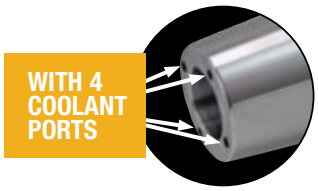
Manufactured of hardened and ground tool steel, these collets can be recommended for their accuracy and fine finish.



Size (in.)	GS Code No.	Price $	STM Code No.	Price $
1/8	325167	**23.42**	325165	**7.95**
5/32	325172	**23.42**	325170	**9.96**
3/16	325177	**23.42**	325175	**9.96**
7/32	325182	**23.42**	325180	**9.96**
1/4	325187	**23.42**	325185	**9.96**
9/32	325192	**23.42**	325190	**9.96**
5/16	325197	**23.42**	325195	**9.96**
11/32	325202	**23.42**	325200	**9.96**
3/8	325207	**23.42**	325205	**9.96**
13/32	325212	**23.42**	325210	**9.96**
7/16	325217	**23.42**	325215	**9.96**
15/32	325222	**23.42**	325220	**9.96**
1/2	325227	**23.42**	325225	**9.96**
9/16	325232	**23.42**	325230	**9.96**
19/32	325237	**23.42**	325235	**9.96**
5/8	325242	**23.42**	325240	**9.96**
21/32	325247	**23.42**	325245	**9.96**
11/16	325252	**23.42**	325250	**9.96**
23/32	325257	**23.42**	325255	**9.96**
3/4	325262	**23.42**	325260	**9.96**

BALANCEABLE SHRINK FIT TOOLING

Requires a balancing machine

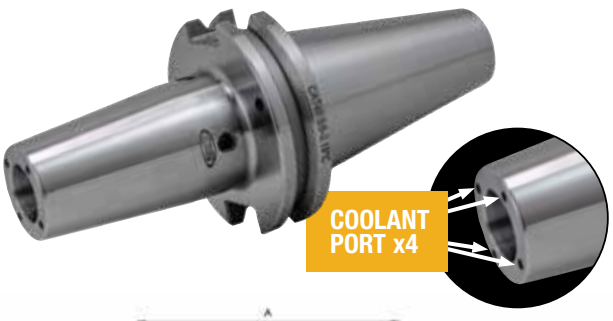


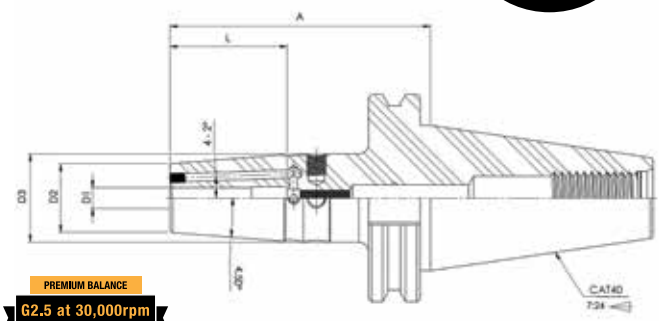
Features and Benefits

- With threaded holes on holders over 6mm I.D. in order to balance.
- Improved concentricity.
- Improved balance design with no moving pieces.
- Low Centrifugal Forces due to low holder mass.
- Maximum gripping power with exceptional concentricity.
- Concentricity 0.0001"/0.003mm
- Chip load distributed evenly along cutting edge of tool which results in longer tool life.
- Constructed of H13 Tool Steel for exceptional durability and cycle life. With proper use, toolholder life should exceed that of standard end mill holders.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Short projections are possible because no mechanical clamping devices are used. This results in greater rigidity and resistance to bending.
- Simple and fast to use. The total time elapsed to remove one cutting tool and insert another is less than 10 seconds.
- Through-spindle coolant capability.
- Coolant through holders require no special backup screws or seals. The fit between the I.D. of the tool holder and cutting tool shank forms the seal, preventing the coolant from flowing anywhere else except through the coolant ports. Coolant ports can be closed with a 3mm set screw. The use of Heat Shrink Tooling allows for greater speeds and feeds, better finishes, increased tool life, and increased productivity due to its High Speed Machining capability and simplicity of use.
- Note: No coolant ports or threaded balance holes on holders under 6mm I.D.

CAT40 Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced to G2.5 at 30,000rpm
- 4 threaded Coolant ports in the nose, can be closed with a 3mm set screw
- Maximum gripping power with exceptional concentricity
- TIR ≤0.0001" / 0.003mm
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole



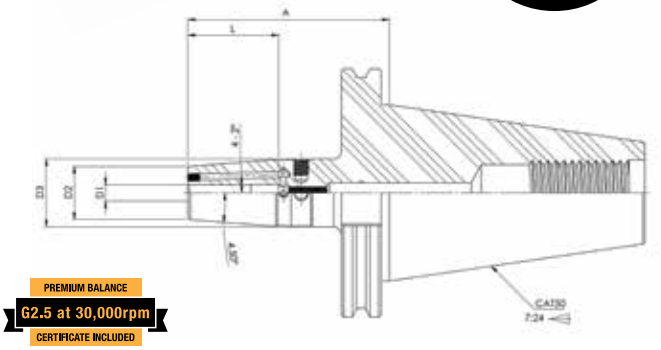


PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
CAT40	1/8"	3.15"	0.59"	0.787"	0.35"	541838	**301.50**
CAT40	3/16"	3.15"	0.59"	0.787"	0.47"	541840	**301.50**
CAT40	1/4"	3.15"	0.83"	1.06"	1.42"	541842	**301.50**
CAT40	1/4"	6.30"	0.83"	1.06"	1.42"	541844	**368.50**
CAT40	5/16"	3.15"	0.83"	1.06"	1.42"	541846	**301.50**
CAT40	5/16"	6.30"	0.83"	1.06"	1.42"	541848	**348.40**
CAT40	3/8"	3.15"	0.94"	1.26"	1.65"	541850	**301.50**
CAT40	3/8"	6.30"	0.94"	1.26"	1.65"	541852	**368.50**
CAT40	1/2"	3.15"	0.94"	1.26"	1.65"	541854	**301.50**
CAT40	1/2"	6.30"	0.94"	1.26"	1.65"	541856	**368.50**
CAT40	5/8"	3.15"	1.06"	1.34"	1.97"	541858	**301.50**
CAT40	3/4"	3.15"	1.30"	1.65"	2.05"	541862	**314.90**
CAT40	3/4"	6.30"	1.30"	1.65"	2.05"	541864	**395.30**
CAT40	1"	3.94"	1.73"	2.09"	2.28"	541866	**335.00**
CAT40	1"	6.30"	1.73"	2.09"	2.28"	541868	**395.30**
CAT40	1-1/4"	3.94"	1.73"	2.09"	2.28"	541870	**335.00**
CAT40	1-1/4"	6.30"	1.73"	2.09"	2.28"	541872	**395.30**
Metric							
CAT40	4mm	80mm	15mm	20mm	12mm	541802	**355.10**
CAT40	6mm	80mm	21mm	27mm	36mm	541806	**355.10**
CAT40	6mm	160mm	21mm	27mm	36mm	541808	**408.70**
CAT40	8mm	80mm	21mm	27mm	36mm	541810	**355.10**
CAT40	8mm	160mm	21mm	27mm	36mm	541812	**408.70**
CAT40	10mm	80mm	24mm	32mm	42mm	541814	**355.10**
CAT40	10mm	160mm	24mm	32mm	42mm	541816	**408.70**
CAT40	12mm	80mm	24mm	32mm	47mm	541818	**355.10**
CAT40	12mm	160mm	24mm	32mm	47mm	541820	**408.70**
CAT40	16mm	80mm	27mm	34mm	50mm	541822	**355.10**
CAT40	16mm	160m	27mm	34mm	50mm	541824	**408.70**
CAT40	20mm	80mm	33mm	42mm	52mm	541826	**317.58**
CAT40	25mm	100mm	44mm	53mm	58mm	541830	**395.30**
CAT40	32mm	100mm	44mm	53mm	58mm	541834	**395.30**

CAT50 Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced G2.5 at 30,000rpm
- 4 threaded Coolant ports in the nose, can be closed with a 3mm set screw
- Maximum gripping power with exceptional concentricity
- TIR ≤0.0001" / 0.003mm with tool shrunk in holder
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole

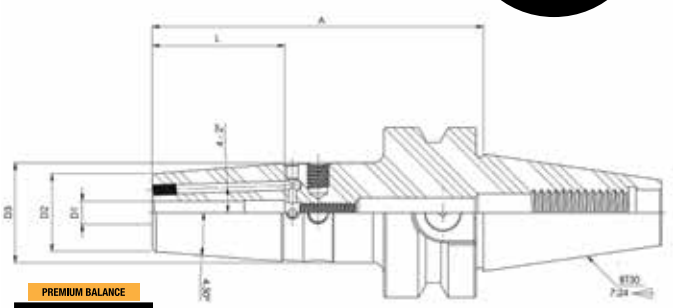


PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
CAT50	1/4"	3.15"	0.83"	1.06"	1.42"	541932	**302.84**
CAT50	1/4"	6.30"	0.83"	1.06"	1.42"	541934	**502.50**
CAT50	5/16"	3.15"	0.83"	1.06"	1.42"	541936	**302.84**
CAT50	3/8"	3.15"	0.94"	1.26"	1.65"	541940	**395.30**
CAT50	3/8"	6.30"	0.94"	1.26"	1.65"	541942	**502.50**
CAT50	1/2"	3.15"	1.06"	1.34"	1.65"	541944	**395.30**
CAT50	1/2"	6.30"	0.94"	1.26"	1.65"	541946	**502.50**
CAT50	5/8"	3.15"	1.06"	1.34"	1.97"	541948	**395.30**
CAT50	5/8"	6.30"	1.06"	1.34"	1.97"	541950	**502.50**
CAT50	3/4"	3.15"	1.30"	1.65"	2.05"	541952	**395.30**
CAT50	3/4"	6.30"	1.30"	1.65"	2.05"	541954	**502.50**
CAT50	1"	3.94"	1.73"	2.09"	2.28"	541956	**395.30**
CAT50	1"	6.30"	1.73"	2.09"	2.28"	541958	**502.50**
CAT50	1-1/4"	3.94"	1.73"	2.09"	2.28"	541960	**395.30**
CAT50	1-1/4"	6.30"	1.73"	2.09"	2.28"	541962	**529.30**
Metric							
CAT50	6mm	80mm	21mm	27mm	36mm	541900	**428.80**
CAT50	6mm	160mm	21mm	27mm	36mm	541902	**529.30**
CAT50	8mm	80mm	21mm	27mm	36mm	541904	**428.80**
CAT50	8mm	160mm	21mm	27mm	36mm	541906	**529.30**
CAT50	10mm	80mm	24mm	32mm	42mm	541908	**428.80**
CAT50	10mm	160mm	24mm	32mm	42mm	541910	**529.30**
CAT50	12mm	80mm	24mm	32mm	47mm	541912	**428.80**
CAT50	12mm	160mm	24mm	32mm	47mm	541914	**529.30**
CAT50	16mm	80mm	27mm	34mm	50mm	541916	**428.80**
CAT50	16mm	160mm	27mm	34mm	50mm	541918	**529.30**
CAT50	20mm	80mm	33mm	42mm	52mm	541920	**443.54**
CAT50	25mm	100mm	44mm	53mm	58mm	541924	**428.80**
CAT50	32mm	100mm	44mm	53mm	58mm	541928	**469.00**

BT30 Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced G2.5 at 30,000rpm
- 4 Coolant ports in the nose
- For maximum gripping power with exceptional concentricity
- TIR of ≤0.0001" / 0.003mm with tool shrunk in holder
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole



PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

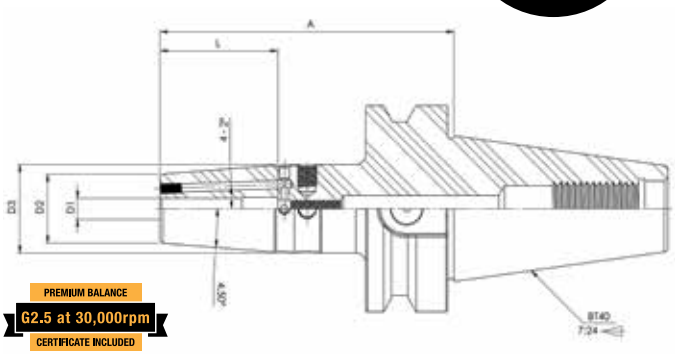
Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
BT30	1/8"	3.15"	0.39"		0.35"	542414	**314.90**
BT30	3/16"	3.15"	0.39"		0.47"	542416	**314.90**
BT30	1/4"	3.15"	0.83"	1.06"	1.42"	542418	**314.90**
BT30	3/8"	3.15"	0.94"	1.26"	1.65"	542422	**314.90**
BT30	1/2"	3.15"	0.94"	1.26"	1.65"	542424	**314.90**
Metric							
BT30	4mm	80mm	10mm		12mm	542402	**301.50**

Coolant Port Screws

Description	Code No.	Price $
4pcs per Package	541801	**4.50**

BT40 Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced G2.5 at 30,000rpm
- 4 Coolant ports in the nose
- For maximum gripping power with exceptional concentricity
- TIR of ≤0.0001" / 0.003mm with tool shrunk in holder
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole



PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

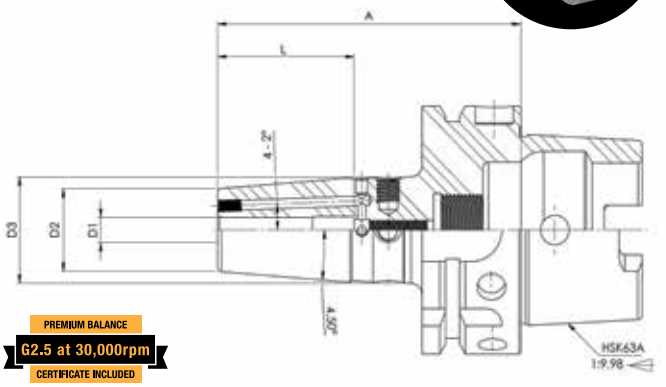
Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
BT40	3/16"	3.54"	0.39"		0.47"	542466	**335.00**
BT40	1/4"	3.54"	0.83"	1.06"	1.42"	542468	**335.00**
BT40	1/4"	6.30"	0.83"	1.06"	1.42"	542470	**381.90**
BT40	3/8"	3.54"	0.94"	1.26"	1.65"	542476	**335.00**
BT40	1/2"	3.54"	1.06"	1.34"	1.65"	542480	**335.00**
BT40	1/2"	6.30"	1.06"	1.34"	1.65"	542482	**381.90**
BT40	3/4"	3.54"	1.30"	1.65"	2.05"	542488	**335.00**
BT40	3/4"	6.30"	1.30"	1.65"	2.05"	542490	**381.90**
BT40	1"	3.94"	1.73"	2.09"	2.28"	542492	**335.00**
BT40	1-1/4"	3.94"	1.73"	2.09"	2.28"	542496	**355.10**
Metric							
BT40	6mm	90mm	21mm	27mm	36mm	542432	**301.50**
BT40	8mm	90mm	21mm	27mm	36mm	542436	**301.50**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

HSK63A Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced G2.5 at 30,000rpm
- 4 Coolant ports in the nose
- For maximum gripping power with exceptional concentricity
- TIR of ≤0.0001" / 0.003mm with tool shrunk in holder
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole

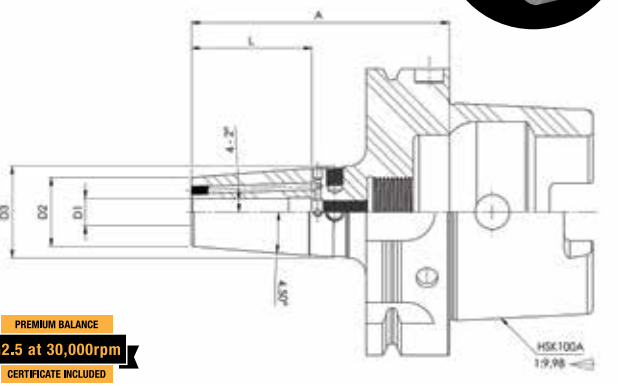


PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
HSK63A	1/8"	3.15"	0.59"	0.787"	0.35"	546338	**368.50**
HSK63A	3/16"	3.15"	0.59"	0.787"	0.47"	546340	**368.50**
HSK63A	1/4"	3.15"	0.826"	1.06"	1.42"	546342	**368.50**
HSK63A	1/4"	6.30"	0.83"	1.06"	1.42"	546344	**469.00**
HSK63A	5/16"	3.15"	0.826"	1.06"	1.42"	546346	**368.50**
HSK63A	3/8"	3.35"	0.94"	1.26"	1.65"	546350	**368.50**
HSK63A	3/8"	6.30"	0.94"	1.26"	1.65"	546352	**469.00**
HSK63A	1/2"	3.54"	1.06"	1.34"	1.65"	546354	**368.50**
HSK63A	1/2"	6.30"	1.06"	1.34"	1.65"	546356	**469.00**
HSK63A	5/8"	3.74"	1.06"	1.34"	1.97"	546358	**368.50**
HSK63A	5/8"	6.30"	1.06"	1.34"	1.97"	546360	**469.00**
HSK63A	3/4"	3.94"	1.30"	1.65"	2.05"	546362	**368.50**
HSK63A	3/4"	6.30"	1.30"	1.65"	2.05"	546364	**469.00**
HSK63A	1"	4.53"	1.73"	2.09"	2.28"	546366	**368.50**
HSK63A	1"	6.30"	1.73"	2.09"	2.28"	546368	**469.00**
HSK63A	1-1/4"	4.72"	1.73"	2.09"	2.28"	546370	**395.30**
HSK63A	1-1/4"	6.30"	1.73"	2.09"	2.28"	546372	**469.00**
Metric							
HSK63A	3mm	80mm	15mm	20mm		546300	**395.30**
HSK63A	4mm	80mm	15mm	20mm	12mm	546302	**395.30**
HSK63A	5mm	80mm	15mm	20mm	15mm	546304	**395.30**
HSK63A	6mm	80mm	21mm	27mm	36mm	546306	**395.30**
HSK63A	6mm	160mm	21mm	27mm	36mm	546308	**489.10**
HSK63A	8mm	80mm	21mm	27mm	36mm	546310	**395.30**
HSK63A	10mm	85mm	24mm	32mm	42mm	546314	**395.30**
HSK63A	12mm	90mm	24mm	32mm	47mm	546318	**395.30**
HSK63A	16mm	95mm	27mm	34mm	50mm	546322	**395.30**
HSK63A	20mm	100mm	33mm	42mm	52mm	546326	**395.30**
HSK63A	25mm	115mm	44mm	53mm	58mm	546330	**395.30**
HSK63A	32mm	120mm	44mm	53mm	58mm	546334	**395.30**

HSK100A Shrink Fit Holders With Coolant Ports

- Holders are balanceable with a balancing machine
- Balanced G2.5 at 30,000rpm
- 4 Coolant ports in the nose
- For maximum gripping power with exceptional concentricity
- TIR of ≤0.0001" / 0.003mm with tool shrunk in holder
- AT2 Taper Accuracy
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force
- Material: H13 Tool Steel
- The hot hardness (hot strength) of H13 resists thermal fatigue cracking which occurs as a result of cyclic heating and cooling cycles
- RFID chip hole



PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia. (D1)	Gage Length (A)	D2	D3	L	Code No.	Price $
Inch							
HSK100A	1/4"	3.35"	0.826"	1.06"	1.42"	546432	**569.50**
HSK100A	5/16"	3.35"	0.826"	1.06"	1.42"	546436	**569.50**
HSK100A	3/8"	3.54"	0.94"	1.26"	1.65"	546440	**569.50**
HSK100A	3/8"	6.30"	0.94"	1.26"	1.65"	546442	**603.00**
HSK100A	1/2"	3.74"	1.06"	1.34"	1.65"	546444	**569.50**
HSK100A	1/2"	6.30"	1.06"	1.34"	1.65"	546446	**603.00**
HSK100A	5/8"	3.94"	1.06"	1.34"	1.97"	546448	**569.50**
HSK100A	5/8"	6.30"	1.06"	1.34"	1.97"	546450	**603.00**
HSK100A	3/4"	4.13"	1.30"	1.65"	2.05"	546452	**569.50**
HSK100A	3/4"	6.30"	1.30"	1.65"	2.05"	546454	**603.00**
HSK100A	1"	4.53"	1.73"	2.09"	2.28"	546456	**569.50**
HSK100A	1"	6.30"	1.73"	2.09"	2.28"	546458	**603.00**
HSK100A	1-1/4"	4.72"	1.73"	2.09"	2.28"	546460	**569.50**
HSK100A	1-1/4"	6.30"	1.73"	2.09"	2.28"	546462	**603.00**

Right Angle Heads

RIGHT ANGLE HEADS

Right Angle Head (VRA-Type) G48

GS DRIVEN TOOLS

For DMG MORI, DOOSAN, HAAS & MAZAK Lathes G48

GS FIXED HEADS

GFX07 ER11 Fixed 90° Right Angle Heads G50
GFX07L ER11 Fixed 90° Right Angle Heads G51
GFX10 ER16 Fixed 90° Right Angle Heads G52
GFX10L ER16 Fixed 90° Right Angle Heads G53
GFX16 ER25 Fixed 90° Right Angle Heads G54
GFX16L ER25 Fixed 90° Right Angle Heads G55
GFX20 ER32 Fixed 90° Right Angle Heads G56
GFX20L ER32 Fixed 90° Right Angle Heads G57
GFX S40 Fixed 90° Right Angle Heads G58

GS PIVOTING HEADS

GPV13 ER20 Pivoting Angle Heads G59
GPV16 ER25 Pivoting Angle Heads G60
GPV20 ER32 Pivoting Angle Heads G61

Right Angle Head (VRA-Type)

1. Used on Vertical Milling Machine to make horizontal cutting work
2. Rigidity constructed suitable for heavy-duty cutting
3. The clamping bushing to suit milling machine

Suitable Milling Head Quill Diameter	Weight	Model No.	Code No.	Price $
85.725mm - 86mm	12 kgs	VRA-R8	326200	**1,350.88**
85.725mm - 86mm	13 kgs	VRA-NT 30	326202	**1,396.11**
105mm	20 kgs	VRA-NT 40	326204	**1,914.40**

DRIVEN TOOLS

2 Year Warranty
(against manufacturer defects)

Main Technical Features

- Main body designed to maximize rigidity and reduce vibration
- Specially treated corrosion resistant steel body
- Angular contact bearings + taper roller bearings on output spindle for better rigidity and longer life
- Gleason spiral bevel gears with completely ground involute form
- Internal coolant option
- Designed, manufactured and assembled in Italy
- 2 Year warranty against manufacturer defects

▼ Direction of rotation is opposite to the machine spindle

▼ Direction of rotation is the same as the machine spindle

Driven Tools For DMG MORI Lathes

Model	Orient	Rotation	Turret	Output	Int. Coolant	Nm	RPM	Gage Length	Code No.	Price $
99.MS.A59	Axial	▼	NL60	ER-32	-	60	10,000	Max 89.9	381504	**1,642.31**
99.MS.A60	Axial	▼	NL60	ER-32	• 80bar	60	10,000	Max 89.9	381505	**2,429.91**
99.MS.A72	Radial	▼	NL60	ER-32	-	60	10,000	90	381506	**3,519.18**
99.MS.A73	Radial	▼	NL60	ER-32	• 80bar	60	10,000	90	381507	**3,938.13**

Radial Axial

Driven Tools For DOOSAN Lathes

Model	Orient	Rotation	Turret	Output	Int. Coolant	Nm	RPM	Gage Length	Code No.	Price $
99.DS.A01	Axial	▼	BMT55	ER-25	-	40	8,000	57.2	381512	**1,424.43**
99.DS.A02	Axial	▼	BMT55	ER-25	• 80bar	40	8,000	57.2	381513	**1,633.91**
99.DS.A11	Radial	▼	BMT55	ER-25	-	40	8,000	70	381514	**2,681.28**
99.DS.A12	Radial	▼	BMT55	ER-25	• 80bar	40	8,000	70	381515	**3,167.33**
99.DS.A41	Axial	▼	BMT65	ER-32	-	70	6,000	72.5	381516	**1,675.80**
99.DS.A42	Axial	▼	BMT65	ER-32	• 70bar	70	6,000	72.5	381517	**1,927.17**
99.DS.A51	Radial	▼	BMT65	ER-32	-	70	6,000	72	381518	**2,815.37**
99.DS.A52	Radial	▼	BMT65	ER-32	• 70bar	70	6,000	72	381519	**3,334.91**

Radial Axial

Driven Tools For HAAS Lathes

Model	Orient	Rotation	Turret	Output	Int. Coolant	Nm	RPM	Gage Length	Code No.	Price $
99.HA.590082	Axial	▼	VDI40	ER-32	-	63	6,000	82.1	381500	**1,240.16**
99.HA.590082B	Axial	▼	VDI40	ER-32	• 25bar	63	6,000	82.1	381501	**1,550.12**
99.HA.590084	Radial	▼	VDI40	ER-32	-	63	6,000	Max. 75	381502	**2,329.43**
99.HA.590084B	Radial	▼	VDI40	ER-32	• 25bar	63	6,000	Max. 75	381503	**2,946.62**

Radial Axial

Driven Tools For MAZAK Lathes

Model	Orient	Rotation	Turret	Output	Int. Coolant	Nm	RPM	Gage Length	Code No.	Price $
99.MZ.A58	Offset-Axial	▼	QTN2-40	ER-32	-	80	6,000	50	381508	**2,178.54**
99.MZ.A59	Offset-Axial	▼	QTN2-40	ER-32	• 80bar	80	6,000	116	381509	**3,351.60**
99.MZ.A65	Radial	▼	QTN2-40	ER-32	-	80	6,000	130	381510	**2,328.06**
99.MZ.A66	Radial	▼	QTN2-40	ER-32	• 80bar	80	6,000	130	381511	**3,072.30**

Radial Offset Axial

Designed for Automatic Tool Change Machines

Design

The compact design, along with mentioned specifications allows for the highest performances, high speeds and long tool life

Case Hardened and ground shank and shaft

Positioning pin with automatic release

Modular anti-rotation group

Standard 10Bar coolant through pin

Graduated ring

Treated steel head body with 360° position andinternal air pressure, maximum rigidity and corrosion resistant. Minimum thermal expansion

Output

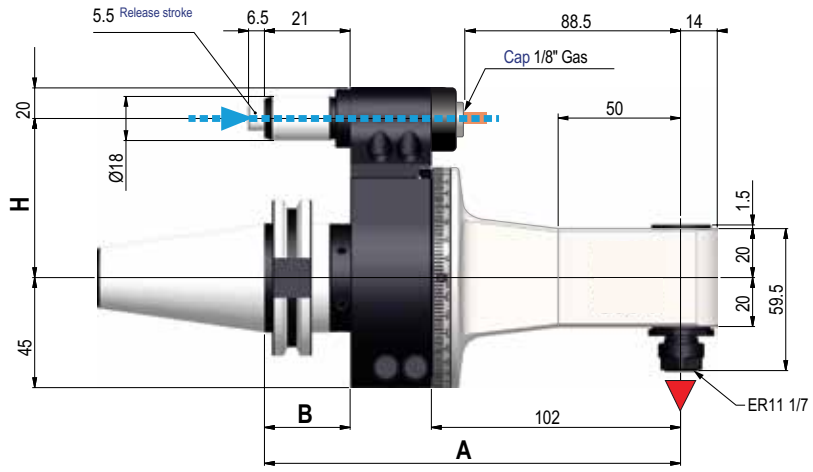
- ER Collet (Standard)
- Weldon
- Shell mill holder
- Special

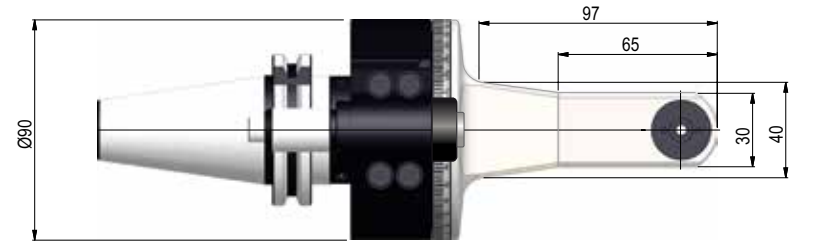
Angular contact preloaded ball bearings of precision class ABE 7/9

Gleason ground spiral bevel gears for maximum performance and minimum vibration

ANGLE HEADS ATC Series

GFX07





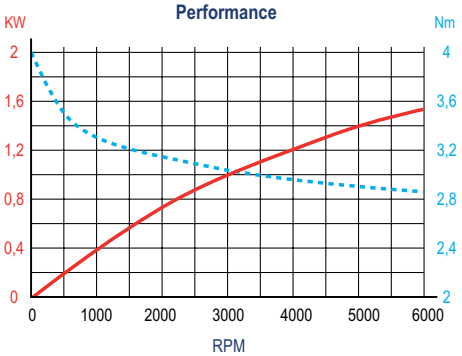
GFX07 ER11 Fixed 90° Right Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX07	ER11	170	35	65	7	M6	10,000	4	381002S	**5,015.87**
CAT50	GFX07	ER11	170	35	80	7	M6	10,000	4	381004S	**5,015.87**
BT40	GFX07	ER11	170	35	65	7	M6	10,000	4	381006S	**4,967.18**
BT50	GFX07	ER11	176	41	80	7	M6	10,000	4	381008S	**4,967.18**
HSK63	GFX07	ER11	177	42	65	7	M6	10,000	4	381010S	**5,240.66**
HSK100	GFX07	ER11	180	45	80	7	M6	10,000	4	381012S	**5,297.09**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX 7
Ratio		1:1
RPM Max		10,000
Max axial load	N	120
Torque	Nm	5
Weight	Kg.	4
Collet	mm	ER11 1mm-7mm

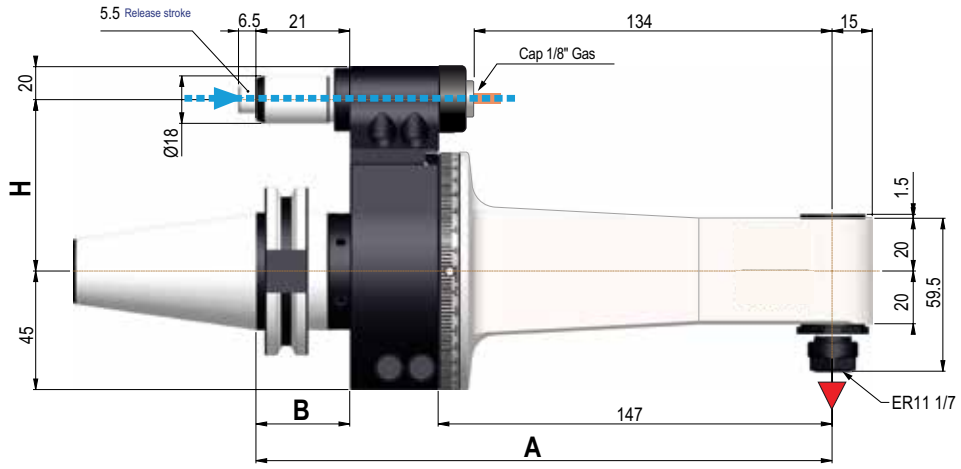


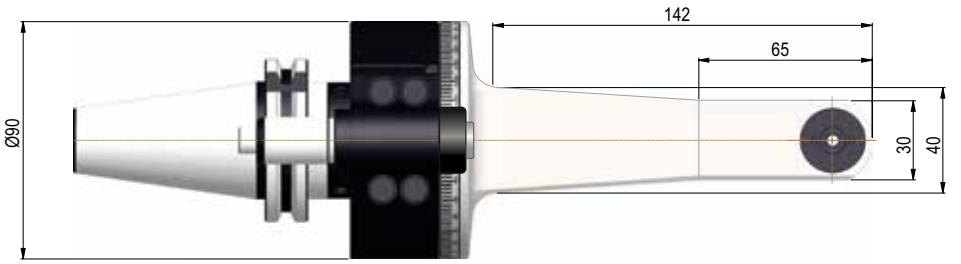
Standard Features & Equipment Included:

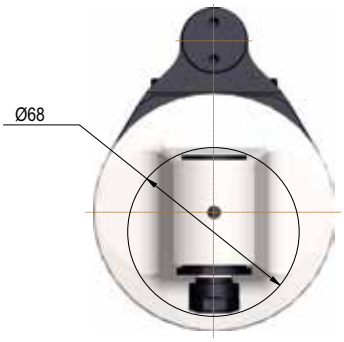
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GFX07L







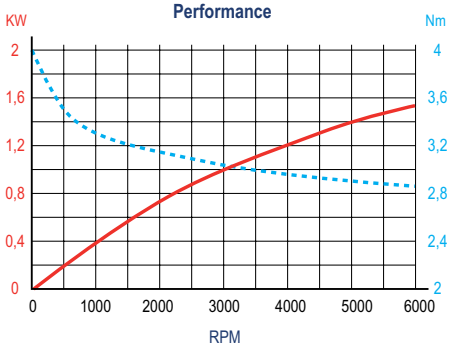
GFX07L ER11 Long Fixed 90° Right Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX07L	ER11	215	35	65	7	M6	10,000	4.3	381302S	**4,807.45**
CAT50	GFX07L	ER11	215	35	80	7	M6	10,000	4.3	381304S	**4,807.45**
BT40	GFX07L	ER11	215	35	65	7	M6	10,000	4.3	381306S	**4,807.45**
BT50	GFX07L	ER11	221	41	80	7	M6	10,000	4.3	381308S	**4,807.45**
HSK63	GFX07L	ER11	222	42	65	7	M6	10,000	4.3	381310S	**5,079.57**
HSK100	GFX07L	ER11	225	45	80	7	M6	10,000	4.3	381312S	**5,137.37**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX 7L
Ratio		1:1
RPM Max		10,000
Max axial load	N	120
Torque	Nm	5
Weight	Kg.	4.3
Collet	mm	ER11 1mm-7mm

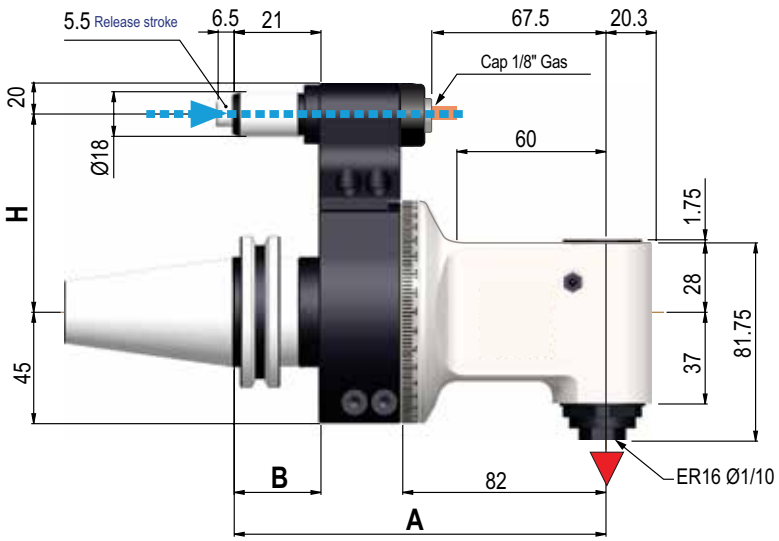


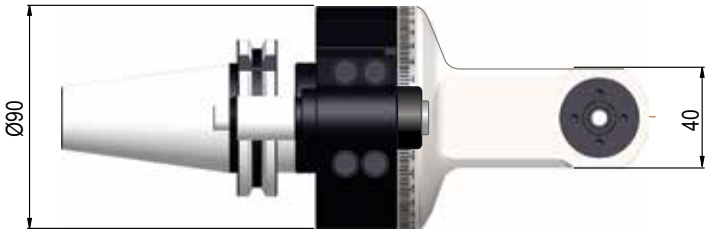
Standard Features & Equipment Included:

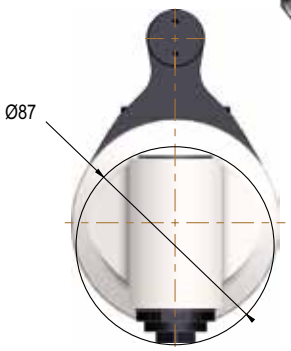
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GFX10







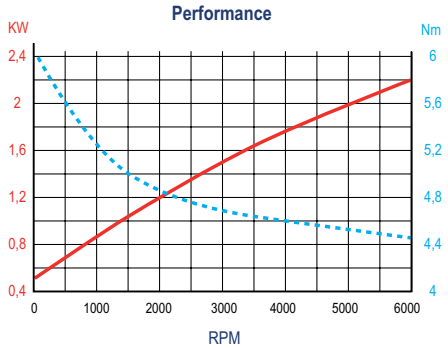
GFX10 ER16 Fixed 90° Right Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX10	ER16	150	35	65	10	M8	10,000	4.3	381020S	**4,079.96**
CAT50	GFX10	ER16	150	35	80	10	M8	10,000	4.3	381022S	**4,079.96**
BT40	GFX10	ER16	150	35	65	10	M8	10,000	4.3	381024S	**4,079.96**
BT50	GFX10	ER16	156	41	80	10	M8	10,000	4.3	381026S	**4,079.96**
HSK63	GFX10	ER16	157	42	65	10	M8	10,000	4.3	381028S	**4,354.32**
HSK100	GFX10	ER16	160	45	80	10	M8	10,000	4.3	381030S	**4,412.88**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX10L
Ratio		1:1
RPM Max		10,000
Max axial load	N	250
Torque	Nm	10
Weight	Kg.	4.3
Collet	mm	ER16 1mm-10mm

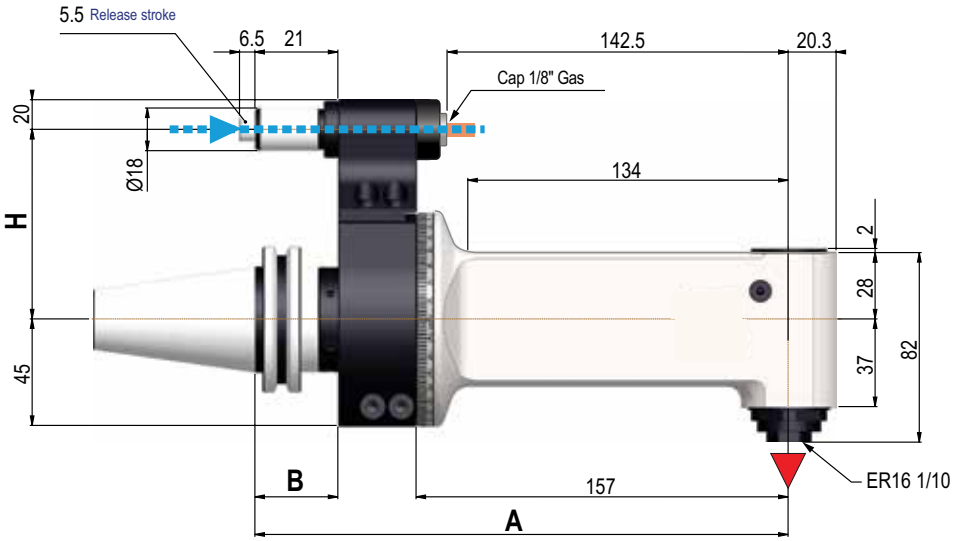


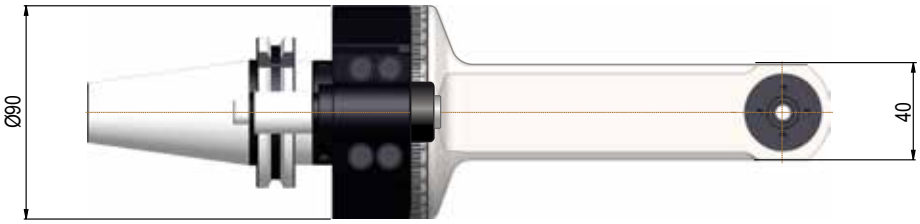
Standard Features & Equipment Included:

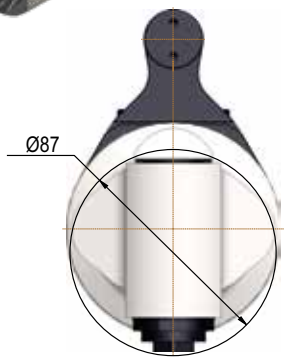
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GFX10L







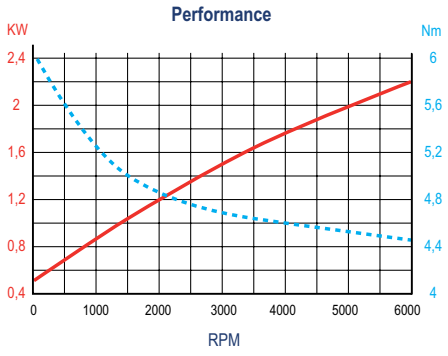
GFX10L ER 16 Long Fixed 90° Right Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX10L	ER16	225	35	65	10	M8	10,000	5.2	381320S	**5,025.97**
CAT50	GFX10L	ER16	225	35	80	10	M8	10,000	5.2	381322S	**5,025.97**
BT40	GFX10L	ER16	225	35	65	10	M8	10,000	5.2	381324S	**5,025.97**
BT50	GFX10L	ER16	231	41	80	10	M8	10,000	5.2	381326S	**5,025.97**
HSK63	GFX10L	ER16	232	42	65	10	M8	10,000	5.2	381328S	**5,298.11**
HSK100	GFX10L	ER16	235	45	80	10	M8	10,000	5.2	381330S	**5,353.75**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX10L
Ratio		1:1
RPM Max		10,000
Max axial load	N	250
Torque	Nm	10
Weight	Kg.	5.2
Collet	mm	ER16 1mm-10mm



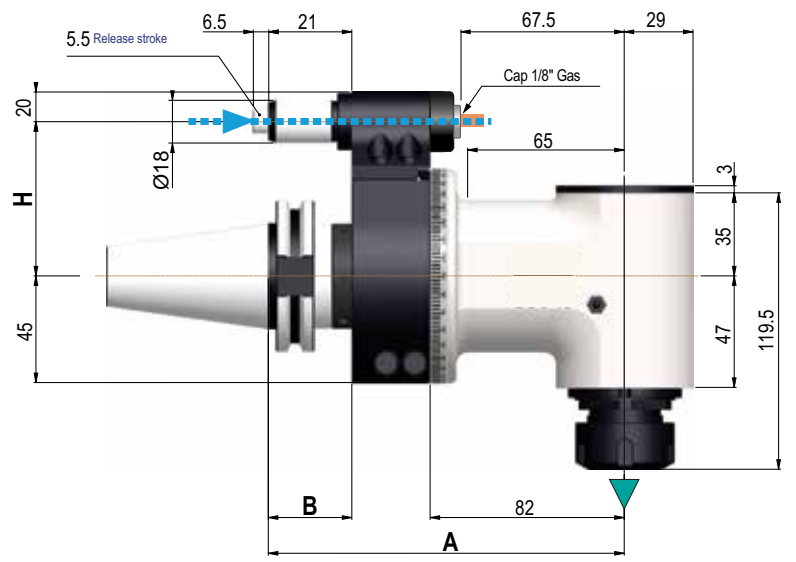
Standard Features & Equipment Included:

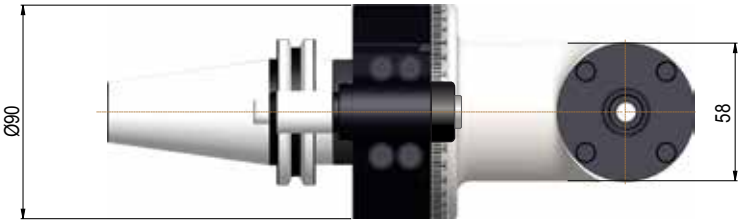
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

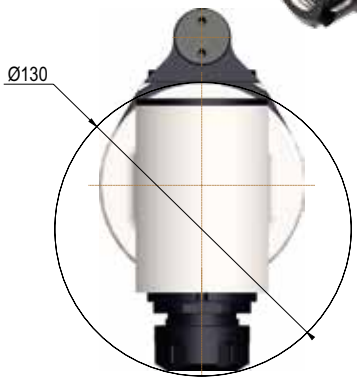
Tool Holding

ANGLE HEADS ATC Series

GFX16







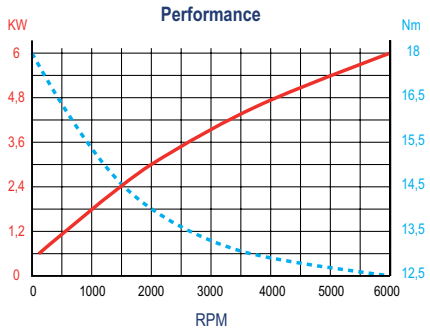
GFX16 ER25 Fixed 90° Right Angle Heads

▼ Direction of rotation is the same as the machine spindle

Taper	Model	System Collet	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX16	ER25	150	35	65	16	M12	8,000	5.4	381100S	**5,021.90**
CAT50	GFX16	ER25	150	35	80	16	M12	8,000	5.4	381102S	**5,021.90**
BT40	GFX16	ER25	150	35	65	16	M12	8,000	5.4	381104S	**5,021.90**
BT50	GFX16	ER25	156	41	80	16	M12	8,000	5.4	381106S	**5,021.90**
HSK63	GFX16	ER25	157	42	65	16	M12	8,000	5.4	381108S	**5,301.53**
HSK100	GFX16	ER25	160	45	80	16	M12	8,000	5.4	381110S	**5,359.97**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX16
Ratio		1:1
RPM Max		8,000
Max axial load	N	510
Torque	Nm	24
Weight	Kg.	5.4
Collet	mm	ER25 2mm-16mm

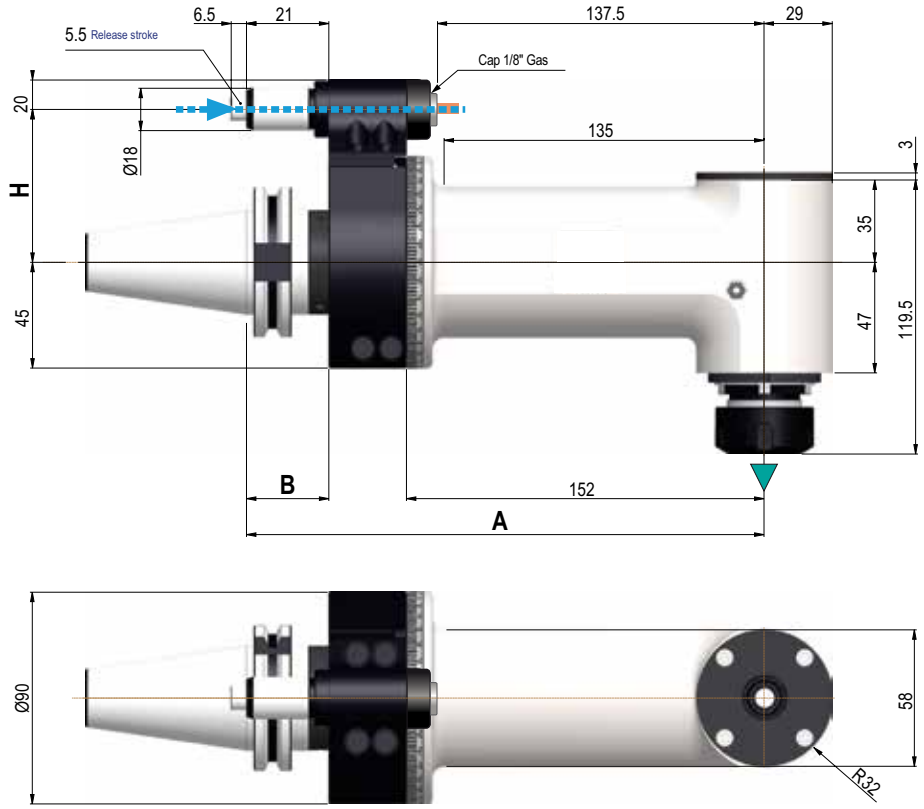


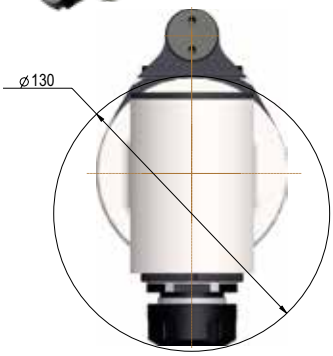
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GFX16L





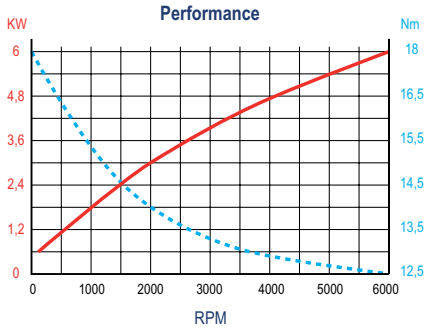
GFX16L ER25 Long Fixed 90° Right Angle Heads

▼ Direction of rotation is the same as the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GFX16L	ER25	220	35	65	16	M12	8,000	6.7	381400S	**6,041.90**
CAT50	GFX16L	ER25	220	35	80	16	M12	8,000	6.7	381402S	**6,041.90**
BT40	GFX16L	ER25	220	35	65	16	M12	8,000	6.7	381404S	**6,041.90**
BT50	GFX16L	ER25	226	41	80	16	M12	8,000	6.7	381406S	**6,041.90**
HSK63	GFX16L	ER25	227	42	65	16	M12	8,000	6.7	381408S	**6,312.90**
HSK100	GFX16L	ER25	230	45	80	16	M12	8,000	6.7	381410S	**6,371.78**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX16L
Ratio		1:1
RPM Max		8,000
Max axial load	N	510
Torque	Nm	24
Weight	Kg.	6.7
Collet	mm	ER25 2mm-16mm



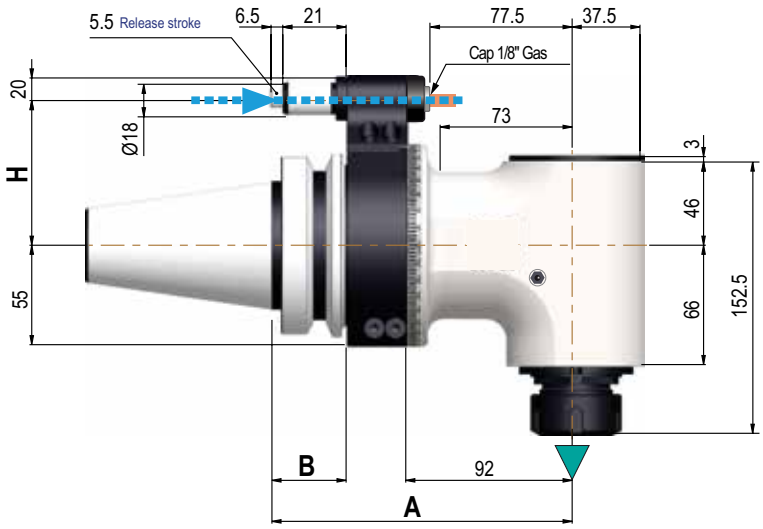
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

Tool Holding

ANGLE HEADS ATC Series

GFX20



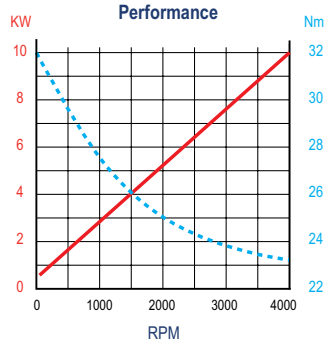
GFX20 ER32 Fixed 90° Right Angle Head

▼ Direction of rotation is the same as the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT50	GFX20	ER32	160	35	80	20	M16	4,000	11	381148S	**5,259.84**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

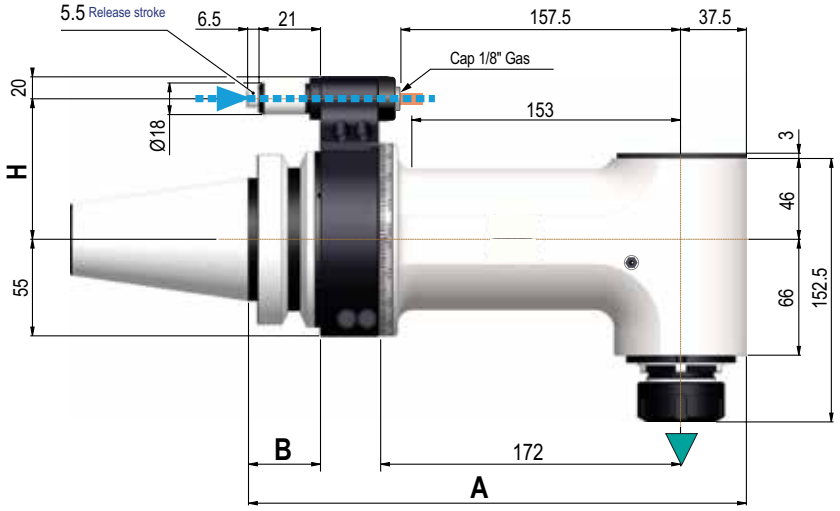
Technical Data		GFX20
Ratio		1:1
RPM Max		4,000
Max axial load	N	1250
Torque	Nm	40
Weight	Kg.	11
Collet	mm	ER32 2.5mm-20mm

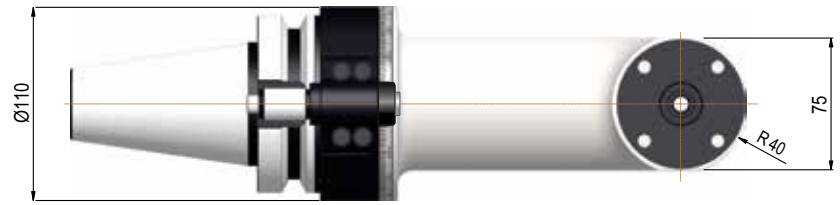


Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

GFX20L





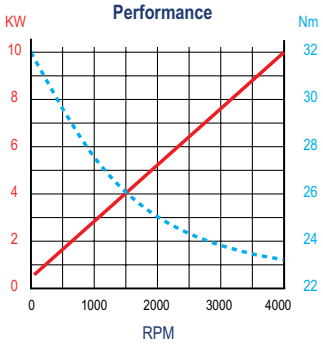
GFX20L ER32 Long Fixed 90° Right Angle Head

▼ Direction of rotation is the same as the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT50	GFX20L	ER32	240	35	80	20	M16	4,000	13.8	381448S	**6,477.89**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX20L
Ratio		1:1
RPM Max		4,000
Max axial load	N	1250
Torque	Nm	40
Weight	Kg.	13.8
Collet	mm	ER32 2.5mm-20mm

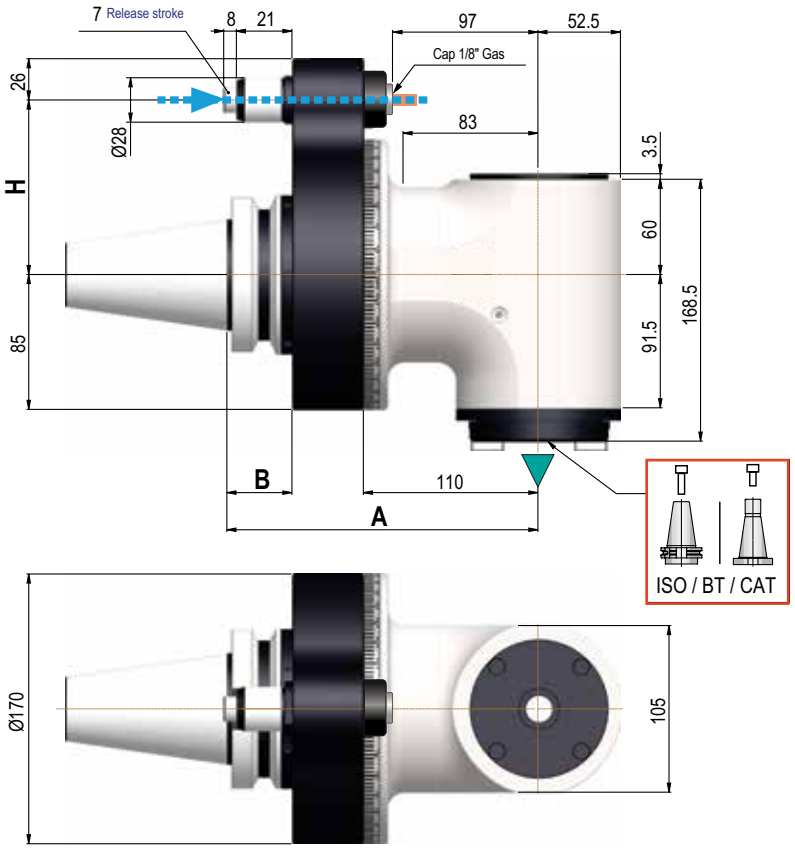


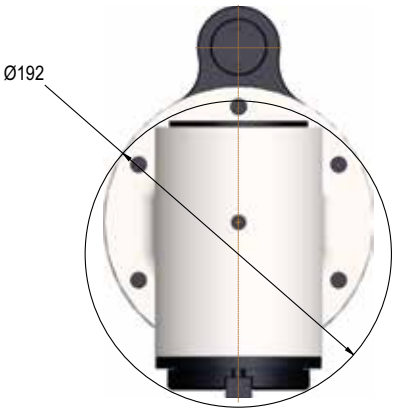
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GFXS40





Note: Accepts CAT40, BT40, SK40 and NMTB 40 Taper Tooling

GFX S40 Fixed 90° Right Angle Heads

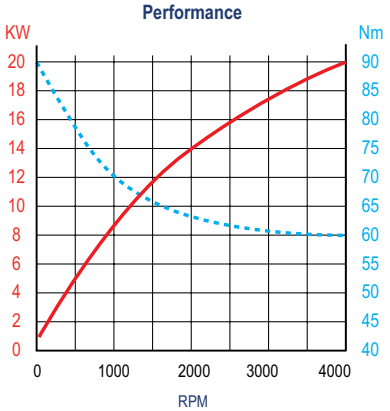
▼ Direction of rotation is the same as the machine spindle

Taper	Model	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT50	GFX S40	190	35	110	26	M20	4,000	22	381121S	**5,884.40**
BT50	GFX S40	196	41	110	26	M20	4,000	22	381123S	**7,649.72**
HSK100	GFX S40	200	45	110	26	M20	4,000	22	381125S	**8,123.43**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GFX S40
Ratio		1:1
RPM Max		4,000
Max axial load	N	1800
Torque	Nm	140
Weight	Kg.	22
Drill / Tap	mm	26mm/M20

Performance

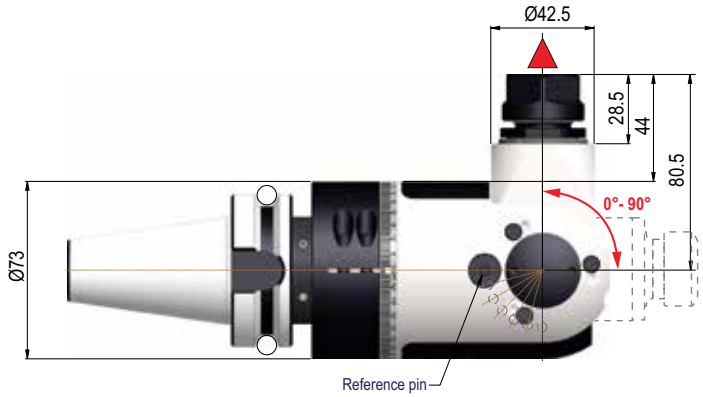


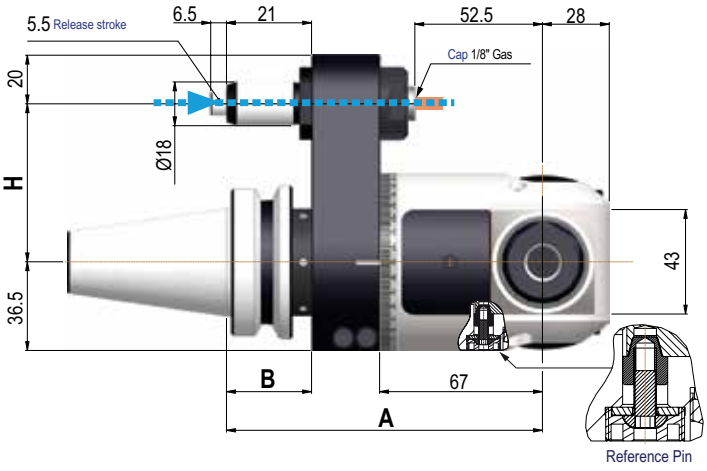
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GPV13





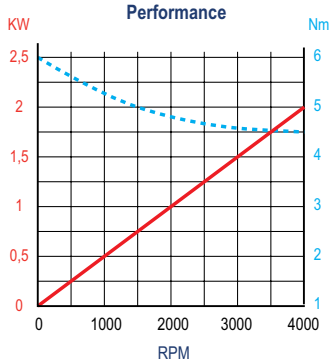
GPV13 ER 20 Pivoting Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GPV13	ER20	130	35	65	13	M10	4,000	4.2	381198S	**5,592.59**
CAT50	GPV13	ER20	130	35	80	13	M10	4,000	4.2	381200S	**5,592.59**
BT40	GPV13	ER20	130	35	65	13	M10	4,000	4.2	381202S	**5,592.59**
BT50	GPV13	ER20	136	41	80	13	M10	4,000	4.2	381204S	**5,592.59**
HSK63	GPV13	ER20	137	42	65	13	M10	4,000	4.2	381206S	**4,518.22**
HSK100	GPV13	ER20	140	45	80	13	M10	4,000	4.2	381208S	**5,930.65**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GPV13
Ratio		1:1
RPM Max		4,000
Max axial load	N	450
Torque	Nm	6
Weight	Kg.	4.2
Collet	mm	ER20 1mm-13mm

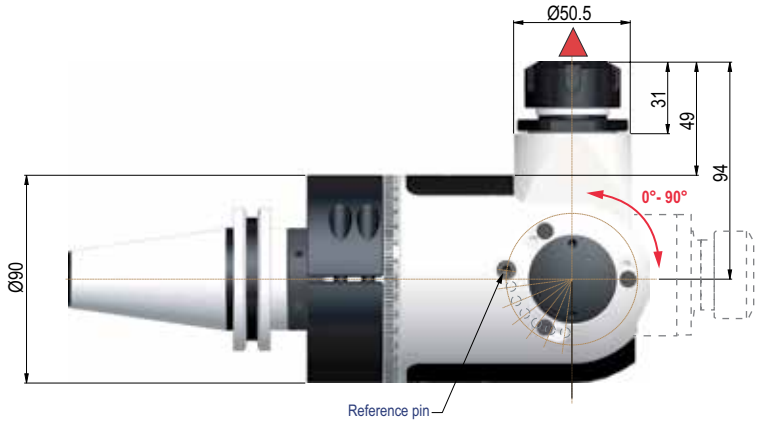


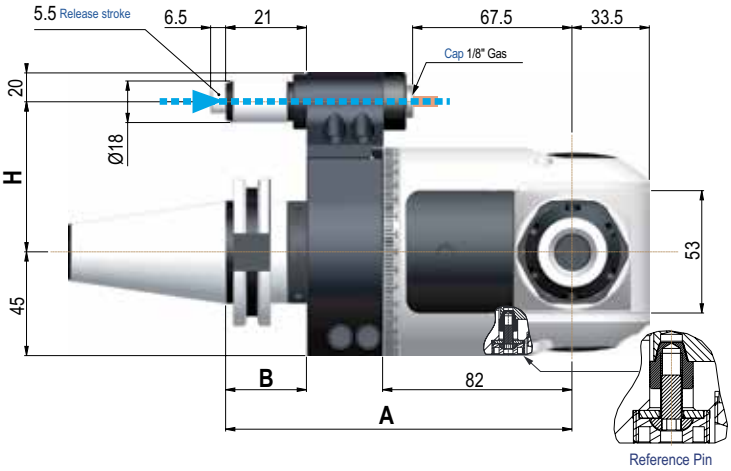
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

ANGLE HEADS ATC Series

GPV16





GPV16 ER25 Pivoting Angle Heads

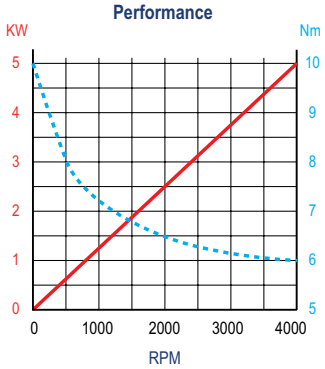
▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT40	GPV16	ER25	150	35	65	16	M12	4,000	6.8	381270S	**5,884.89**
CAT50	GPV16	ER25	150	35	80	16	M12	4,000	6.8	381272S	**5,884.89**
BT40	GPV16	ER25	150	35	65	16	M12	4,000	6.8	381274S	**5,884.89**
BT50	GPV16	ER25	156	41	80	16	M12	4,000	6.8	381276S	**5,884.89**
HSK63	GPV16	ER25	157	42	65	16	M12	4,000	6.8	381278S	**6,164.53**
HSK100	GPV16	ER25	160	45	80	16	M12	4,000	6.8	381280S	**6,222.96**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GPV16
Ratio		1:1
RPM Max		4,000
Max axial load	N	480
Torque	Nm	18
Weight	Kg.	6.8
Collet	mm	ER25 2mm-16mm

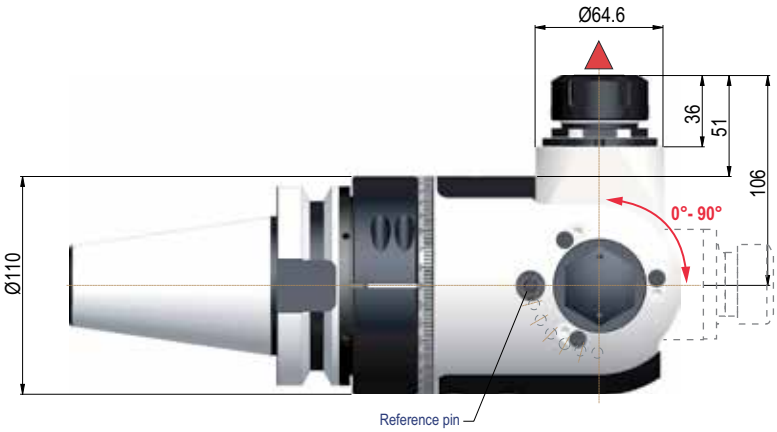
Performance

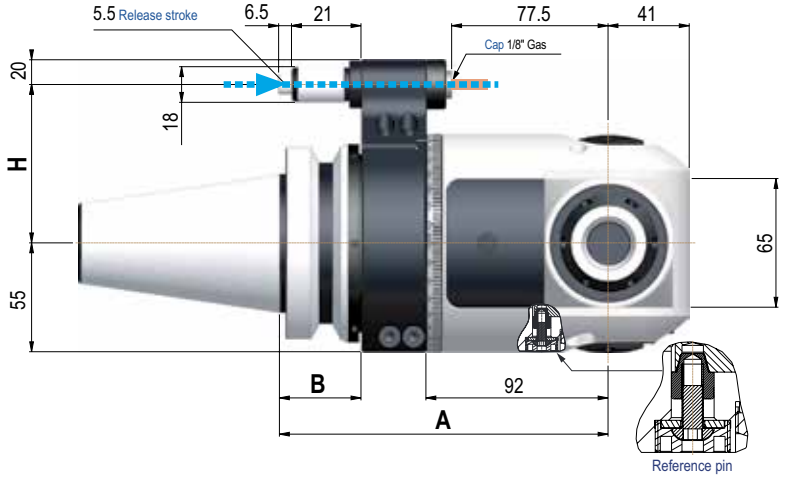


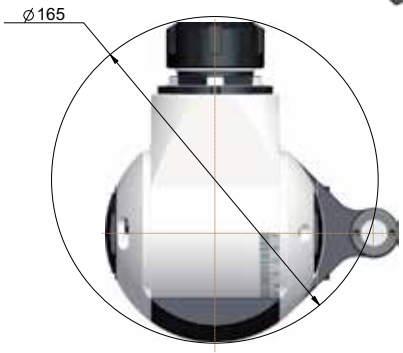
Standard Features & Equipment Included:

- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

GPV20







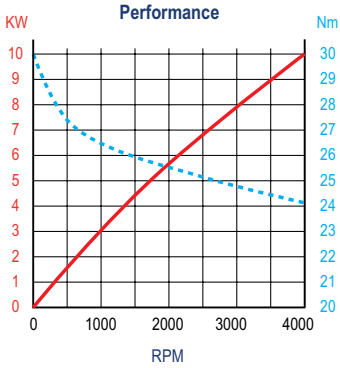
GPV20 ER32 Pivoting Angle Heads

▼ Direction of rotation is opposite to the machine spindle

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max RPM	Weight (Kg.)	Code No.	Price $
CAT50	GPV20	ER32	160	35	80	20	M16	4,000	13	381150S	**6,182.81**
BT50	GPV20	ER32	166	41	80	20	M16	4,000	13	381154S	**6,182.81**
HSK100	GPV20	ER32	170	45	80	20	M16	4,000	13	381158S	**6,514.35**

Other tapers available, please inquire.
* For Haas machines please contact Customer Service

Technical Data		GPV20
Ratio		1:1
RPM Max		4,000
Max axial load	N	715
Torque	Nm	32
Weight	Kg.	13
Collet	mm	ER32 3mm-20mm



Standard Features & Equipment Included:

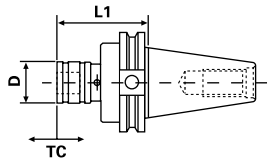
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book and Inspection report

Tapping Chucks & Collets

CAT Taper Tension/Compression & Rigid Tap Holders G63
BT Taper Tension/Compression & Rigid Tap Holders G63
HSK Tension/Compression & Rigid Tap Holders G64
NMTB Taper Tension/Compression Tap Holders G64
Weldon Shank Tension/Compression & Rigid Tap Holders G64
Straight Shank Tension/Compression Tap Holders G64
Straight Shank T/C & Rigid Tapping Chuck G64
Morse Taper Tension/Compression Tap Holders G65
Torque Control Tap Collets & Sets G65
Positive Drive Tap Collets, Reducers & Sets G65
Synchrolize Tapping System G66-67
Air Tapping Units G67

CAT Taper Tension/ Compression Tap Holders

- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds
- Smooth stroke - even under full torque load, the tension-compression stroke is full and free
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole

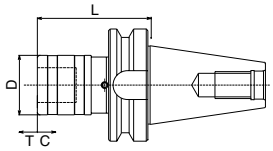


RETENTION KNOB PG G11 COLLETS PG G65

Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	T/C (in.)	Code No.	Price $
CT40	#0-9/16	1/8	#1	2.93	1.43	0.29/0.29	531543	**372.24**
CT40	#0-9/16	1/8	#1	4.00	1.43	0.29/0.29	531540	**372.24**
CT40	#0-9/16	1/8	#1	4.47	1.25	0.79/0.39	531542	**372.24**
CT40	5/16-7/8	1/4-1/2	#2	4.50	2.09	0.49/0.49	531544	**420.75**
CT40	5/16-7/8	1/4-1/2	#2	6.66	2.00	0.85/0.49	531546	**404.01**
CT40	13/16-1-3/8	3/4-1	#3	5.75	3.07	0.79/0.79	531549	**783.09**
CT40	13/16-1-3/8	3/4-1	#3	8.00	3.07	0.79/0.79	531548	**753.08**
CT40	13/16-1-3/8	3/4-1	#3	9.19	2.87	0.98/0.59	531550	**792.79**
CT50	#0-9/16	1/8	#1	4.00	1.43	0.29/0.29	531552	**495.99**
CT50	#0-9/16	1/8	#1	5.02	1.25	0.79/0.39	531554	**495.99**
CT50	5/16-7/8	1/4-1/2	#2	4.50	2.09	0.49/0.49	531556	**547.47**
CT50	5/16-7/8	1/4-1/2	#2	5.66	2.00	0.85/0.49	531558	**547.47**
CT50	13/16-1-3/8	3/4-1	#3	6.25	3.07	0.79/0.79	531560	**828.63**
CT50	13/16-1-3/8	3/4-1	#3	7.72	2.87	0.98/0.59	531562	**715.89**

BT Taper Tension/ Compression Tap Holders

- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds
- Smooth stroke - even under full torque load, the tension-compression stroke is full and free
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole

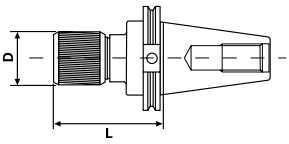


RETENTION KNOB PG G11 COLLETS PG G65

Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	T/C (in.)	Code No.	Price $
BT30	#0-9/16	1/8	#1	2.40	1.43	0.29/0.29	532261	**405.90**
BT30	#0-9/16	1/8	#1	4.25	1.43	0.29/0.29	532260	**405.90**
BT30	#0-9/16	1/8	#1	4.92	1.25	0.79/0.39	532262	**405.90**
BT40	#0-9/16	1/8	#1	2.62	1.43	0.29/0.29	532267	**364.32**
BT40	#0-9/16	1/8	#1	3.80	1.43	0.29/0.29	532264	**364.32**
BT40	#0-9/16	1/8	#1	4.33	1.25	0.79/0.39	532266	**364.32**
BT40	5/16-7/8	1/4-1/2	#2	4.50	2.09	0.49/0.49	532268	**420.75**
BT40	5/16-7/8	1/4-1/2	#2	6.34	2.00	0.85/0.49	532270	**444.41**
BT40	13/16-1-3/8	3/4-1	#3	7.50	3.07	0.79/0.79	532272	**819.72**
BT40	13/16-1-3/8	3/4-1	#3	9.00	2.87	0.98/0.59	532274	**872.11**
BT50	5/16-7/8	1/4-1/2	#2	6.34	2.00	0.85/0.49	532277	**619.74**

CAT Taper Rigid Tap Holders

- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole

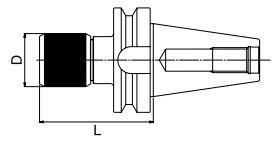


RETENTION KNOB PG G11 COLLETS PG G65

Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	Code No.	Price $
CT40	#0-9/16	1/8	#1	2.95	1.25	531564	**257.40**
CT40	5/16-7/8	1/4-1/2	#2	3.74	2.00	531566	**289.08**
CT40	13/16-1-3/8	3/4-1	#3	4.72	2.87	531568	**320.76**
CT50	#0-9/16	1/8	#1	3.02	1.25	531570	**352.44**
CT50	5/16-7/8	1/4-1/2	#2	3.91	2.00	531572	**378.18**
CT50	13/16-1-3/8	3/4-1	#3	5.11	2.87	531574	**448.47**

BT Taper Rigid Tap Holders

- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole

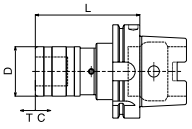


RETENTION KNOB PG G11 COLLETS PG G65

Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	Code No.	Price $
BT30	#0-9/16	1/8	#1	2.44	1.25	532276	**320.76**
BT40	#0-9/16	1/8	#1	2.95	1.25	532278	**289.08**
BT40	5/16-7/8	1/4-1/2	#2	3.74	2.00	532280	**282.15**
BT40	13/16-1-3/8	3/4-1	#3	4.72	2.87	532282	**472.23**
BT50	#0-9/16	1/8	#1	3.03	1.25	532281	**341.55**
BT50	5/16-7/8	1/4-1/2	#2	3.74	2.00	532283	**448.47**
BT50	13/16-1-3/8	3/4-1	#3	4.92	2.87	532284	**531.63**

HSK Tension/Compression Tap Holders

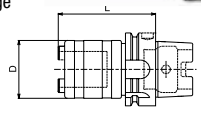
- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds
- Smooth stroke - even under full torque load, the tension-compression stroke is full and free
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole



Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	T/C (in.)	Code No.	Price $
HSK63	#0-9/16	1/8	#1	5.30	1.43	0.29/0.29	536196	**652.41**
HSK63	5/16-7/8	1/4-1/2	#2	6.10	2.09	0.49/0.49	536198	**751.41**
HSK100	#0-9/16	1/8	#1	5.30	1.43	0.29/0.29	536202	**1,193.94**
HSK100	5/16-7/8	1/4-1/2	#2	6.30	2.09	0.49/0.49	536204	**1,285.85**

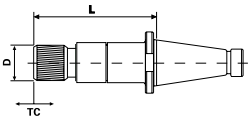
HSK Rigid Tap Holders

- Quick-change - push back on the holder sleeve and the adapter with tool is removable
- Press on the end of the adapter nose and the tool is removable - all in a few seconds.
- Interchangeability - our adapters and holders are interchangeable with Universal-Bilz quick change holders and adapters
- AT2 Taper Accuracy
- RFID Chip Hole



Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	Code No.	Price $
HSK63	#0-9/16	1/8	#1	3.34	1.26	536184	**540.54**
HSK63	5/16-7/8	1/4-1/2	#2	4.00	1.97	536186	**576.18**
HSK100	#0-9/16	1/8	#1	3.54	1.43	536190	**881.10**
HSK100	5/16-7/8	1/4-1/2	#2	3.74	2.09	536192	**1,052.37**

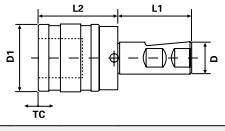
NMTB Taper Tension/ Compression Tap Holders



Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	T/C (in.)	Code No.	Price $
NMTB40	#0-9/16	1/8	#1	3.90	1.25	0.79/0.39	534500	**323.10**

Weldon Shank Tension/Compression Tap Holders

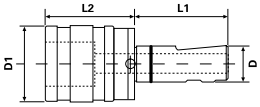
- Precision ground surfaces
- Compact length
- Provide additional mating flexibility
- Provides axial float
- Adjustable entry force



Tap Range Hand	Tap Range Pipe	System	Shank Dia. D	D1	L1	L2	T/C	Code No.	Price $
#0-9/16	1/8	#1	1	1.25	2.28	4.13	0.79/0.39	534520	**315.81**
#0-9/16	1/8	#1	1	1.43	2.28	1.53	0.79/0.39	534522	**315.81**
#0-9/16	1/8	#1	1-1/2	1.25	2.69	4.13	0.79/0.39	534532	**346.22**
5/16-7/8	1/4-1/2	#2	1-1/4	2.00	2.28	5.55	0.85/0.49	534530	**400.58**
5/16-7/8	1/4-1/2	#2	1-1/2	2.00	2.69	5.55	0.85/0.49	534534	**408.87**

Weldon Shank Rigid Tap Holders

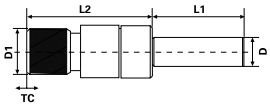
- Precision ground surfaces
- Provides axial float
- Provide additional mating flexibility
- Compact length
- Adjustable entry force



Tap Range Hand	Tap Range Pipe	System	Shank Dia. D	D1	L1	L2	Code No.	Price $
#0-9/16	1/8	#1	1	1.26	2.28	1.46	534540	**183.15**
5/16-7/8	1/4-1/2	#2	1	1.97	2.28	2.12	534542	**256.41**
13/16-1-3/8	3/4-1	#3	1-1/2	2.83	2.69	3.27	534544	**325.71**

Straight Shank Tension/Compression Tap Holders

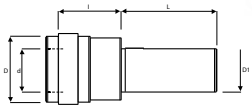
- Straight shank tooling may be used to extend tooling reach for extended length operations
- This option is less costly than extended length integral shank tooling
- They may be used with any size machining centre or lathe
- When loaded into larger holders, their reduced O.D. permits tapping applications within large holes or whenever tight clearances are encountered



Tap Range Hand	Tap Range Pipe	System	Shank Dia. D	D1	L1	L2	Tension & Compression T	Tension & Compression C	Code No.	Price $
#0-9/16	1/8	#1	1	1.25	3.50	4.13	0.79	0.39	534510	**315.81**
5/16-7/8	1/4-1/2	#2	1	2.00	3.50	5.55	0.85	0.49	534512	**376.20**
#0-9/16	1/8	#1	1-1/4	1.25	4.00	4.13	0.79	0.39	534514	**308.55**

Straight Shank Tension/Compression Tapping Chuck

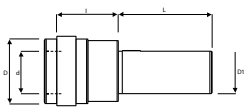
- Precision ground surfaces
- Provides axial float
- Adjustable entry force
- Plastic collar to protect chuck from coolant
- Compact length
- Roller cage construction



Desc	System	Shank D1	d	D	l	L	Tap Capacity	Tension & Compression T	Tension & Compression C	Code No.	Price $
1" shank	#1	1.00	0.748	1.50	1.76	1.95	#0 - 9/16	0.35	0.35	339100	**331.60**
1" shank	#2	1.00	1.220	2.17	2.52	2.00	5/16 - 7/8	0.59	0.59	339105	**395.01**
1-1/2" shank	#2	1.50	1.220	2.17	2.52	3.50	5/16 - 7/8	0.59	0.59	339110	**429.31**
1-1/2" shank	#3	1.50	1.890	3.09	3.85	3.50	13/16 - 1-3/8	0.94	0.94	339115	**615.38**

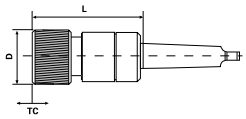
Straight Shank Rigid Tapping Chuck

- Precision ground surfaces
- Compact length
- No float for synchronous tapping
- Coolant through spindle capability



Desc	System	Shank D1	d	D	l	L	Tap Capacity	Code No.	Price $
1" shank	#1	1.00	0.748	1.30	1.60	1.95	#0 - 9/16	339120	**192.31**
1" shank	#2	1.00	1.220	2.00	2.50	2.00	5/16 - 7/8	339125	**269.23**
1-1/2" shank	#3	1.50	1.890	2.84	3.44	3.50	13/16 - 1-3/8	339130	**342.00**

Morse Taper Tension/ Compression Tap Holders



Morse Taper	Tap Range Hand	Tap Range Pipe	System	D (in.)	L (in.)	T/C (in.)	Code No.	Price $
3	#0-9/16	1/8	#1	1.25	4.750	0.79/0.39	534550	**263.24**
3	5/16-7/8	1/4-1/2	#2	2.00	5.870	0.85/0.49	534552	**268.96**
4	#0-9/16	1/8	#1	1.25	4.72	0.79/0.39	534554	**252.02**
4	5/16-7/8	1/4-1/2	#2	2.00	5.94	0.85/0.49	534556	**257.17**

Torque Control Tap Collets & Sets

Tap System #1
- Tap Collets are fully compatible with Bilz System #1. Size Range: #0 - 9/16" hand tap and 1/8" pipe tap

Tap System #2
- Tap Collets are fully compatible with Bilz System #2. Size Range: 5/16" - 7/8" hand tap and 1/4" - 1/2" pipe tap

Tap System #3
- Tap Collets are fully compatible with Bilz System #3. Size Range: 1/2" - 1-3/8" hand tap and 3/4" - 1" pipe tap

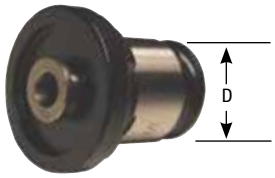
	Tap Size	Tap System	D	Tap Shank	Square	Code No.	Price $
	#0-#6	1	0.748	0.141	0.110	337260	**100.72**
	#8	1	0.748	0.168	0.131	337261	**100.72**
	#10	1	0.748	0.194	0.152	337262	**100.72**
	#12	1	0.748	0.220	0.165	337263	**100.72**
	1/4	1	0.748	0.255	0.191	337264	**100.72**
	5/16	1	0.748	0.318	0.238	337265	**100.72**
	3/8	1	0.748	0.381	0.286	337266	**100.72**
	7/16	1	0.748	0.323	0.110	337267	**100.72**
	1/2	1	0.748	0.367	0.110	337268	**100.72**
	9/16	1	0.748	0.429	0.332	337269	**100.72**
NPT	1/8P	1	0.748	0.313	0.234	337270	**100.72**
	5/16	2	1.220	0.318	0.238	337275	**129.36**
	3/8	2	1.220	0.381	0.286	337276	**129.36**
	7/16	2	1.220	0.323	0.242	337277	**129.36**
	1/2	2	1.220	0.367	0.275	337278	**129.36**
	9/16	2	1.220	0.429	0.322	337279	**129.36**
	5/8	2	1.220	0.480	0.360	337280	**129.36**
	11/16	2	1.220	0.542	0.406	337281	**129.36**
	3/4	2	1.220	0.590	0.442	337282	**129.36**
	13/16	2	1.220	0.652	0.489	337283	**129.36**
	7/8	2	1.220	0.697	0.523	337284	**129.36**
NPT	1/4P	2	1.220	0.562	0.421	337285	**129.36**
	3/8P	2	1.220	0.700	0.531	337286	**129.36**
	1/2P	2	1.220	0.687	0.515	337287	**129.36**
	1/2	3	1.891	0.367	0.275	337230	**296.60**
	9/16	3	1.891	0.429	0.322	337231	**296.60**
	5/8	3	1.891	0.480	0.360	337233	**296.60**
	11/16	3	1.891	0.542	0.406	337234	**296.60**
	3/4	3	1.891	0.590	0.442	337235	**296.60**
	13/16	3	1.891	0.652	0.489	337237	**296.60**
	7/8	3	1.891	0.697	0.523	337238	**296.60**
	15/16	3	1.891	0.760	0.570	337239	**296.60**
	1	3	1.891	0.800	0.600	337241	**296.60**
	1-1/16 - 1-1/8	3	1.891	1.021	0.766	337242	**296.60**
	1-3/16 - 1-1/4	3	1.891	0.381	0.286	337243	**296.60**
	1-5/16 - 1-3/8	3	1.891	1.108	0.831	337245	**296.60**
NPT	3/4P	3	1.891	0.906	0.679	337246	**296.60**
	1P	3	1.891	1.125	0.843	337247	**296.60**

Positive Drive Tap Collets, Reducers & Sets

Tap System #1
- Tap Collets are fully compatible with Bilz System #1. Size Range: #0 - 9/16" hand tap and 1/8" pipe tap

Tap System #2
- Tap Collets are fully compatible with Bilz System #2. Size Range: 5/16" - 7/8" hand tap and 1/4" - 1/2" pipe tap

Tap System #3
- Tap Collets are fully compatible with Bilz System #3. Size Range: 3/8" - 1-3/8" hand tap and 1/2" - 1" pipe tap

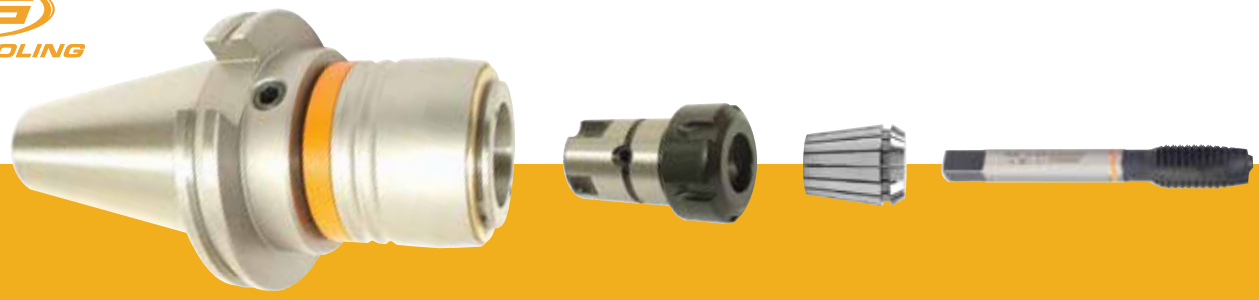


	Tap Size	Tap System	D	Tap Shank	Square	Code No.	Price $
	#0-#6	1	0.748	0.141	0.110	337052	**40.66**
	#8	1	0.748	0.168	0.131	337054	**40.66**
	#10	1	0.748	0.194	0.152	337056	**40.66**
	#12	1	0.748	0.220	0.165	337058	**40.66**
	1/4	1	0.748	0.255	0.191	337060	**40.66**
	5/16	1	0.748	0.318	0.238	337062	**40.66**
	3/8	1	0.748	0.381	0.286	337064	**40.66**
	7/16	1	0.748	0.323	0.242	337066	**40.66**
	1/2	1	0.748	0.367	0.275	337068	**40.66**
	9/16	1	0.748	0.429	0.322	337070	**40.66**
NPT	1/8P	1	0.748	0.438	0.328	337072	**40.66**
	5/16	2	1.220	0.318	0.238	337074	**51.74**
	3/8	2	1.220	0.381	0.286	337076	**51.74**
	7/16	2	1.220	0.323	0.242	337078	**51.74**
	1/2	2	1.220	0.367	0.275	337080	**51.74**
	9/16	2	1.220	0.429	0.322	337082	**51.74**
	5/8	2	1.220	0.480	0.360	337084	**51.74**
	11/16	2	1.220	0.542	0.406	337086	**51.74**
	3/4	2	1.220	0.590	0.442	337088	**51.74**
	13/16	2	1.220	0.652	0.489	337090	**51.74**
	7/8	2	1.220	0.697	0.523	337092	**51.74**
NPT	1/4P	2	1.220	0.562	0.421	337094	**51.74**
	3/8P	2	1.220	0.700	0.531	337096	**51.74**
	1/2P	2	1.220	0.687	0.515	337098	**51.74**
	3/8	3	1.891	0.381	0.286	337111	**138.60**
	1/2	3	1.891	0.367	0.275	337089	**138.60**
	9/16	3	1.891	0.429	0.322	337091	**138.60**
	5/8	3	1.891	0.480	0.360	337093	**138.60**
	11/16	3	1.891	0.542	0.406	337095	**138.60**
	3/4	3	1.891	0.590	0.442	337097	**138.60**
	13/16	3	1.891	0.652	0.489	337100	**138.60**
	7/8	3	1.891	0.697	0.523	337102	**138.60**
	15/16	3	1.891	0.760	0.570	337104	**138.60**
	1	3	1.891	0.800	0.600	337106	**138.60**
	1-1/8	3	1.891	0.896	0.672	337108	**138.60**
	1-1/4	3	1.891	1.021	0.766	337110	**138.60**
	3/8	3	1.891	0.381	0.286	337111	**138.60**
	1-3/8	3	1.891	1.108	0.831	337112	**138.60**
NPT	1/2P	3	1.891	0.687	0.515	337113	**138.60**
	3/4P	3	1.891	0.906	0.679	337114	**138.60**
	1P	3	1.891	1.125	0.843	337116	**138.60**

Reducers	Type #2 - #1	337118	**109.88**
	Type #3 - #2	337119	**219.71**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.



SYNCHROLIZE TAPPING SYSTEM FOR RIGID TAPPING

The Synchrolize system has 0.008" of compensation in compression and 0.039" of compensation in tension.

- The Synchrolize tapping chuck is the better solution, it gives you the possibility to work with axial compensation
- Tap capacity: M3-M12, M6-M20, M14-M33
- Triple life of tap in comparison to a traditional tapping system
- Quick change of the tap and of the adapter
- Suitable for rigid tapping with micro compensation
- Uses ER Tap Collets full and free
- Up to 9" of gauge length can be obtained when using the extension system
- No need for tap collets due to the opposing set screws in the tap adapters

CAT Taper Synchrolize Tap Chucks

- Slim nose design
- Up to 200% increase in tap life

Taper	Tap Range Hand	System	Nose Dia. (in.)	Gauge Length (in.)	Code No.	Price $
CAT40	#0 - 1/2	1	1.693	2.087	531610	**553.63**
CAT40	3/8" - 3/4	2	2.323	2.874	531614	**688.22**
CAT50	#0 - 1/2	1	1.690	2.402	531612	**592.08**
CAT50	3/8" - 3/4	2	2.323	2.874	531616	**857.31**

HSK Synchrolize Tap Chucks

- Slim nose design
- Up to 200% increase in tap life

Taper	Tap Range Hand	System	Nose Dia. (in.)	Gauge Length (in.)	Code No.	Price $
HSK50A	#0 - 1/2	1	1.693	2.756	536210	**553.63**
HSK50A	3/8" - 3/4	2	2.362	3.819	536218	**688.22**
HSK63A	#0 - 1/2	1	1.693	2.520	536212	**553.63**
HSK63A	3/8" - 3/4	2	2.362	3.819	536214	**688.22**
HSK100A	3/8" - 3/4	2	2.362	3.583	536216	**1,034.20**

BT Taper Synchrolize Tap Chucks

- Slim nose design
- Up to 200% increase in tap life

Taper	Tap Range Hand	System	Nose Dia. (in.)	Gauge Length (in.)	Code No.	Price $
BT40	#0 - 1/2	1	1.690	2.402	532310	**438.27**

Synchrolize Quick Change Tap Adapters — Extended

- Opposing set screws to secure tap, NO NEED for Tap Collets
- Designed for perfect hole alignment

System	Tap Range	Collet Style	L	Nose Dia.	Code No.	Price $
1	#0 - 1/2	ER16	55mm	28mm	338126	**664.56**
2	3/8" - 3/4	ER25	86mm	42mm	338128	**710.70**

• See page G24 for ER16 collets • See page G26 for ER25 collets

Synchrolize Quick Change Tap Adapters

- Opposing set screws to secure tap, NO NEED for Tap Collets
- Designed for perfect hole alignment

System	Tap Range	Collet Style	Length	Nose Dia.	Code No.	Price $
1	#0 - 1/2	ER16	24mm	28mm	338120	**249.72**
2	3/8" - 3/4	ER25	28mm	42mm	338122	**292.02**

• See page G24 for ER16 collets • See page G26 for ER25 collets

SYNCHROLIZE EXTENSION SYSTEM

Up to 9" of Gauge Length

Synchrolize Tap Adapter Bodies

System	Length Added	Code No.	Price $
1	5mm	338132	**326.62**
2	7mm	338134	**374.85**

Synchrolize Terminals

System	Tap Range	Collet Style	Length	Code No.	Price $
1	#0 - 1/2	ER16	50mm	338138	**338.05**
2	3/8" - 3/4	ER25	79mm	338140	**345.73**

Mini Arm Type Air Tapping Unit — VAT-712

- Air tapping spindle
- Parallel arm
- Table mounting column
- Air combination
- 6 ANSI Tap Collets #10-1/2"
- Radial jib
- Air pressure: 6~8 kgs/cm^3
- Air Cylinders included
- Requires: 5HP compressor
- Without stand plate

* Base not included

Tap Range	Speed RPM	Work Range	Weight (kg)	Code No.	Price $
#10-1/2	400	Rmax 700mm	12	326700	**3,666.91**

Synchrolize Extensions

System	Length	Code No.	Price $
1	25mm	338144	**88.44**
1	50mm	338146	**103.83**
2	50mm	338148	**134.47**
2	100mm	338150	**153.70**

Synchrolize Assembly Supports

System	Code No.	Price $
1	338156	**161.40**
2	338158	**176.78**

Small Arm Type Air Tapping Unit — VAT-1412

- Air tapping spindle
- Parallel arm
- Table mounting column
- Air combination
- 6 ANSI Tap Collets #10-1/2"
- Radial jib, increases arm reach by 500mm
- Air pressure: 6~8 kg/cm^3
- Air Cylinders included
- Requires: 5HP compressor
- Without stand plate

* Base not included

Tap Range	Speed RPM	Work Range	Weight (kg)	Code No.	Price $
#10 - 1/2	400	Rmax 1400mm Rmin 200mm	18	326705	**4,077.73**

Drill Chucks & Tap Adapters

CAT Taper Integral Keyless Drill Chucks G69
BT Taper Integral Keyless Drill Chucks G69
NMTB Taper Integral Keyless Drill Chucks. G69
M.T., R8 & Straight Shank Integral Keyless Drill Chucks G69-70
Replacement Drill Chucks & Wrenches G69-70
Ball/Plain Bearing & Keyless Drill Chucks G71
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CAT, BT, NMTB & R8 Morse Taper Adapters. G72
CT, BT, NMTB Taper Boring Head Holders G72
NMTB30 Drill Chuck Arbors G72
NMTB To NMTB Taper Open End Adapters G72
NMTB To R8 Taper Adapters G72
Morse Taper Sleeves. G72
Extension Length Sockets. G72
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Lathe Mandrels. G73
Annular Cutter Holders G73
Type B & C CNC Toolholder Bushings G73
Taper Dimensions. G74-75

GS TOOLING

DRILL CHUCKS

HIGH PRECISION

PREMIUM TOLERANCE

TiN COATED JAWS FOR IMPROVED LIFE

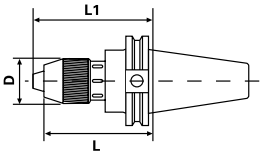
GS Keyless Drill Chucks designed to achieve the highest accuracy and rigidity possible

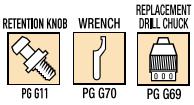
GS Super Heavy Duty Ball Bearing Drill Chucks are made to the highest tolerances in the market

CAT Taper Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The designeliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability
- AT2 Taper Accuracy
- RFID Chip Hole



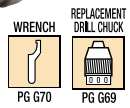


Taper	Cap.	L	L1	D	Code No.	Price $
CT40	1/4	2.559	2.795	1.3	531480	**438.41**
CT40	1/2	4.527	4.992	1.97	531482	**282.15**
CT40	5/8	4.724	5.236	2.24	531483	**518.75**
CT50	1/2	3.54	3.996	1.97	531484	**346.50**
CT50	5/8	3.7	4.134	2.24	531485	**569.14**

NMTB Taper Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability

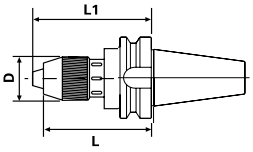


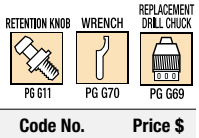
Taper	Cap.	Gauge Length (Open)	Gauge Length (Closed)	Chuck Dia.	Code No.	Price $
NMTB40	1/2	3.75	4.20	1.97	534406	**582.49**
NMTB50	1/2	3.35	3.74	1.97	534408	**379.64**

BT Taper Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability
- AT2 Taper Accuracy
- RFID Chip Hole



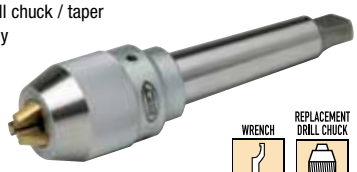


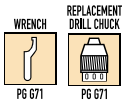
Taper	Cap.	L	L1	D	Code No.	Price $
BT30	1/4	3.15	3.38	1.3	532210	**374.31**
BT30	1/2	3.55	4.02	1.97	532212	**287.10**
BT40	1/4	2.95	3.19	1.3	532214	**385.05**
BT40	1/2	3.74	4.18	1.97	532216	**287.10**
BT50	5/8	5.12	5.59	2.24	532219	**413.68**

Morse Taper Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability



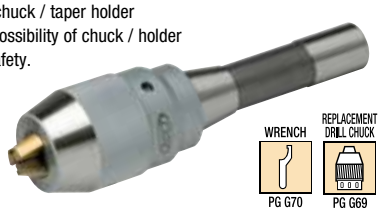


Shank	Gripping Dia. (mm)	Chuck Dia.	Gauge Length	Code No.	Price $
M.T. 4	0-13	51	100	337426	**210.67**
M.T. 4	3-16	57	120	337428	**281.81**

R8 Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability

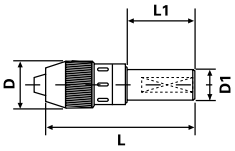


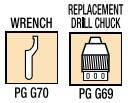
Shank	Gripping Dia. (mm)	Chuck Dia.	Gauge Length	Draw Bar	Code No.	Price $
R-8	0-13	51	100	7/16-20	337430	**276.03**
R-8	3-16	57	120	7/16-20	337432	**312.81**

Straight Shank Integral Keyless Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability





Capacity	D1	L	L1	D	Code No.	Price $
1/4	3/4	5.87	2.56	1.34	534410	**203.26**
1/2	1-1/4	6.06	2.56	1.97	534414	**233.01**

Replacement Drill Chucks

These chucks provide exceptionally high torque - up to three times the gripping strength of conventional drill chuck / taper holder combinations. The design eliminates any possibility of chuck / holder misalignment, and it assures separation safety.

Description	Code No.	Price $
1/4" chuck	534422	**130.28**
1/2" chuck for BT40 / CAT50	534424	**155.43**
1/2" chuck for CAT40 / NMTB40	534425	**155.43**
5/8" chuck for CAT40/50, BT40	534427	**265.61**

Super Heavy Duty Ball Bearing Drill Chucks

GS Ball Bearing Chucks are specially designed for HEAVY DUTY drilling applications on production drilling machines, jig borers, milling machines, lathes and radials. The ideal choice for those jobs that require close tolerance drilling. The ball thrust bearing reduces friction in the chuck's closing mechanism, so the operator can apply more gripping power on the twist drill shank.

- High precision, premium tolerance

Chuck Model	Capacity (in.)	Mount	Code No.	Price $
13BXH	3/64-1/2	JT6	536500	**94.60**
16BXH	3/64-5/8	JT3	536502	**118.33**
19BXH	3/64-3/4	JT4	536504	**153.70**

Plain Bearing Drill Chucks

GS Plain Bearing Chucks are specially designed for stationary drilling, turning, milling, and woodworking machines.

- Sleeve design eliminates the possibility of tooth breakage
- Hardened jaws and body help to avoid wear and lengthen the life of the chuck
- Each chuck supplied with a key

Chuck Model	Capacity (in.)	Mount	Code No.	Price $
13GH	3/64-1/2	JT6	536516	**38.50**
16GH	3/64-5/8	JT3	536520	**45.00**

Super Precision Keyless Drill Chucks

Keyless chucks are engineered to quickly loosen and tighten a tool on the chuck collar of the drill, either by manual operation or when torque is applied. Rotating the chuck collar in a counterclockwise direction will loosen the tool.

- High precision, premium tolerance
- The jaws feature a TiN coated surface treatment to assure durability

Chuck Model	Capacity (in.)	Mount	Code No.	Price $
6XH	1/64-1/4	JT1	536524	**141.87**
6XH	1/64-1/4	3/8 -24	536526	**137.74**
10XH	1/64-3/8	JT2	536528	**162.35**
10XH	1/64-3/8	JT33	536530	**162.35**
13XH	1/64-1/2	JT6	536534	**178.29**
13XH	1/64-1/2	JT33	536536	**251.14**
13XH	1/64-1/2	1/2 -20	536538	**77.00**
16XH	1/8-5/8	JT6	536540	**224.08**
16XH	1/8-5/8	JT33	536542	**218.54**

Replacement Chuck Wrenches

Description	Code No.	Price $
Fits 1/4" chucks	534418	**7.80**
Fits 1/2" chucks	534420	**9.90**
Fits 5/8" chucks	534431	**9.90**

Drill Chuck Keys

- Nickel thumb grip
- The potential for fracturing under excessive load is limited due to soft steel handles

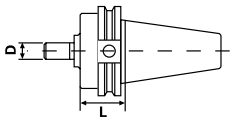
Chuck Model	Key No.	Code No.	Price $
13GH 1/2 JT33	P6	536548	**3.70**
13GH 1/2 JT6	P6	536548	**3.70**
16GH 5/8	P7	536550	**3.70**
19GH 3/4	P7	536550	**3.70**
13BXH	P6	536548	**3.70**
16BXH	P7	536550	**3.70**
19BXH	P7	536550	**3.70**

Drill Chuck Arbors

Taper	Jacobs Taper	Code No.	Price $
MT1	2	326900	**7.14**
MT2	1	326901	**7.56**
MT2	2	326902	**7.56**
MT2	3	326904	**7.56**
MT2	6	326906	**7.56**
MT2	33	326908	**7.56**
MT3	2	326910	**8.59**
MT3	3	326912	**8.69**
MT3	4	326914	**10.35**
MT3	6	326916	**8.80**
MT3	33	326918	**9.00**
MT4	3	326920	**11.70**
MT4	4	326922	**12.21**
MT4	6	326924	**11.70**
MT4	33	326926	**11.70**
MT5	3	326928	**22.98**
MT5	6	326930	**22.98**
R8	2	326932	**14.90**
R8	3	326934	**14.90**
R8	6	326936	**14.90**
1/2	1	326938	**6.20**
1/2	2	326940	**6.20**
1/2	6	326942	**6.20**
1/2	33	326944	**6.20**
5/8	3	326946	**6.80**
3/4	3	326948	**6.80**
3/4	6	326950	**7.80**

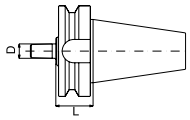
CAT Taper Jacobs Taper Adapter

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- 0.0002" or better ensures the best possible cutting tool life



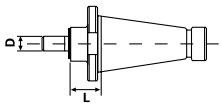
Taper	JT Size	L	D	Code No.	Price $
CT40	JT#2	1.61	0.560	531490	**108.90**
CT40	JT#3	1.58	0.812	531492	**108.90**
CT40	JT#4	1.49	1.13	531494	**108.90**
CT40	JT#6	1.61	0.677	531496	**108.90**
CT40	JT#33	1.61	0.625	531498	**108.90**
CT50	JT#2	1.61	0.560	531500	**158.40**
CT50	JT#3	1.58	0.812	531502	**158.40**
CT50	JT#4	1.49	1.13	531504	**158.40**
CT50	JT#6	1.61	0.677	531506	**158.40**
CT50	JT#33	1.61	0.625	531508	**158.40**

BT Taper Jacobs Taper Adapter



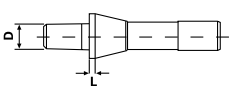
Taper	JT Size	L	D	Code No.	Price $
BT30	JT#6	1.02	0.677	532224	**96.03**
BT40	JT#2	1.61	0.560	532230	**107.91**
BT40	JT#3	1.57	0.812	532232	**107.91**
BT40	JT#6	1.61	0.677	532234	**107.91**
BT40	JT#33	1.61	0.625	532236	**107.91**
BT50	JT#6	1.77	0.677	532237	**170.28**

NMTB Taper Jacobs Taper Adapter



Taper	JT Size	L	D	Code No.	Price $
NMTB40	JT#2	0.65	0.560	534442	**110.10**
NMTB40	JT#3	0.61	0.812	534444	**110.10**
NMTB40	JT#6	0.65	0.677	534446	**110.10**
NMTB40	JT#33	0.65	0.625	534448	**110.10**
NMTB50	JT#3	1.30	0.812	534452	**153.71**
NMTB50	JT#4	1.22	01.13	534454	**153.71**

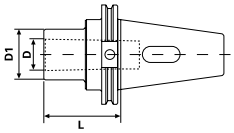
R8 Jacobs Taper Adapter



Taper	JT Size	L	D	Code No.	Price $
R8	JT#2	0.13	0.560	534462	**75.54**
R8	JT#3	0.13	0.812	534464	**75.54**
R8	JT#6	0.13	0.677	534466	**75.54**
R8	JT#33	0.13	0.625	534468	**75.54**

CAT Morse Taper Adapters

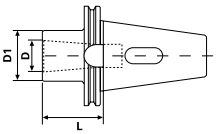
- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- 0.0002" or better ensures the best possible cutting tool life



Taper	Size	L	D	D1	Code No.	Price $
CT40	MT#1	1.75	0.475	1.00	531510	**123.75**
CT40	MT#2	2.36	0.700	1.25	531512	**123.75**
CT40	MT#3	3.00	0.938	1.57	531514	**133.65**
CT40	MT#4	3.54	1.23	1.97	531516	**140.58**
CT50	MT#2	1.75	0.700	1.25	531518	**182.16**
CT50	MT#3	1.75	0.938	1.57	531520	**182.16**
CT50	MT#4	3.00	1.23	1.97	531522	**186.12**
CT50	MT#5	4.13	1.75	2.75	531524	**214.83**

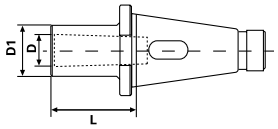
BT Morse Taper Adapters

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- 0.0002" or better ensures the best possible cutting tool life



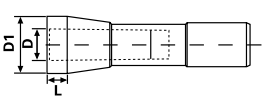
Taper	Size	L	D	D1	Code No.	Price $
BT30	MT#1	1.75	0.475	1.00	532238	**116.82**
BT40	MT#1	1.75	0.475	1.00	532242	**138.60**
BT40	MT#2	2.36	0.700	1.25	532244	**138.60**
BT40	MT#3	3.00	0.938	1.57	532246	**134.64**
BT40	MT#4	3.54	1.23	1.97	532248	**138.60**
BT50	MT#2	1.75	0.700	1.25	532241	**203.94**
BT50	MT#3	1.75	0.928	1.57	532243	**203.94**
BT50	MT#4	3.00	1.231	1.89	532245	**230.67**
BT50	MT#5	4.00	1.748	2.48	532247	**234.63**

NMTB Morse Taper Adapters



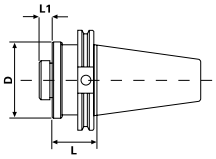
Taper	Size	L	D	D1	Code No.	Price $
NMTB40	MT#2	1.75	0.70	1.25	534472	**117.88**
NMTB40	MT#3	2.25	0.94	1.57	534474	**117.88**
NMTB40	MT#4	3.00	1.23	1.97	534476	**117.88**
NMTB50	MT#2	1.88	0.70	1.25	534478	**173.50**
NMTB50	MT#3	2.38	0.94	1.57	534480	**178.66**
NMTB50	MT#4	3.25	1.23	1.97	534482	**183.80**
NMTB50	MT#5	4.63	1.75	2.75	534484	**201.09**

R8 Morse Taper Adapters



Taper	Size	L	D	D1	Code No.	Price $
R8	MT#1	0.44	0.48	1.00	534486	**77.83**
R8	MT#2	0.44	0.70	1.25	534488	**77.83**
R8	MT#3	2.56	0.94	1.57	534490	**85.49**

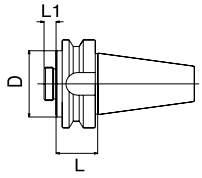
CT Taper Boring Head Holders



RETENTION KNOB
PG G11

Taper	Thread	L	L1	D	Code No.	Price $
CT40	7/8 - 20	1.75	0.44	1.75	531526	**97.97**
CT40	1-1/2 - 18	1.75	0.50	2.96	531528	**99.92**
CT50	1-1/2 - 18	1.75	0.50	2.96	531532	**140.54**

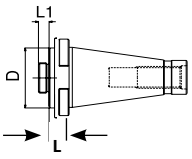
BT Taper Boring Head Holders



RETENTION KNOB
PG G11

Taper	Thread	L	L1	D	Code No.	Price $
BT30	1-1/2-18	1.75	0.50	2.96	532252	**99.00**

NMTB Taper Boring Head Holders



Taper	Thread	L	L1	D	Code No.	Price $
NMTB40	7/8-20	1.75	0.44	1.75	534492	**95.68**
NMTB50	7/8-20	1.75	0.44	1.75	534496	**140.54**
NMTB50	1-1/2-18	1.75	0.50	2.94	534498	**140.89**

NMTB30 JT6 Jacobs Taper Adapter

Taper	Size	Draw Bar	Code No.	Price $
30	JT-3	1/2-13	420147	**165.84**
30	JT-33	1/2-13	420148	**174.48**
30	JT-6	1/2-13	420149	**174.48**

NMTB To NMTB Taper Open End Adapters

Outside Taper	Inside Taper	Code No.	Price $
40	30	420035	**351.61**
50	30	420040	**413.00**
50	40	420045	**450.97**

NMTB To R8 Taper Adapters

Outside Taper	Inside Taper	Draw Bar	Code No.	Price $
40	R-8	5/8-11	420060	**369.51**

Morse Taper Sleeves

Hardened and Ground Throughout
Used to convert spindles to smaller tapers and to extend the spindles of drill presses, radial drills, boring mills, turret lathes and similar machines.

Sleeve No.	Morse Taper Hole	Morse Taper Outside	Overall Length	Code No.	Price $
12	1	2	3-5/8	420305	**7.60**
13	1	3	3-7/8	420310	**8.70**
23	2	3	4-3/8	420315	**9.90**
14	1	4	4-7/8	420320	**9.70**
24	2	4	5	420325	**9.30**
34	3	4	5-1/2	420330	**11.80**
15	1	5	6-1/8	420335	**20.70**
25	2	5	6-1/8	420340	**20.30**
35	3	5	6-1/8	420345	**19.10**
45	4	5	6-3/4	420350	**19.10**
36	3	6	8-5/8	420353	**33.30**
46	4	6	8-5/8	420355	**36.20**
56	5	6	8-5/8	420360	**41.80**

Extension Length Sockets

Sleeve No.	Morse Taper Hole	Morse Taper Shank	Overall Length	Soft, Hard. Tang Code No.	Price $
21	2	1	6-1/4	420405	**124.57**
12	1	2	6-1/4	420410	**123.73**
22	2	2	6-7/8	420415	**116.95**
32	3	2	7-3/4	420420	**135.36**
23	2	3	7-5/8	420435	**139.86**
33	3	3	8-1/2	420440	**142.67**
43	4	3	9-1/2	420445	**195.45**
53	5	3	10-1/2	420450	**307.44**
34	3	4	9-1/2	420465	**167.52**
44	4	4	10-1/2	420470	**222.93**
54	5	4	11-7/8	420475	**308.03**
35	3	5	10-1/2	420480	**200.91**
45	4	5	11-7/8	420485	**244.08**
55	5	5	13-1/4	420490	**354.99**
65	6	5	15-3/8	420495	**598.01**
46	4	6	14	420500	**390.08**
56	5	6	15-3/8	420505	**466.90**

Solid Sockets

Hardened and ground throughout.

Socket No.	Overall Length (in.)	Morse Taper Hole	Outside Dia. (in.)	Code No.	Price $
1	3-1/2	1	1	420805	**107.52**
2	3-1/2	1	1-1/4	420810	**100.95**
3	3-1/2	1	1-1/2	420815	**130.96**
4	4	2	1	420820	**147.92**
5	4	2	1-1/4	420825	**147.92**
6	4	2	1-1/2	420830	**147.92**
7	4	2	1-3/4	420835	**130.22**
8	4	2	2	420840	**172.54**
9	4-3/4	3	1-1/4	420845	**160.56**
10	4-3/4	3	1-1/2	420850	**160.56**
11	4-3/4	3	1-3/4	420855	**160.56**
12	4-3/4	3	2	420860	**182.58**
13	6	4	1-1/2	420865	**200.69**
14	6	4	1-3/4	420870	**200.69**
15	6	4	2	420875	**227.78**
18	10-1/8	6	3-1/4	420890	**553.42**
19	10-1/8	6	3-1/2	420895	**617.26**

Annular Cutter Holders

Straight Shank
R8 Shank
Morse Taper Shank

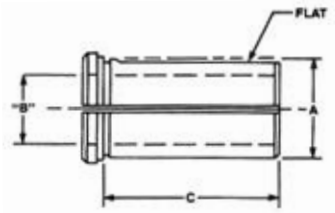
- Holder shank allows different machines to drive cutter
- Select adapter lengths reduce the number of machine set ups

See page D6 for Annular Cutters

Model No.	Shank	Cutter Shank Size	Gauge Length	Code No.	Price $
Straight Shank - 3 Flats					
HEN-1	1/2	3/4	2-1/8	425435	**197.38**
HEN-2	3/4	3/4	2	425436	**197.38**
HEN-2-6	3/4	3/4	6	425437	**212.05**
HEN-2-12	3/4	3/4	12	425438	**242.84**
HEN-6-6	3/4	1-1/4	6	425440	**253.17**
HEN-6-12	3/4	1-1/4	12	425441	**222.89**
Straight Shank - 2 Flats					
HEN-9-6	3/4	3/4	6	425442	**247.64**
Morse Taper Shank					
HEN-3	MT2	3/4	2	425444	**239.51**
HEN-3-6	MT2	3/4	6	425445	**265.09**
HEN-3-12	MT2	3/4	12	425446	**249.54**
HEN-4	MT3	3/4	2	425447	**264.12**
HEN-4-6	MT3	3/4	6	425448	**300.24**
HEN-4-12	MT3	3/4	12	425449	**379.22**
HEN-8	MT3	1-1/4	2-3/4	425450	**301.21**
HEN-8-6	MT3	1-1/4	6	425451	**324.64**
R8 Shank					
HEN-5	R8	3/4	1-3/4	425453	**243.27**
HEN-7-6	R8	1-1/4	6	425457	**335.30**
HEN-7-12	R8	1-1/4	12	425458	**444.83**

Type B CNC Toolholder Bushings

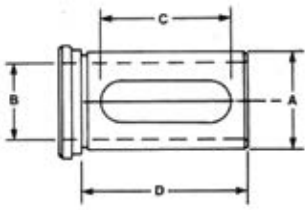
- Split style
- Shorter length
- Clamp on flat
- Bushing collapses to hold tool
- Used for drills, boring bars, and other tools



Bushing Type	Dia. (A)	Bore (B)	Length Under Head (C)	Code No.	Price $
B	1-1/2"	1/2"	2-1/2"	470510	**70.50**
B	1-1/2"	5/8"	2-1/2"	470511	**70.50**
B	1-1/2"	3/4"	2-1/2"	470512	**70.50**
B	1-1/2"	1"	2-1/2"	470513	**70.50**
B	1-1/2"	1-1/4"	2-1/2"	470514	**70.50**
B	2"	5/8"	3-1/2"	470515	**114.40**
B	2"	3/4"	3-1/2"	470516	**114.40**
B	2"	1"	3-1/2"	470517	**114.40**
B	2"	1-1/4"	3-1/2"	470518	**114.40**
B	2"	1-1/2"	3-1/2"	470519	**114.40**
B	2"	1-3/4"	3-1/2"	470520	**114.40**

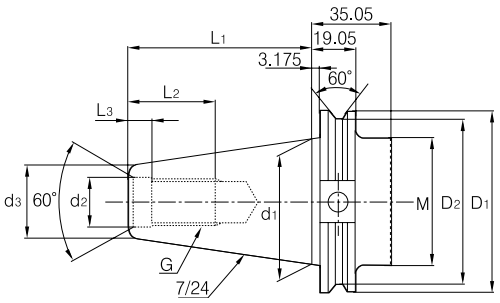
Type C CNC Toolholder Bushings

- Designed for use on all CNC Turning Machines
- Elongated slot
- For use with drills, boring bars, reamers, etc.
- Precision ground throughout



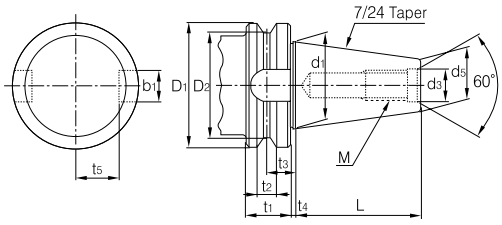
Bushing Type	Dia. (A)	Bore (B)	Length of Slot (C)	Length Under Head (D)	Code No.	Price $
C	1-1/2"	1/2"	3"	3-3/8"	470500	**76.55**
C	1-1/2"	5/8"	3"	3-3/8"	470501	**76.55**
C	1-1/2"	3/4"	3"	3-3/8"	470502	**76.55**
C	1-1/2"	1"	3"	3-3/8"	470503	**76.55**
C	1-1/2"	1-1/4"	3"	3-3/8"	470504	**76.55**
C	2"	3/4"	3-5/8"	4"	470505	**116.55**
C	2"	1"	3-5/8"	4"	470506	**116.55**
C	2"	1-1/4"	3-5/8"	4"	470507	**116.55**
C	2"	1-1/2"	3-5/8"	4"	470508	**116.55**
C	2"	1-3/4"	3-5/8"	4"	470509	**116.55**

CAT Taper Dimensions



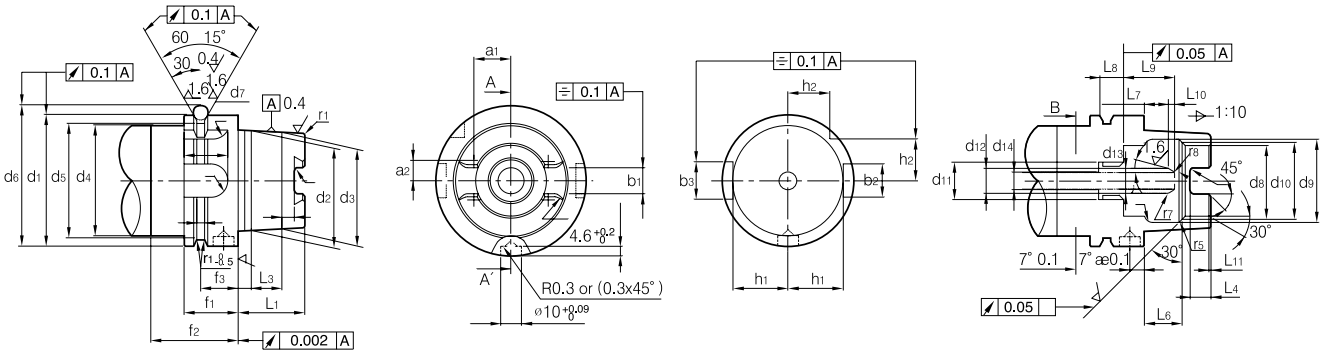
Shank No.	D1	D2	M	d1	d2	d3	L1	L2	L3	G
CAT40	63.5	56.36	44.45	44.45	16.28	21.84	68.25	28.45	4.78	5/8-11
CAT45	82.55	75.41	57.15	57.15	19.46	27.69	82.55	38.1	4.78	3/4-10
CAT50	98.43	91.29	69.85	69.85	26.19	35.05	101.6	44.45	6.35	1-8

BT Taper Dimensions



Shank No.	D1	D2	t1	t2	t3	t4	d1	d3	L	M	b1	t5	d5
BT35	53	43	22	10	14.6	2	38.1	13	56.5	M12x1.75	16.1	19.6	21.62
BT40	63	52	25	10	16.6	2	44.45	17	65.4	M16x2	16.1	22.6	25.3
BT45	85	73	30	12	21.2	3	57.15	21	82.8	M20x25	9.3	29.1	33.1
BT50	100	85	35	15	23.2	3	69.85	25	101.8	M24x3	25.7	35.4	40.1
BT60	155	135	45	20	28.2	3	107.95	31	161.8	M30x3.5	25.7	60.1	60.7

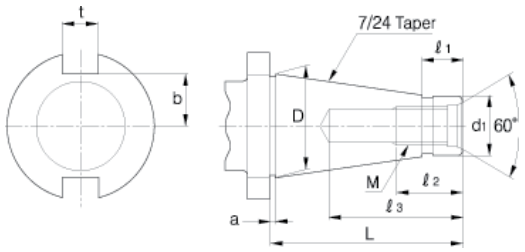
HSK Taper Dimensions



Shank No.	b1	b2	b3	d1	d2	d3	d4	d5	d6	d7	d8	d9	d10	d11	d12	d13	d14	a1	a2
HSK50	10.54	12	14	50	38	36.9	42	43	59.3	7	26	32	29	M16X1	10	6.8	6.8	13.997	7.648
HSK63	12.5	16	14	63	48	46.53	53	55	72.3	7	34	40	37	M18X1	12	8	8.4	17.862	9.25
HSK100	20	20	14	100	75	72,80	85	92	109.75	7	53	63	58	M24X1.5	16	12	12	27.329	15

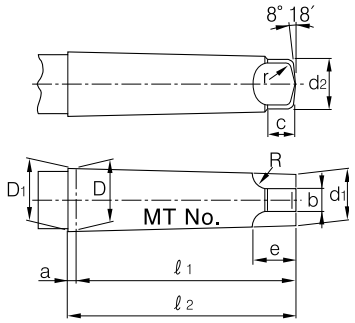
Shank No.	f1	f2	f3	f4	b1	b2	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	r1	r2	r3	r4	r5	r6	r7	r8
HSK50	26	42	18	3.75	2	15.5	25	5	11	7.5	4.5	14.13	10	10	23	3	1	19	1	1.5	2.38	6	0.5	1	2	6
HSK63	26	42	18	3.75	28.5	20	32	6.3	14.7	10	6	18.13	10	12	24.5	3	1	21	1.2	1.5	3	8	0.6	1.5	3	8
HSK100	29	45	20	3.75	44	31.5	50	10	24	15	10	28.56	12.5	16	28	3	1.5	24	2	2	3	12	1	1.5	3	10

NMTB Taper Dimensions



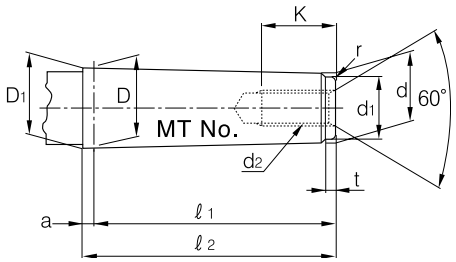
MT No.	D	d1	L	ℓ1	M	ℓ2	ℓ3	a	t	b
30	1-1/4"-31.75	17.40 (-0.29/-0.36)	70	20	UNC-1/2"	24	50	1.6	15.9	6
40	1-3/4"-44.45	25.32 (-0.30/-0.387)	95	25	UNC-5/8"	30	60	1.6	15.9	22.5
50	2-3/4"-69.85	39.60 (-0.31/-0.41)	130	25	UNC-1"	45	90	3.2	25.4	35
60	4-1/4"-107.95	60.20 (-0.34/-0.46)	210	45	UNC1/4"	56	110	3.2	25.4	60

Morse Taper With Tang



MT No.	Taper	Taper Angle(a)	D	a	D1	d1	ℓ1	ℓ2	d2	b	c	e	R	r
0	1/19.212	1°29'27"	9.045	3	9.201	6.104	56.5	59.5	6	3.9	6.5	10.5	4	1
1	1/20.047	1°25'43"	12.065	3.5	12.24	8.972	62	65.5	8.7	5.2	8.5	13.5	5	1.2
2	1/20.020	1°25'50"	17.78	5	18.03	14.034	75	80	13.5	6.3	10	16	6	1.6
3	1/19.922	1°26;16"	23.825	5	24.076	19.107	94	99	18.5	7.9	13	20	7	2
4	1/19.254	1°29'15"	31.267	6.5	31.605	25.164	117.5	124	24.5	11.9	16	24	8	2.5
5	1/19.002	1°30'26"	44.399	6.5	4.741	36.531	149.5	156	35.7	15.9	19	29	10	3
6	1/19.180	1°29'36"	63.348	8	63.765	52.399	210	218	51	19	27	40	13	4
7	1/19.231	1°29'22"	83.058	10	83.578	68.186	286	296	66.8	28.6	35	54	19	5

Morse Taper Screw Type



MT No.	Taper	Taper Angle(a)	D	a	D1	d1	ℓ1	ℓ2	d1	d2	k	t	r
0	1/19.212	1°29'27"	9.045	3	9.201	6.442	50	53	6	-	-	4	0.2
1	1/20.047	1°25'43"	12.065	3.5	12.23	9.396	53.5	57	9	M6	16	5	0.2
2	1/20.020	1°25'50"	17.78	5	18.03	14.583	64	69	14	M10	24	5	0.2
3	1/19.922	1°26'16"	23.825	5	24.076	19.759	81	86	19	M12	28	7	0.6
4	1/19.254	1°29'15"	31.267	6.5	31.605	25.943	2.5	109	25	M16	32	9	1
5	1/19.002	1°30'26"	44.399	6.5	4.741	37.584	129.5	136	35.7	M20	40	9	2.5
6	1/19.180	1°29'36"	63.348	8	63.765	53.859	182	190	51	M24	50	12	4
7	1/19.231	1°29'22"	83.058	10	83.578	70.058	250	260	65	M33	80	18.5	5

Universal Boring And Facing Masterhead

Solve ALL Your Boring and Facing Problems

- Ideal for boring in a wide range of diameters
- Hardened and precision ground for long life and extreme accuracy
- Allows for multi-tool boring
- Suitable for precision boring of cylindrical holes and for machining of external cylindrical surfaces

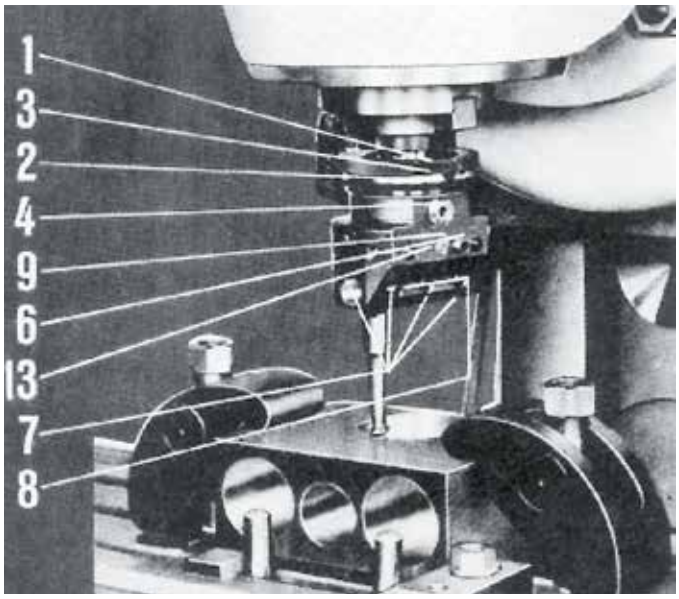
	1-3/8"		2-1/8"		3-1/8"		4-7/8"		6-1/4"	
Model No.	**VHU 36**	**Price $**	**VHU 56**	**Price $**	**VHU 80**	**Price $**	**VHU 125**	**Price $**	**VHU 160**	**Price $**
Code No.	300007	**4,476.49**	300055	**5,689.67**	300105	**6,552.13**	300155	**7,234.25**	300205	**8,470.02**
QUICK RETURN MOVEMENT QUICK RETURN ADJUSTMENT THROUGH SLIDE SETTING SCREW										
Operating Accuracy	± 0.0002		± 0.0002		± 0.0002		± 0.0002		± 0.0002	
Boring and facing range from 0 up to	9		13		16		24		31	
Max. adjustability of slide	1.375		2.125		3.125		4.875		6.250	
Max. dia. of slide	2.750		4.250		6.250		9.750		11.500	
			0.002		0.002		0.002		0.002	
Various automatic slide –	0.0016		0.004		0.004		0.004		0.004	
feeds per revolution	0.0032		0.006		0.006		0.006		0.006	
	0.0048		0.008		0.008		0.008		0.008	
1 graduation of sensitive	0.0005		0.0005		0.0005		0.0005		0.0005	
adjustments ins. on dia.										
1 Revolution of sensitive adjustment	0.016		0.016		0.016		0.016		0.016	
Quick return per revolution	0.030		0.120		0.120		0.160		0.160	
Diameter of tool post holes in slide	5/8		1		1		1-1/4		1-1/4	
Height of Head without shank	3.125		4.350		4.350		5.000		5.000	
Width of Head	2.875		4.500		5.500		7.000		8.725	
Weight of head without shank	4 lb		12 lb		16 lb		26.6 lb		31 lb	
Accessories	300003	**1,082.81**	300053	**2,012.04**	300104	**2,012.04**	-	-		
Head only	300004	**4,361.65**	300054	**5,299.05**	300103	**5,614.13**	300154	**7,065.99**	300203	**7,869.02**
Case only	-	-	300052	**253.39**	300102	**674.91**	300204	**823.86**	300204	**823.86**
Shank M.T. 2	300010	**414.52**	-	-	-	-	-	-	-	-
Shank M.T. 3	300015	**436.92**	-	-	-	-	-	-	-	-
Shank M.T. 4	300020	**504.52**	300110	**558.87**	300110	**558.87**	-	-	-	-
Shank M.T. 5	-	-	300115	**679.88**	300115	**679.88**	300115	**679.88**	300115	**679.88**
Shank M.T. 6	-	-	-	-	300165	**951.85**	300165	**951.85**	300165	**951.85**
Shank ISA - 30	300025	**382.45**	-	-	-	-	-	-	-	-
Shank ISA - 40	300030	**414.52**	300070	**534.72**	300070	**534.72**	-	-	-	-
Shank ISA - 50	-	-	300075	**675.85**	300075	**675.85**	300075	**675.85**	300075	**675.85**
Shank R - 8	300035	**427.67**	300080	**439.40**	-	-	-	-	-	-
Shank Straight 3/4"	300039	**238.82**	-	-	-	-	-	-	-	-
Shank Straight 1"	300040	**311.76**	-	-	-	-	-	-	-	-
Shank Cat - 40	300033	**558.87**	300073	**643.87**	-	-	-	-	-	-
Shank Cat - 50	-	-	300076	**697.99**	300076	**697.99**	300076	**697.99**	300076	**697.99**
Shank BT - 40	300034	**678.10**	300074	**732.45**	-	-	-	-	-	-
Shank BT - 50	-	-	300077	**779.10**	300077	**779.10**	300077	**779.10**	300077	**779.10**
Tang M.T. 2	300245	**60.74**	-	-	-	-	-	-	-	-
Tang M.T. 3	300250	**79.81**	-	-	-	-	-	-	-	-
Tang M.T. 4	300255	**110.00**	300255	**110.00**	300255	**110.00**				
Tang M.T. 5	-	-	300260	**152.86**	300260	**152.86**	300260	**152.86**	300260	**152.86**
Tang M.T. 6	-	-	-	-	300265	**148.02**	300265	**148.02**	300265	**148.02**

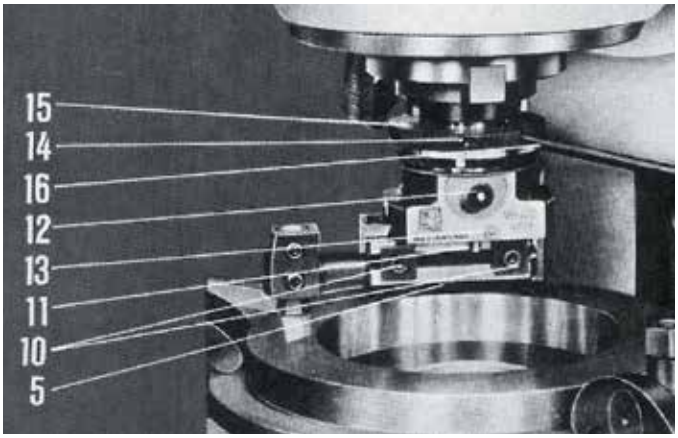
Standard Equipment Supplied With The Master Head In Case

Boring bars	3/8 2pcs	1 x 4	1 x 4	1-1/4 x 6	1-1/4 x 6
Boring bars	5/8 2pcs	1 x 6	1 x 6	1-1/4 x 9-3/4	1-1/4 x 9-3/4
Boring bar holders		*1 x 5-1/2	*1 x 5-1/2	*1-1/4 x 6-5/16	*1-1/4 x 6-5/16
		*2pcs	*2pcs	*2pcs	*2pcs
Extension holder	5/8 x 3-7/8	1 x 6-7/8	1 x 6-5/8	1-1/4 x 11-13/16	1-1/4 x 11-13/16
Complete set of reinforcing rings	5/8	1	1	1-1/4	1-1/4
Carbide round tool bits	*5/8	*1	*1	*1-1/4	*1-1/4
	*4pcs	*4pcs	*4pcs	*4pcs	*4pcs
HSS square tool bits		*5/16 x 1-3/16	*5/16 x 1-3/16	*3/8 x 1-13/32	*3/8 x 1-13/32
		*4pcs	*4pcs	*4pcs	*4pcs
Reducing sleeve	5/8 x 3/8	1 x 3/4	1 x 3/4	1-1/4 x 3/4	1-1/4 x 3/4
Reducing sleeve		1 x 5/8	1 x 5/8	1-1/4 x 5/8	1-1/4 x 5/8

Principal Component Part of Head Vhu-36

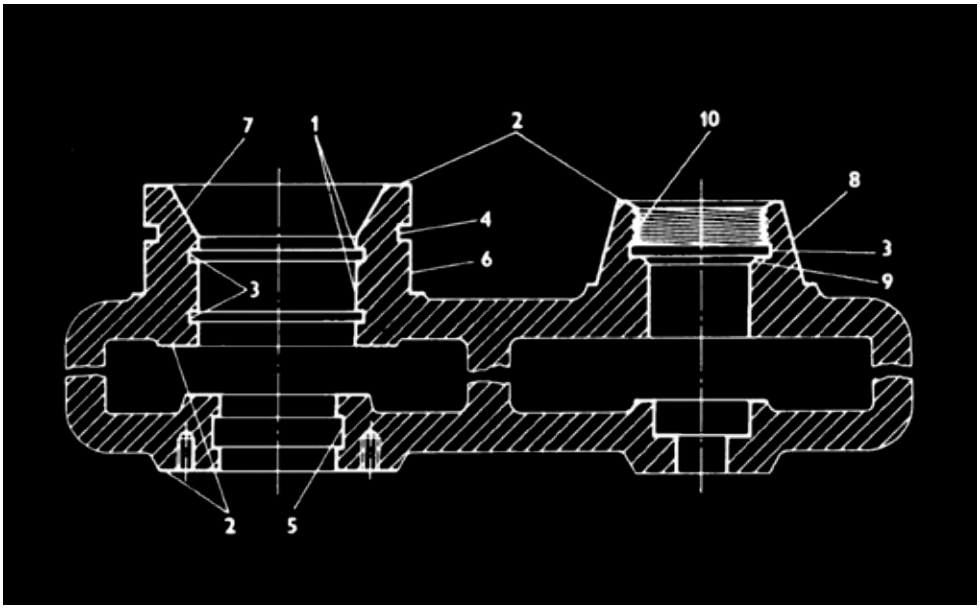
1. Braking ring
2. Engaging ring
3. Control ring
4. Scale
5. Slide
6. Setting screw
7. Holes for tools
8. Clamping screws
9. Screw for locking slide in position
10. Stop dog
11. Stop dog pin
12. Knob for rapid traverse control (only in Vhu 1-1/4)
13. Lubricator
14. Screw for clutch adjustment
15. Clutch
16. Retaining rod



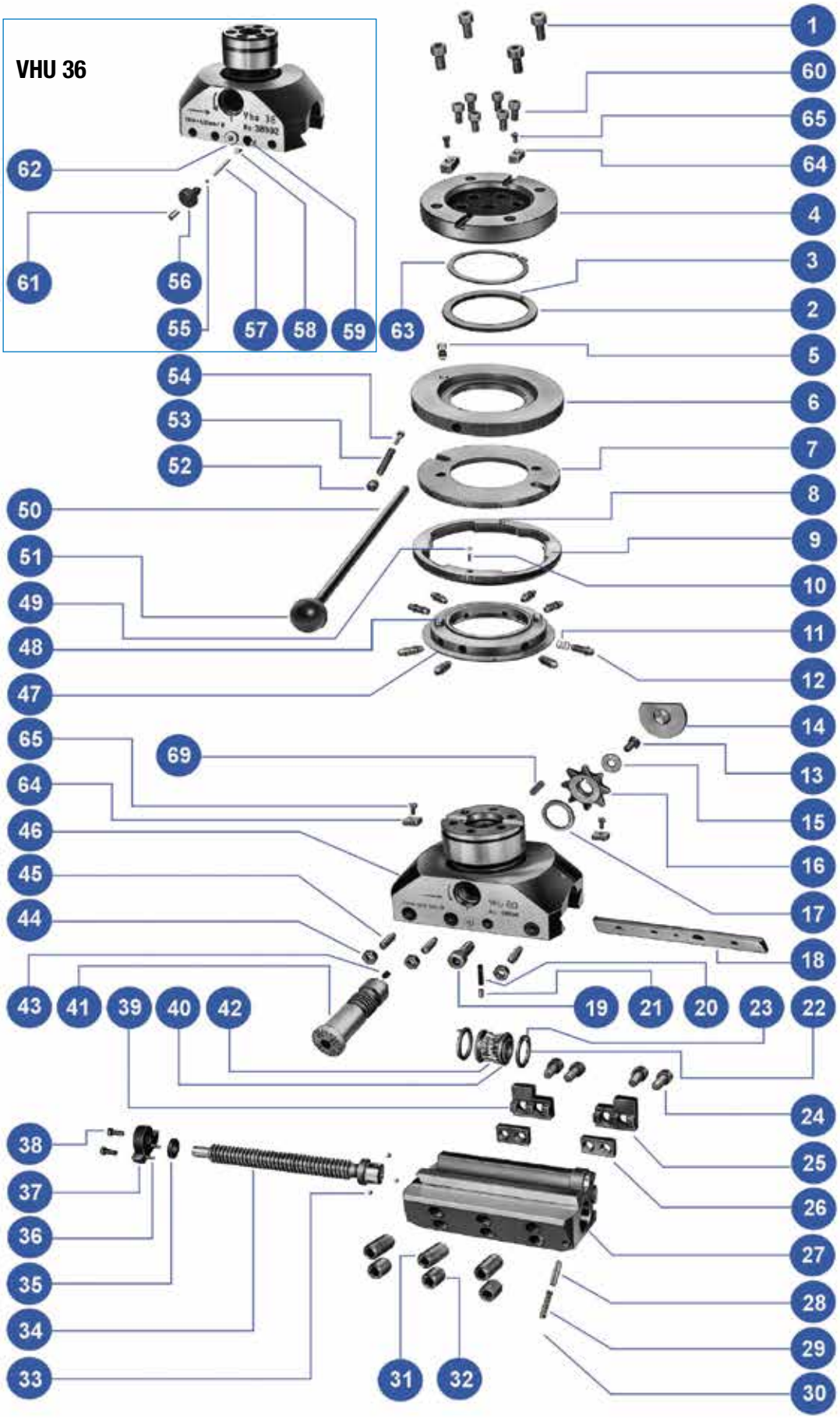


Basic machining operations shown for the Vhu type universal boring heads:

1. Boring of holes
2. Spotfacing of small end large-diameter end faces
3. Recessing inside holes
4. Recessing on surfaces of parts
5. Free recessing
6. External diameter machining
7. Boring of tapered holes
8. External machining of taper
9. Facing of rear end faces
10. Thread cutting



NAREX BORING HEAD PARTS BREAKDOWN FOR VHU 36, 56, 80, 125, 160



NAREX BORING HEAD PARTS BREAKDOWN FOR VHU 36, 56, 80, 125, 160 CONTINUED

Narex Boring And Facing Head Parts

New ID No.	Description	VHU-36 (1-3/8") pcs	VHU-36 (1-3/8") Code No.	VHU-36 (1-3/8") Price $	VHU-56 (2-1/8") VHU-80 (3-1/8") pcs	VHU-56 (2-1/8") VHU-80 (3-1/8") Code No.	VHU-56 (2-1/8") VHU-80 (3-1/8") Price $	VHU-125 (4-7/8") VHU-160 (6-1/4") pcs	VHU-125 (4-7/8") VHU-160 (6-1/4") Code No.	VHU-125 (4-7/8") VHU-160 (6-1/4") Price $
1	Cap Screw	4	300770	**1.61**	4	300588	**2.63**	4	300588	**2.63**
2	Ring	1	300702	**73.33**	1	300503	**272.61**	1	300603	**145.75**
3	Pin	1	300736	**1.61**	1	300551	**1.61**	1	300655	**1.61**
4	Flange (Hold-Ring)	1	300771	**491.24**	1	300480(vhu-56)	**514.91**	1	300691	**908.80**
					1	300591(vhu-80)	**847.94**		-	**-**
5	Clutch Pin (Safety pin)	1	300726	**60.63**	1	300505	**79.28**	1	300605	**79.28**
6	Hold Ring (Brake ring)	1	300703	**351.55**	1	300504	**666.38**	1	300604	**605.86**
7	Set Ring	1	300704	**333.25**	1	300506	**442.62**	1	300606	**497.07**
8	Pin	2	300736	**1.61**	2	300554	**1.14**	2	300658	**1.14**
9	Ring (Control Ring)	1	300705	**236.35**	1	300507	**460.92**	1	300607	**539.29**
10	Spring	2	300720	**1.61**	1	300540	**2.06**	1	300640	**2.06**
11	Spring	6	300707	**1.61**	8	300511	**1.14**	8	300611	**1.14**
12	Pin	6	300708	**29.51**	8	300509	**72.88**	8	300609	**72.88**
13	Cap Screw	1	300764	**1.61**	1	300546	**18.41**	1	300650	**18.41**
14	Cover (Lid)	1	300716	**39.01**	1	300518	**29.51**	1	300618	**47.25**
15	Washer	1	300765	**14.76**	1	300541	**21.51**	1	300646	**21.51**
16	Star Gear (Ratchet Wheel)	1	300715	**103.42**	1	300520	**127.79**	1	300620	**133.74**
17	Washer (Ring)	1	300718	**372.03**	1	300522	**123.78**	1	300622	**123.78**
18	Slideguide	1	300710	**181.79**	1	300413(vhu-56)	**218.97**	1	300613	**302.93**
					1	300513(vhu-80)	**230.52**		-	**-**
19	Screw		-	**-**	1	300577	**5.04**	1	300653	**2.63**
20	Spring		-	**-**	1	300536	**2.06**	1	300670	**2.06**
21	Brake		-	**-**	1	300521	**21.51**	1	300621	**21.51**
22	Washer (Ring)	2	300722	**85.12**	2	300525	**103.42**	2	300625	**103.42**
23	Pin	2	300769	**1.14**	2	300551	**1.61**	2	300655	**1.61**
24	Stop Screw	2	300739	**1.61**	4	300549	**2.63**	4	300644	**2.63**
25	Stop (Dog) - L.H. Stop	2	300728	**109.25**	1	300515	**163.82**	1	300615	**163.82**
26	Stop Nut (Insert)	2	300742	**68.30**	2	300514	**49.30**	2	300614	**49.30**
27	Slide	1	300713	**3,396.65**	1	300402(vhu-56)	**3,892.46**	1	300602	**5,078.68**
					1	300502(vhu-80)	**4,134.53**	1	300680	**5,119.17**
28	Pin (Bar)	1	300747	**28.49**	1	300524	**28.49**	1	300624	**35.46**
29	Spring	1	300746	**1.14**	1	300570	**3.20**	1	300670	**2.06**
30	Set Screw	1	300774	**1.61**	1	300508	**2.06**	1	300671	**1.61**
31	Set Screw	3	300735	**8.24**	3	300568	**16.25**	3	300674(vhu-125)	**16.25**
								5	300674(vhu-160)	**16.25**
32	Set Screw	3	300741	**8.24**	3	300567	**16.25**	3	300673(vhu-125)	**16.25**
								5	300673(vhu-160)	**16.25**
33	Ball	3	300775	**1.14**	3	300558	**1.14**	3	300661	**1.14**
34	Worm Rod (Screw)	1	300712	**787.75**	1	300423(vhu-56)	**969.20**	1	300623	**1,332.53**
					1	300523(vhu-80)	**1,211.50**	1	300692	**1,514.32**
35	Washer (Distance Ring) - Spacer	1	300727	**73.33**	1	300537	**73.33**	1	300637	**73.33**
36	Pin	2	300777	**1.61**	2	300553	**1.61**	2	300657	**1.14**
37	End Stop (Back Bearing)	1	300717	**97.47**	1	300538	**85.12**	1	300638	**103.42**
38	End Screw	2	300776	**1.61**	2	300543	**1.61**	2	300648	**1.61**
39	Stop (Dog) - R.H. Stop		-	**-**	1	300516	**163.82**	1	300616	**163.82**
40	Gear Ring	2	300721	**85.12**	2	300526	**85.12**	2	300626	**85.12**
41	Spindle (Worm)	1	300709	**539.29**	1	300512	**727.01**	1	300612	**787.75**
42	Worm Gear (Worm Wheel)	1	300723	**691.32**	1	300417	**836.26**	1	300617	**727.47**
43	Pin (Parallel Key)	1	300766	**14.76**	1	300519	**14.76**	1	300619	**14.76**
44	Head Nut	3	300749	**1.61**	3	300572	**1.61**	4	300647	**1.61**
45	Head Screw	3	300748	**2.40**	3	300545	**2.63**	4	300649	**2.63**
47	Ring (Control Ring)	1	300706	**418.24**	1	300510	**666.38**	1	300610	**727.01**
48	Pin	2	300738	**0.91**	2	300556	**5.04**	2	300659	**5.04**
49	Ball	2	300744	**1.14**	2	300558	**1.14**	2	300661	**1.14**
50	Stop Rod (Bar)	1	300734	**28.49**	1	300535	**53.43**	1	300635	**71.16**
51	Knob (Ball)		-	**-**	1	300559	**3.89**	1	300662	**3.89**
52	Screw	1	300763	**1.61**	1	300547	**1.61**	1	300651	**1.61**
53	Spring	1	300724	**1.61**	1	300529	**1.61**	1	300629	**1.61**
54	Pin Point	1	300725	**49.30**	1	300530	**60.63**	1	300630	**60.63**
55	Ball	1	300751	**1.14**		-	**-**		-	**-**
56	Cap Screw	1	300740	**79.17**		-	**-**		-	**-**
57	Pin	1	300732	**21.51**		-	**-**		-	**-**
58	Pin	1	300719	**21.51**		-	**-**		-	**-**
59	Pin	1	300779	**1.14**		-	**-**		-	**-**
60	Cap Screw	6	300770	**1.61**	6	300481(vhu-56)	**2.63**	6	300689	**2.63**
					6	300589(vhu-80)	**1.61**		-	**-**
61	Pin	1	300778	**1.14**		-	**-**		-	**-**
62	Plug	2	300780	**8.69**	2	300592	**8.69**	2	300694	**8.69**
63	Ring Clip (Circlip)	1	300750	**4.11**	1	300560	**14.76**	1	300663	**18.99**
64	Parallel key		-	**-**	4	300587	**42.33**	4	300687	**42.33**
65	Screw		-	**-**	4	300590	**1.61**	4	300690	**1.61**
66	Pin	1	300781	**11.44**	1	300593	**20.59**	1	300695	**19.56**
67	Set Screw	2	300741	**8.24**	2	300567	**16.25**	2	300673	**16.25**
68	Screw		-	**-**	2	300548	**8.24**	2	300652	**8.24**

New ID No.	Description	VHU-36 (1-3/8") pcs	VHU-36 (1-3/8") Code No.	VHU-36 (1-3/8") Price $	VHU-56 (2-1/8") VHU-80 (3-1/8") pcs	VHU-56 (2-1/8") VHU-80 (3-1/8") Code No.	VHU-56 (2-1/8") VHU-80 (3-1/8") Price $	VHU-125 (4-7/8") VHU-160 (6-1/4") pcs	VHU-125 (4-7/8") VHU-160 (6-1/4") Code No.	VHU-125 (4-7/8") VHU-160 (6-1/4") Price $
69	Pin	1	300782	**1.61**	1	300594	**1.61**	1	300696	**1.61**
101	Boring tool Ø5mmx3/8"x60mm	1	300754	**329.52**		-	**-**		-	**-**
102	Boring tool Ø13mmx5/8"x90mm	1	300752	**338.75**		-	**-**		-	**-**
103	Internal corner tool Ø5mmx3/8"x60	1	300755	**480.25**		-	**-**		-	**-**
104	Internal corner tool Ø13mmx5/8"x90	1	300753	**451.70**		-	**-**		-	**-**
105	Right hand tool S20	1	-	**-**	1	-	**-**	1	-	**-**
106	Right hand tool H10	1	-	**-**	1	-	**-**	1	-	**-**
107	Left hand tool S20	1	-	**-**	1	-	**-**	1	-	**-**
108	Left hand tool H10	1	-	**-**	1	-	**-**	1	300676	**263.92**
109	Tool HSS		-	**-**	2	300564	**100.88**	2	300667	**119.47**
110	Tool S20		-	**-**	2	300563	**69.50**	2	300669	**191.93**
111	Extension (Boring bar)		-	**-**	1	300528	**338.75**	1	300628	**545.85**
112	Extension (Boring bar)		-	**-**	1	300527	**338.75**	1	300627	**583.25**
113	Toolholder (Holder with screw)		-	**-**	2	L=185 300534	**844.27**	2	300634	**976.47**
114	Toolholder (Holder with screw)	1	300731	**689.71**	1	L=220 300533	**928.36**	1	L=350 300633	**1,067.35**
115	Collar Set (Set of spacing tubes)	1	300730	**85.12**	1	300532	**136.71**	1	300632	**143.23**
116	Reducer (Reduction sleeve)	1	300733	**236.35**	1	300542	**272.61**	1	300641	**327.29**
117	Reducer (Reduction sleeve)		-	**-**	1	300544	**272.61**	1	300608	**333.25**
118	Allen (Hexagon) Wrench "NAREX"	1	300773	**87.29**		-	**-**		-	**-**
119	Allen (Hexagon) Wrench 4	1	300760	**67.16**	1	300561	**67.16**	1	300664	**67.16**
120	Hexagon wrench 6		-	**-**	1	300562	**82.03**	1	300665	**211.98**
121	Washer	1	300729	**52.28**	1	300531	**79.28**	1	300631	**79.28**
122	Hex Screw	1	300743	**1.61**	1	300550	**3.77**	1	300654	**3.77**

Boring Bar Sets for Boring & Facing Heads

narex

Diameter	Pieces	Code No.	Price $
5/8	6	300835	**1,360.23**
1	6	300837	**1,587.43**
1-1/4	6	300839	**1,955.57**

Precision Boring Heads

STM

- Ideal for mill or jig bore operation
- These heads readily adapt to many different machines due to interchangeable shanks

Head Dia.	Hole Size	Offset	Code No.	Price $
2	1/2	1/2	356001	**132.58**
3	3/4	3/4	356002	**176.76**
4	1	1	356003	**278.29**

Individual Bars

narex

Model	Shank Dia.	Style	O.A.L.	Boring Head	Code No.	Price $
R5/8-0945	5/8	SCBCR	50mm	VHU-36	300840	**380.79**
R5/8-0946	5/8	SCBCR	50mm	VHU-36	300845	**380.79**
L5/8-0947	5/8	SCACL	50mm	VHU-36	300850	**380.79**
L5/8-0948	5/8	SCACL	50mm	VHU-36	300855	**380.79**
R5/8-0949	5/8	SCBCR	90mm	VHU-36	300860	**530.81**
R5/8-0950	5/8	SCACR	90mm	VHU-36	300865	**530.81**
R1-0951	1	SCBCR	80mm	VHU-56, VHU-80	300870	**478.12**
R1-0952	1	SCBCR	80mm	VHU-56, VHU-80	300875	**478.12**
L1-0953	1	SCACL	80mm	VHU-56, VHU-80	300880	**478.12**
L1-0954	1	SCACL	80mm	VHU-56, VHU-80	300885	**478.12**
R1-0955	1	SCBCR	150mm	VHU-56, VHU-80	300890	**530.81**
R1-0956	1	SCACR	150mm	VHU-56, VHU-80	300895	**530.81**
R1-1/4-0957	1-1/4	SCBCR	100mm	VHU-125, VHU-160	300900	**647.20**
R1-1/4-0958	1-1/4	SCBCR	100mm	VHU-125, VHU-160	300905	**647.20**
L1-1/4-0959	1-1/4	SCACL	100mm	VHU-125, VHU-160	300910	**647.20**
L1-1/4-0960	1-1/4	SCACL	100mm	VHU-125, VHU-160	300915	**647.20**
R1-1/4-0961	1-1/4	SCBCR	180mm	VHU-125, VHU-160	300920	**680.00**
R1-1/4-0962	1-1/4	SCACR	180mm	VHU-125, VHU-160	300925	**680.00**

Shanks for Boring Heads

STM

See page G80 for GS Boring Head Holders

Size	Thread	Code No.	Price $
R8	1-1/2-18TPI	356010	**64.79**
ISA40	1-1/2-18TPI	356012	**80.94**
MT3	1-1/2-18TPI	356014	**64.79**
ISA30	1-1/2-18TPI	356016	**34.16**
3/4" S.S.	1-1/2-18TPI	356018	**48.54**
MT4	1-1/2-18TPI	356020	**72.86**
1" S.S.	1-1/2-18TPI	356025	**48.54**

Height Presetter

Fast Accurate Measurement of Vertical Height Magnetic Base for Horizontal Operation.
Reference point of work can be measured very quickly and accurately without damage to tool teeth.

Size	Description	Code No.	Price $
4"	Height Presetter	337950	**743.47**

Height Presetter — Optical Type

- Height 50mm
- With magnetic base
- The red lamp will light up when touched
- Accuracy 0.005 mm
- Combined vertical and horizontal in a unit
- Weight: 0.3 kg

Model No.	Code No.	Price $
HP-50ZM (Magnetic Base)	337970	**498.25**
HP-50Z (Standard Base)	337971	**362.95**

Electronic Tool Length Setter

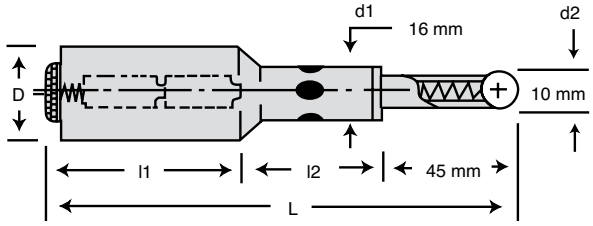
- High accuracy
- Easy operation
- Be sure to remove all chips and oil from the sensor plate and the base of the HP-50E as well as from the workpiece and tool
- To move the tool approaching the sensor plate slowly
- When touching, the "LED" turns on immediately and "H" is just 50.00 mm (or 2")
- LED will not function if batteries are not set in correctly
- Designed to be used on ferrous and non-ferrous materials

Model No.	H	Base Dia.	Sensor Plate Dia.	Code No.	Price $
With Magnetic Base					
HP-50EM	50 mm	40mm	12.7mm	337976	**541.81**
HP-100 EM	100 mm	40mm	12.7mm	337978	**842.81**

Touch Point Sensor

Model No. VPS-20

- Red pilot can be seen clearly
- High sensitivity location sensor
- Location of end surface, outside circle dia., inside circle dia. of the workpiece for processing can be detected with full effect
- Whole travel of red pilot is illuminating, detecting also can be done during turning while spindle stops

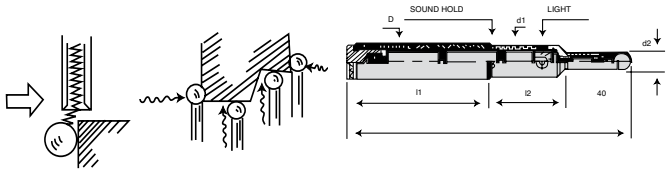


D	d1	d2	L	l1	l2	Type	Code No.	Price $
20	18	10	160	79	41	UM-5#(SP)	337955	**127.15**

Touch Point Sensor (With Beeper)

Model No. VPS-20B / VPS-3/4B

- Unit will sound at the same time when the red lamp lights up
- Accuracy: within 0.005 mm



D	d1	d2	L	l1	l2	Type	Code No.	Price $
20	16	10	157	77	35	UM-5#	337960	**169.31**
3/4	0.629	0.394	6.18	3.03	1.378	UM-5#	337962	**186.20**

Machinists' Mate

Self-Contained Visual Aid - 1/2" Shank
For Machine Set-Up

- Checks machine, tool and workpiece set-up
- Acts as edge finder on vertical milling machines
- Trams table quickly
- Parallels vise
- Checks "spindle run out" – simply, quickly, accurately
- Emits light to indicate precise contact of part at ±0.0001"

Shank Dia.	Code No.	Price $
1/2	145600	**31.50**

NC/CNC Trolley

Complete Tool Trolley with 4 Tool Trays and Inserts.

- Trays bolt in
- (w)1002mm x (D)650mm x (H)830mm
- Weight: 51kgs

Desc.	Taper Type	Inserts Per Tray	Replacement Plastic Inserts Code No.	Price $	Tool Cart Code No.	Price $
Trolley, 4 trays hold 28 inserts	40	7	326986	**5.15**	326985	**823.59**
Trolley, 4 trays hold 20 inserts	50	5	326996	**4.94**	326995	**823.59**

Standard Draw Bar — SDB-2J

- 7/16-20 thread
- 4140 heat treated Alloy Steel

Machine Type	Bar Length (in.)	Hex Length (in.)	Code No.	Price $
2J Head Bridgeport Variable Speed	18	5.5	151700	**87.70**

Deluxe Tool Setting Stand

Quick and easy way to change cutters and pull studs.
Protects the taper of holder with protective insert.
Available in all tapers.

- Select between horizontal or vertical tool holding; quick and simple operation
- For CAT, BT & NMTB Tapers

Vertical	Horizontal	Code No.	Price $
40 Taper	40 Taper x 2 (only BT & NMTB)	335250	**617.41**
50 Taper	50 Taper x 2 (only BT & NMTB)	335260	**617.41**
50 Taper	50 Taper x 1 / 40 Taper x 1	335240	**617.41**
40 Taper	50 Taper x 1 / 40 Taper x 1	335230	**617.41**

Tool Holder Locking Device

- For CAT, BT & NMTB Tapers

Description	Code No.	Price $
30 Taper	335270	**280.99**
40 Taper	335275	**280.99**
50 Taper (Only CAT50 & NMTB50)	335280	**280.99**

Tool Holder Locking Fixture

- Weight: 4.5 kg

Description	Code No.	Price $
HSK63	335225	**738.17**

Simple Tool Setting Stand

Quick and easy way to change cutters and retention knobs.
Protects the taper of holder with protective insert.
Available in all tapers.

- This is an excellent helping tool for simple, rapid and safe tool holding
- For CAT, BT & NMTB Tapers

Model	Code No.	Price $
TL-30	335200	**331.97**
TL-35	335205	**288.61**
TL-40	335210	**331.97**
TL-50	335220	**331.97**

Spindle Taper Wipers

- For easily and quickly cleaning spindle holes
- Plastic body, the taper wiper is made of special cotton material therefore not damaging the spindle
- The BT & DIN tapers are the same

Model No.	Taper	Total Length	Code No.	Price $
VTW-30	#30	168mm	326210	**38.72**
VTW-40	#40	159mm	326215	**32.97**
VTW-50	#50	265mm	326220	**56.00**
VTW-50H	HSK50	159mm	326225	**135.32**
VTW-63H	HSK63	167mm	326230	**176.64**

Workholding, Clamping & Fixturing

Workholding, Clamping & Fixturing

VISES

GS Milling Machine Vises H2-3
GS Modular Vises & Accessories/Parts H3-4
GS Double Clamp Vises. H5-6
Multi-Tasking 5-Axis Modular Vise H7-8
Milling Vises H9
Power Machine Vises H10
Toolmaker Vises, EDM Vises H11
Bench Vises H11
Drill Press Vises H12

WORKHOLDING

G-Clamps, U/N Work Stoppers H12
Vee Blocks H12-14
Angle Plates & Cross Tables H14
Sine Bars, Plates, Vises. H15
Arbor Presses H15

LATHE CHUCKS

STM Lathe Chucks H17-20
Lathe Chuck Jaws, T-Nuts H22-28

LATHE ACCESSORIES

GS Live Centres H29-34
STM / Skoda Live Centres H35-39
Toolposts & Holders H40-43

CLAMPING & FIXTURING

Clamping Kits H44
Clamps H44
STM / Tooling Components H45-46
Fixturing H47-49

GS160G 6" Precision Milling Machine Vise

This vise has been redesigned with new industry leading workholding features.

- Jaw opening: 9.13" / 232mm
- Bed height: 2.875" ±0.0005"
- Weight: 68lbs / 31kg
- Narrower body style to allow more vises on a machine table
- The bearing pack has been relocated to help reduce oil/water/chip leakage into the vise body
- The thrust bearings have been replaced with ball bearings to make the pack stronger and more stable
- Spherical segment creates all-directional alignment and reduces jaw lift for improved performance
- Spindle does not protrude past the end of the body
- Brush seal design
- Perpendicularity (running face and jaw plate): 0.0004"
- Parallelism (running face to bottom of bed): 0.0006"
- Material: FCD-60 (80,000psi)
- Stationary jaw: 4 bolt stationary design reduces lift
- Pull-type design: Reduces stress on body during clamping
- Chip evacuation: Straight through the body on sides and ends. Locations strategically chosen to not reduce body strength
- Max. Clamping Force: 30378 ft/lbs

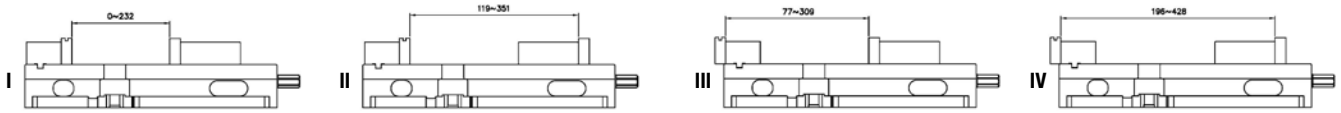
10 YEAR WARRANTY!

(Inch)

Model	Code No.	Price $
GS160G	327320	**702.00**
#2 Main Screw	327322	**96.84**
#4 Sliding Spindle Nut	327324	**106.41**
#5 Movable Jaw	327326	**142.25**
#6 Fixed Jaw	327328	**122.45**
#7 Jaw Plate (2pcs)	327330	**91.00**
Repair Kit - consists of #8 segment, #20 bearing, #21 o-ring, 2pc #10 brush, 2pc #19 c-clip	327332	**47.04**
Handle Assembly - consists of #11 socket, #12 bar, #13 pin	327334	**53.50**
#14 Slide Cover (Back)	327336	**5.94**
#14 Slide Cover (Front)	327338	**11.88**
#16 Bolt for Jaw Plate (piece)	327340	**3.03**
#17 Bolt (long) for Fixed Jaw	327342	**3.12**
#18 Bolt (short) for Fixed Jaw	327344	**3.11**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	T	U	Weight	Code No.	Price $
427	186	151	466	111.025	39	90.53	73.025	58.7	18.42	17.46	101.6	44.5	19	232	23.8	98.4	31kg	327320	**702.00**

Capacity

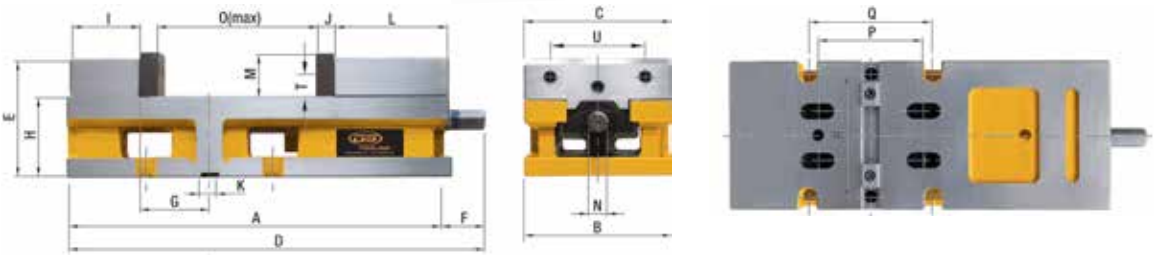


I	II	III	IV
0~9.13"	4.68~13.82"	3.03~12.16"	7.72~16.85"
0~232mm	119~351mm	77~309mm	196~428mm

GSV60 6" Versatile Vise

- 6" vise with 6-1/2" opening
- High accuracy vise for single station CNC centres specially designed to prevent workpiece lift
- 2 operating positions for Vertical Machine Centres: Upright & Lay Down
- 1 operating position for Horizontal Machine Centres: Horizontal
- Bed height: 81mm ±0.012mm (3.189" ±0.0005")
- Material: FCD-60
- Weight: 68lbs / 31kg

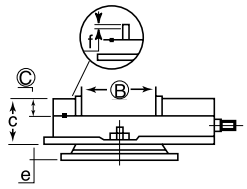
LIFETIME WARRANTY!

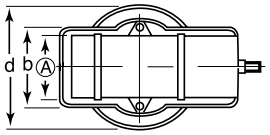


A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	T	U	Weight	Code No.	Price $
385	152.45	151	431.8	118.7	46.8	69.84	81	69.9	18	18	114.3	44.5	19	163	107.95	127	127	23.8	98.4	31kg	382620	**995.00**

GS675 6" Precision Milling Machine Vise

- Vises are matched (Bed Height: 2.875")
- An integral key and large fasteners reduce deflection by 50%
- 4-jaw plate positions allow extra capacity with the jaw plates in the outside position
- The swivel base is graduated 360° in one degree increments
- Chip cover protects leadscrew from damage
- The quality movable jaw does not lift off the bed, and the deflection of the stationary jaw is minimized

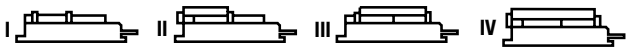




(Inch)

Model	Jaw Width A	Jaw Open B	C	O.A.L.	b	c	d	e	f	Plain Ship Wt	Code No.	Price $
GS675	6	7.5	1.77	17.2	9.13	4.6	12	1.65	0.39	80lbs	327275M	**620.00**
Jaw Plates (2pcs)											327330	**91.00**
Swivel Base Only											327280	**174.00**
Replacement Handle											327334	**53.50**
Main Screw, Collar & Collar Set Screw for GS675											327284	**103.12**
Chip Cover											327338	**11.88**
Vise Nut for GS675											327288	**152.69**
Jaw Plate Screws (4pcs)											327286	**16.87**
Ball Bearing Thrust Collar											327292	**166.52**

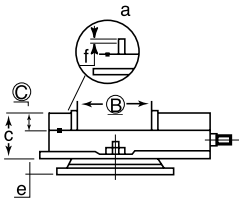
Capacity

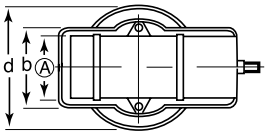


	I	II	III	IV
GS 675	0-7-1/2"	2-1/8" - 10-1/4"	5" - 13-1/8"	7" - 15-7/8"
	0-192mm	54-262mm	125-333mm	177-403mm
GS 810	0-10.43"	2.36" - 3.66"	6.25"- 16.61"	8.58" - 20.79"
	0-265mm	60-347mm	159-422mm	218-528mm

GS810 8" Precision Milling Machine Vise

- Vises are matched (Bed Height: 3.310")
- An integral key and large fasteners reduce deflection by 50%
- 4-jaw plate positions allow extra capacity with the jaw plates in the outside position
- The swivel base is graduated 360° in one degree increments
- Chip cover protects leadscrew from damage
- The other quality movable jaw does not lift off the bed, and the deflection of the stationary jaw is minimized





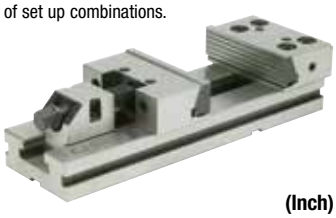
(Inch)

Model	Jaw Width A	Jaw Open B	C	O.A.L.	b	c	d	e	f	Plain Ship Wt	Code No.	Price $
GS810	8	10.0	2.25	21.8	11.62	5.55	15.0	1.85	0.43	158lbs	327300	**1,900.00**
Swivel Base Only											327310	**308.00**
Jaw Plates											327311	**181.80**
Replacement Handle											327305	**68.87**

GS Plain Base Modular Vises

Manufactured under rigid quality control. As a result of the high standard construction, GS Vises can be depended upon to maintain their accuracy under the most severe operating conditions. The modular design and the concept of interchangeability makes possible a wide variety of set up combinations.

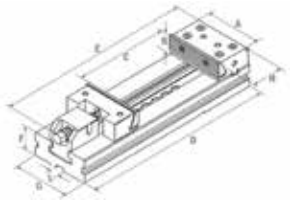
- High accuracy
- Unlimited clamping range
- High quality alloy steel
- High clamping pressure
- No jaw lift
- All vises are matched



(Inch)

Model	Jaw Width (A)	Opening (C)	Jaw Height (B)	Code No.	Price $
1	4	4	1.2	382005	**861.00**
2	5	6	1.6	382010	**947.80**
3	6	8	1.97	382015	**1,034.60**
3	6	12	1.97	382017	**1,204.00**
4	7	8	2.4	382020	**1,465.80**
4	7	12	2.4	382025	**1,549.80**
4	7	16	2.4	382030	**1,722.00**
4	7	20	2.4	382032	**2,065.00**
5	8	8	2.6	382035	**1,892.80**
5	8	12	2.6	382040	**2,238.60**
5	8	16	2.6	382045	**2,583.00**
5	8	20	2.6	382050	**3,099.60**
5	8	24	2.6	382052	**3,614.80**
6	12	8	3.2	382055	**2,926.00**
6	12	12	3.2	382060	**3,614.80**
6	12	16	3.2	382065	**4,305.00**
6	12	20	3.2	382070	**4,821.60**
6	12	24	3.2	382075	**5,336.80**
6	12	28	3.2	382080	**5,852.00**
6	12	32	3.2	382085	**6,368.60**

Modular Vise Specs



(Inch)

Vise Size	Code No.	D	E	F	G	H	I	Kgs
4 x 4	382005	10.63	12.5	1.378	2.95	3.07	0.628	6.8
5 x 6	382010	13.583	16.4	1.575	3.8	3.04	0.64	12.9
6 x 6	382015	16.535	20.86	1.968	4.92	3.574	0.64	25.5
6 x 12	382017	20.472	20.86	1.968	4.92	3.574	0.64	29
7 x 8	382020	17.913	24.80	2.283	5.8	3.876	0.64	37
7 x 12	382025	21.85	24.80	2.283	5.8	3.876	0.64	42
7 x 16	382030	25.787	24.80	2.283	5.8	3.876	0.64	47
7 x 20	382032	29.724	24.80	2.283	5.8	3.876	0.64	52
8 x 8	382035	19.488	28.74	2.756	6.8	4.536	0.64	64
8 x 12	382040	23.425	28.74	2.756	6.8	4.536	0.64	69
8 x 16	382045	27.362	28.74	2.756	6.8	4.536	0.64	74
8 x 20	382050	31.299	28.74	2.756	6.8	4.536	0.64	79
8 x 24	382052	35.236	28.74	2.756	6.8	4.536	0.64	84
12 x 8	382055	21.063	32.67	3.07	7.67	4.74	0.64	95
12 x 12	382060	25.000	32.67	3.07	7.67	4.74	0.64	105
12 x 16	382065	28.937	32.67	3.07	7.67	4.74	0.64	115
12 x 20	382070	32.874	32.67	3.07	7.67	4.74	0.64	125
12 x 24	382075	36.811	32.67	3.07	7.67	4.74	0.64	135
12 x 28	382080	40.748	32.67	3.07	7.67	4.74	0.64	145
12 x 32	382085	44.685	32.67	3.07	7.67	4.74	0.64	155

Parts For GS 8" Precision Milling Machine Vises

Description	Code No.	Price $
Main Screw, Collar & Collar Set Screw	327306	**234.94**
Ball Bearing Thrust Collar	327292	**166.52**
Needle Bearing Thrust Collar	327307	**55.35**
Chip Cover	327308	**8.82**
Vise Nut	327309	**364.02**
Jaw Plate Screws (4pcs)	327312	**12.77**

Parts & Accessories For GS Modular Vises

Mechanical Blocking Device

Swivel Base

Extension Base

Moveable Jaw Section and Base

Fixed Jaw Section and Base

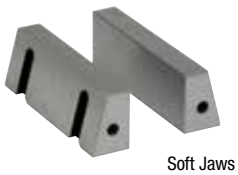
Part Description	#1 Code No.	Price $	#2 Code No.	Price $	#3 Code No.	Price $	#4 Code No.	Price $	#5 Code No.	Price $	#6 Code No.	Price $
Swivel Base	382380	**497.00**	382385	**568.40**	382390	**676.20**	382395	**742.00**	382400	**1,073.80**	382405	**1,338.40**
Extension Base	382260	**411.61**	382265	**462.66**	382270	**514.35**	382275	**566.04**	382280	**709.95**	382285	**995.40**
Mechanical Blocking Device	382470	**200.20**	382475	**235.20**	382480	**285.60**	382485	**322.00**	382490	**400.40**	382495	**597.80**
Moveable Jaw	382412	**200.20**	382417	**254.80**	382422	**303.80**	382427	**460.11**	382432	**694.95**	382437	**1,029.34**
Fixed Jaw	382410	**200.20**	382415	**254.80**	382420	**303.80**	382425	**460.11**	382430	**694.95**	382435	**1,029.34**
Main Screw	382850	**60.20**	382852	**82.60**	382854	**98.00**	382856	**98.00**	382859	**138.60**	382860	**138.60**
T-Wrench	382820	**19.60**	382822	**19.60**	382824	**21.00**	382826	**21.00**	382828	**25.20**	382830	**25.20**
Box Wrench	382874	**37.80**	382876	**37.80**	382878	**43.40**	382880	**43.40**	382882	**77.00**	382884	**77.00**
Vise Holding Jaws (Pair)	382685	**72.43**	382690	**72.43**	382695	**101.47**	382700	**101.47**	382705	**109.20**	382710	**109.20**
Positioning Keys	382655	**42.00**	382660	**42.00**	382665	**42.00**	382670	**42.00**	382675	**42.00**	382680	**42.00**
Work Stop	382770	**44.99**	382775	**44.99**	382780	**44.99**	382785	**44.99**	382790	**56.00**	382795	**56.00**
Jaw Plate for Fixed Jaw	382862	**82.60**	382864	**89.60**	382866	**128.91**	382868	**140.71**	382870	**182.00**	382872	**243.60**
Jaw Plate for Moveable Jaw	382863	**82.60**	382865	**89.60**	382867	**128.91**	382869	**140.71**	382871	**182.00**	382873	**243.60**
Lock Screw for Blocking Device	382471	**11.20**	382476	**11.20**	382481	**14.00**	382486	**14.00**	382491	**15.40**	382496	**15.40**
	M6x1 x 25mm		M12x1 x 25mm		M14x2 x 35mm		M12x1.75 x 40mm		M20x2.5 x 60mm		M20x2.5mm x 50mm	
	382472	**6.93**			382482	**11.56**						
	M8x1.25 x 25mm				M12x1.75 x 30mm							
Chrome Locking Ball for Blocking Device	382473 9/16" dia.	**11.01**										
Pre-Assembled Groups												
Overall Length	5.5"		6.30"		9"		10"		12"		13.75"	
Leadscrew Overhang	2.08"		2.3"		2.8"		2.0"		3"		2.16"	
Moveable Jaw Section and Base Assembly	382290	**476.00**	382295	**592.20**	382300	**744.80**	382305	**872.20**	382310	**1,299.20**	382315	**2,622.54**

Prismatic Jaws

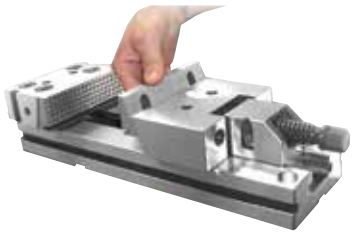
Model No.	Code No.	Price $
#3	382890	**309.19**
#4	382892	**411.61**
#5	382894	**514.35**

Modular Vise w/ Quick Interchangeable Pulldown Jaws

No tools needed for quick hand change of downward jaw plates



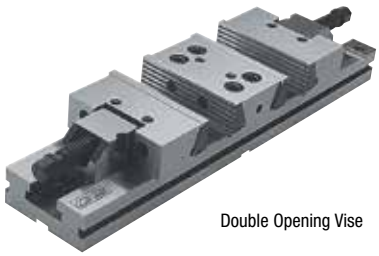
Soft Jaws



Description	Code No.	Price $
6 x 8 Modular Vise	382896	**1,449.14**
Pair Soft Jaws	382897	**129.34**

GS Modular Vises — Single & Double Opening

- High accuracy
- No length limitations
- Unlimited clamping range
- No jaw lift
- High quality alloy steel
- Low profile
- High clamping pressure
- All vises are matched
- Mechanical and pneumohydraulic blocking devices
- Extra long base

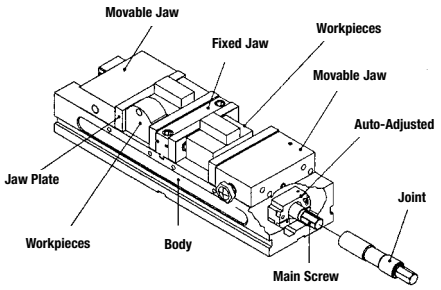


Double Opening Vise

Model	Opening	O.A.L.	Jaw Width	Weight (kg)	Code No.	Price $
Single Opening Modular Vise						
1	11.4	18	4	10	382101	**1,071.00**
2	12.6	20.5	5	17	382102	**1,442.00**
3	14.7	23	6	31	382103	**1,792.00**
3	18.11	27	6	34	382104	**1,985.20**
4	16	26	7	46	382105	**2,091.60**
4	20	30	7	51	382106	**2,298.80**
5	24	36	8	92	382110	**3,959.20**
Double Opening Modular Vise						
3	2 x 4.3	23	6	38	382153	**2,174.20**
3	2 x 6.3	27	6	41	382154	**2,373.00**
4	2 x 6.7	30	7	63	382156	**2,746.80**
5	2 x 10	40	8	107	382172	**4,947.60**
6	2 x 6.3	35	12	154	382175	**5,895.40**
6	2 x 16	55	12	194	382180	**9,739.18**

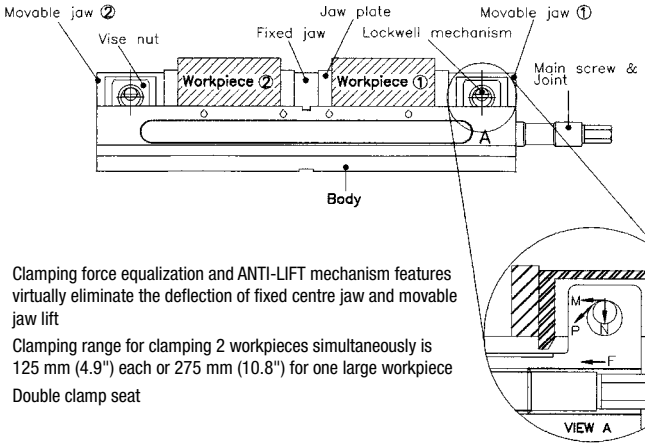
Double Clamp Vise

- Double clamp set - one handle can simultaneously operate two moveable jaws and clamps 2 workpieces of same or different size or one large workpiece
- This model can increase efficiency and productivity of CNC machines
- The movable jaw ANTI-LIFT mechanism provides alignment to workpiece without jaw lift
- There are 6 kinds of clamping ways to meet workpieces of different shapes and sizes
- The whole body is precisely ground and height tolerance is within ± 0.025mm (±0.001"), therefore several vises can be lined up for production
- The vise is made of FDC-80.000 psi (55kg/cm²) Ductile iron, and slide ways are hardened to 45HRC
- The rigid construction prevents base distortion
- Precision made to high accuracy standard



Model No.	Code No.	Price $
4" - TLD-40G/HV	382610	**1,718.00**
6" - TLD-60G/HV	382600	**2,260.00**

ANTI-LIFT MECHANISM



- Clamping force equalization and ANTI-LIFT mechanism features virtually eliminate the deflection of fixed centre jaw and movable jaw lift
- Clamping range for clamping 2 workpieces simultaneously is 125 mm (4.9") each or 275 mm (10.8") for one large workpiece
- Double clamp seat

GS Double Clamp Vise (TLD-40G/HV, TLD-60G/HV)

ANTI-LIFT Mechanism

M: Jaws forward movement force

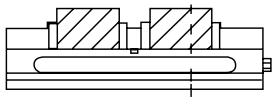
N: Gravity

P: Resultant 45° component force forces the workpiece down while clamping

F: Direction of jaw movement

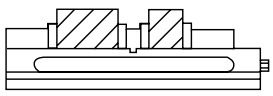
Clamping Examples For Different Applications:

1



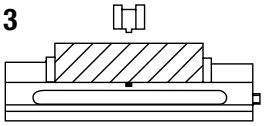
Clamping 2 pieces of same size workpieces.
Max. Capacity: 90mm (3.5")
125mm (4.9")

2



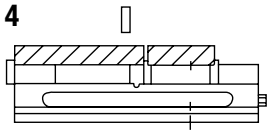
Clamping 2 pieces of different size of workpieces.
Max. Capacity: 90mm (3.5")
125mm (4.9")

3



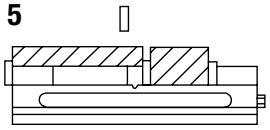
Large workpieces are able to be clamped after moving fixed jaw.
Max. Capacity: 237mm (9.3")
1315mm (12.4")

4



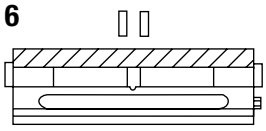
Stepped jaw plate for thin workpiece.
Max. Capacity: 215mm (8.4")
275mm (10.8")

5

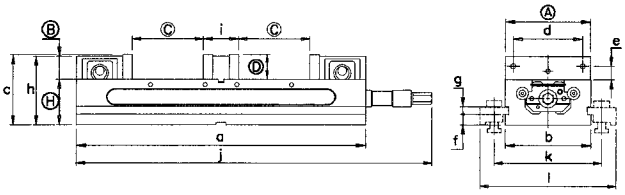


Clamping 2 different workpieces.
Max. Capacity: 215mm (8.4")
275mm (10.8")

6



Large thin workpiece is able to be clamped after removing jaw plate on fixed jaw.
Max. Capacity: 405mm (15.9")
520mm (20.5")

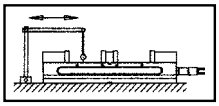


Dimensional Information For Double Clamp Vises:

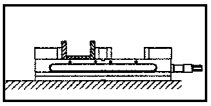
(mm/in.)

Model No.	A	B	C	D	a	b	c	d	e	f	g	h	H	i	j	k	l	Guide Block	Weight (kg/lb)
TLD-40G	103	33	90	38	405	104	101.5	63.5	17.5	13	31	96.5	63.5	55	430	143	195	18	20
(TLD-40HV)	4.05	1.29	3.54	1.49	15.9	4.09	3.99	2.5	0.68	0.51	1.22	3.79	2.5	2.16	16.9	5.62	7.67	0.709	44
TLD-60G	152	41.5	125	44.5	520	154	123.5	98.42	23.8	18	16	126.5	82.55	64	639	193	245	18	48
(TLD-60HV)	5.98	1.6	4.9	1.75	20.47	6	4.98	3.87	0.94	0.7	0.63	4.86	3.25	2.52	25.15	7.59	9.64	0.709	105.6

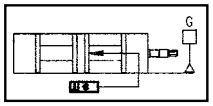
TLD-40G, TLD-60G; match vise, TLD-40HV, TLD-60H (horizontal and vertical 2 way) Inspection Specification:



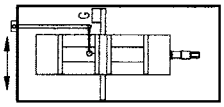
1
Parallelism: running face to bottom of bed.
Guaranteed: 0.01 mm (0.0004")



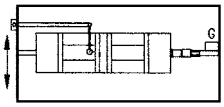
2
Squareness: between running face and jaw plate.
Guaranteed: 0.03 mm (0.0012")



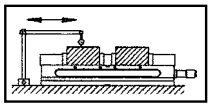
3
Squareness both sides to fixed jaw plate.
Guaranteed: 0.02 mm (0.0008")



4
Parallelism: keyways on bottom of bed to jaw plate.
Guaranteed: 0.02 mm (0.0008")



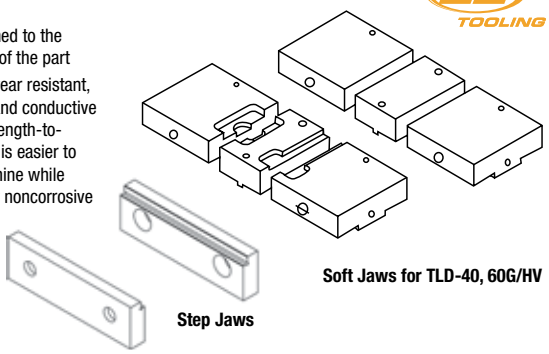
5
Squareness: keyways on bottom of bed to jaw plate.
Guaranteed: 0.02 mm (0.0008")



6
Parallelism: running face of the test block to bottom.
Guaranteed: 0.02 mm (0.0008")

Machinable Fixture Jaws

- Can be machined to the precise shape of the part
- Aluminum is wear resistant, nonmagnetic and conductive with a high strength-to-weight ratio. It is easier to form and machine while being naturally noncorrosive



Soft Jaws for TLD-40, 60G/HV

Step Jaws

Description	Code No.	Price $
4" aluminum soft jaws	382612	**495.18**
4" step jaws	382614	**223.12**
6" aluminum soft jaws (10mm key)	382602	**756.60**
6" aluminum soft jaws (14mm key)	382609	**756.60**
6" step jaws	382604	**256.05**

Steel Jaw Plate Set

Steel offers high tensile strength and corrosion resistance.

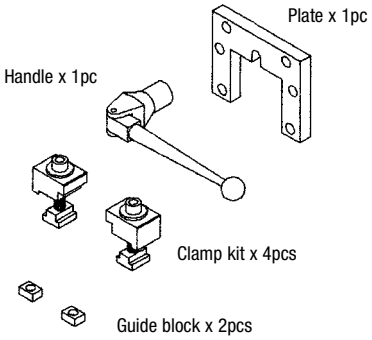
Description	Code No.	Price $
6" steel jaw plate set (4pcs) for TLD60	382617	**284.74**

Steel Jaw Sets

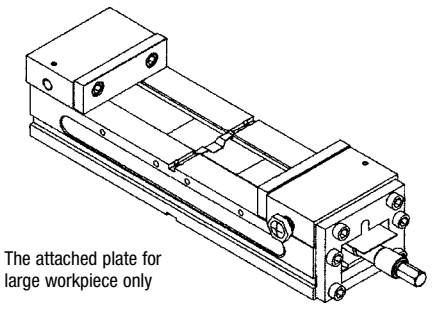
Steel offers high tensile strength and corrosion resistance.

Description	Code No.	Price $
4" steel jaw set for TLD40	382615	**338.93**
6" steel jaw set for TLD60	382605	**429.56**

Standard Accessories

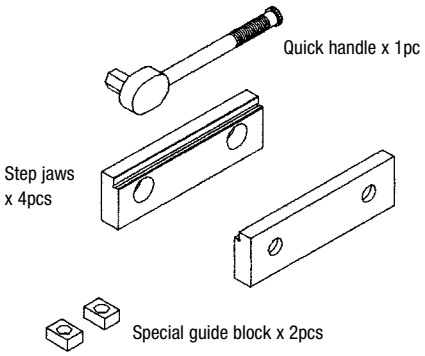


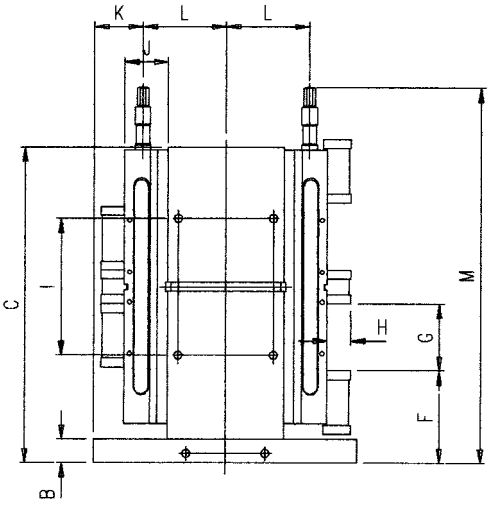
Usage of "Plate"

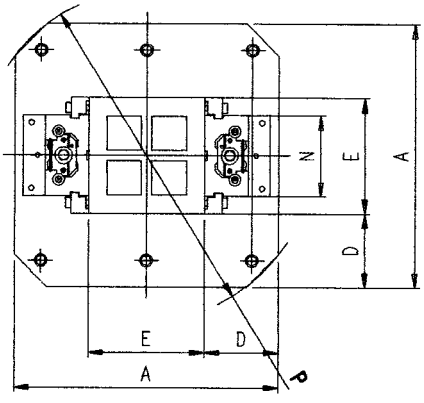


The attached plate for large workpiece only

Optional Accessories







Jig Block Dimensional Specifications

(mm/in.)

Model NO.	Use Vise	Pallet Size	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Weight (kg/lb)
GS-40-4C	TLD-40	400 x 400	400	40	500	110	180	168	90	38	203	63.5	75.5	124.5	543	104	506	118
GS-40-4C	TLD-40	400 x 400	15.74	1.57	19.68	4.33	7.08	6.61	3.54	1.49	7.99	2.5	2.907	4.90	21.3	4.09	19.92	259.6
GS-60-4C	TLD-60	500 x 500	500	45	600	140	220	175	125	44.5	260	82.5	92	158	714	154	628	233
GS-60-4C	TLD-60	500 x 500	19.68	1.77	23.62	5.51	8.66	6.88	4.92	1.75	10.23	3.25	3.62	6.25	28.11	6.02	24.72	512.6

GS Multi-Tasking Modular Vises for 5-Axis Machining Centers

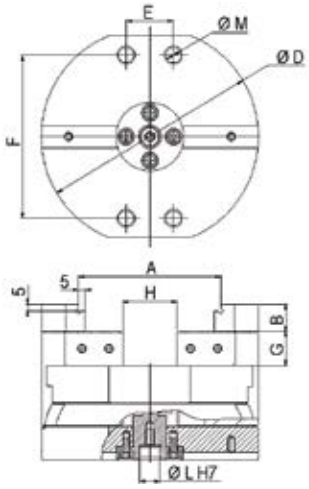
The MULTI-TASKING range of vises has been specially designed for 5-axis machines. Working on 5 sides of the workpiece, it allows the best optimization of the machining cycle. Thanks to the compact design this kind of vise can be installed on all machining centres. The use of GRIP jaws is strongly recommended with multitasking vises.

- Self-centering or eccentric
- Eccentric jaw adjustment in steps of 2mm
- Highest accuracy in positioing and alignment (±0.02mm) due to ground rack teeth on both the base and the fixed jaws
- Minimum deflection
- Solid, rigid construction and maximum clamping ratio to the total length
- Positioning through ground holes or keyways
- All case hardened to 60HRC for durability

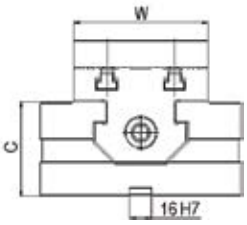
Type 1 & 2

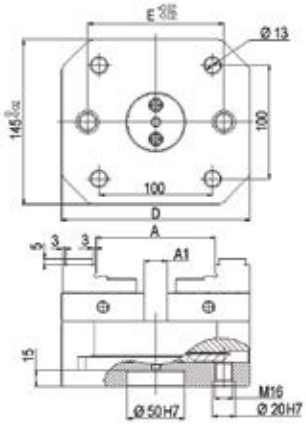
Type 3

Vise shown with riser

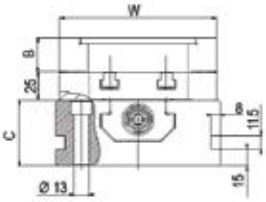


Type 1 & 2

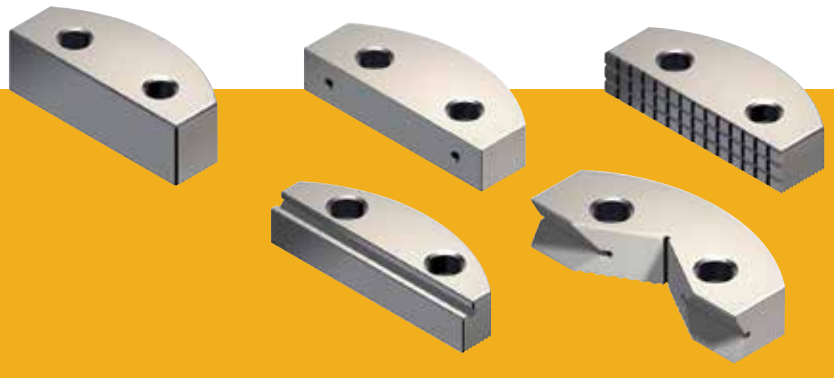




Type 3



	Type 1	Type 2	Type 3x166	Type 3x266
Code No.	**382520**	**382522**	**382524**	**382526**
Price $	**2,157.77**	**2,876.79**	**3,308.41**	**3,452.28**
A	74	104	108	208
A1	-	-	20	60
W	74	99	138	138
B	15	20	30	30
C	50	70	58	58
øD/D	120	160	166	266
E	5	35	120	200
F	92	120	-	-
G	20	25	-	-
H	20	40	-	-
øL H7	20	20	-	-
M	9	11	-	-
kg	4.9	11	13	20
kN	16	20	30	30



Also available:

Smooth, Soft, Serrated, Step, Prismatic, and Grip Jaws

Call for more information

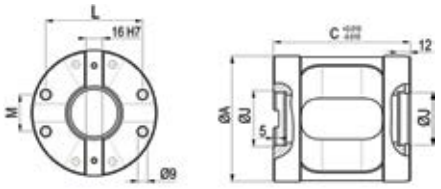
Steel Risers

Allow greater access to machine hard to reach areas of the workpiece

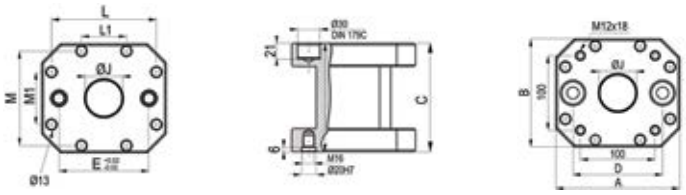
Type 1

Type 3 x 166

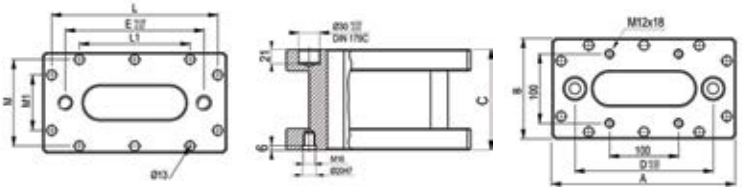
Type 1 & 2



Type 3 x 166



Type 3 x 266



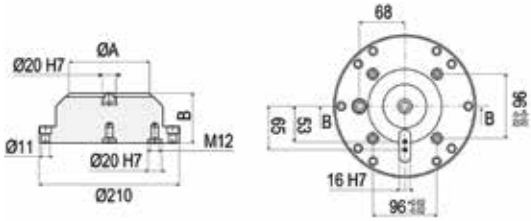
Model	A	B	C	D	E	L	L1	M	M1	ØJ	kg	Code No	Price $
Type 1	119	-	130	-	-	92	-	35	-	50 H7	6	382521	**1,409.19**
Type 2	158	-	130	-	-	120	-	35	-	50 H7	10	382523	**3,494.00**
Type 3x166	166	145	145	120	120	140	60	126	70	50 H7	14	382525	**2,956.16**
Type 3x266	266	125	145	200	200	240	160	125	80	-	21.5	382527	**6,528.40**

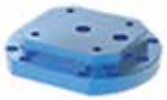
Aluminum Risers

Allow greater access to machine hard to reach areas of the workpiece

Type 1 & 2

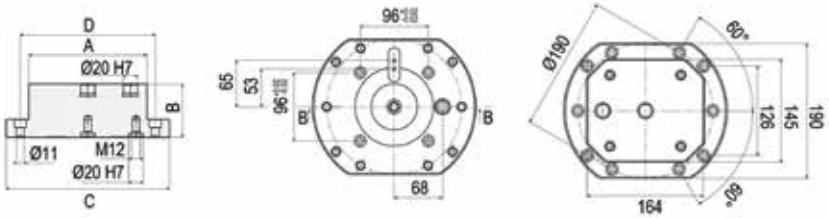
Type 1 & 2





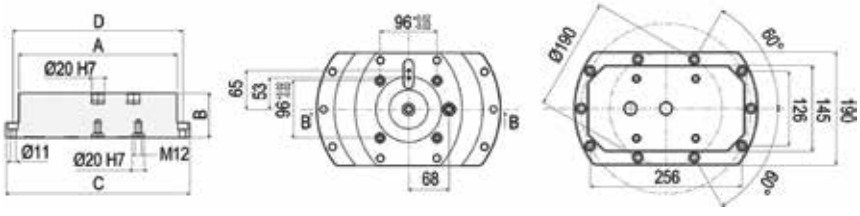
Type 3 x 166

Type 3 x 166



Type 3 x 266

Type 3 x 266

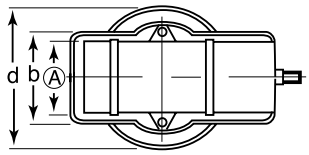


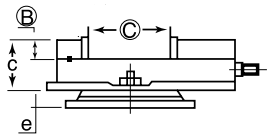
Model	A	B	C	D	kg	Code No	Price $
Type 1	Ø120	50	-	-	3	382531	**737.80**
Type 1	Ø120	75	-	-	4.5	382532	**778.40**
Type 1	Ø120	100	-	-	5.4	382533	**821.80**
Type 2	Ø160	50	-	-	3.5	382534	**737.80**
Type 2	Ø160	75	-	-	4.9	382535	**778.40**
Type 2	Ø160	100	-	-	6.4	382536	**821.80**

Model	A	B	C	D	kg	Code No	Price $
Type 3 x 166	166	50	230	190	3.8	382541	**855.40**
Type 3 x 166	166	75	230	190	5.3	382542	**911.40**
Type 3 x 166	166	100	230	190	6.8	382543	**970.20**
Type 3 x 266	266	50	310	286	5.8	382544	**1,316.00**
Type 3 x 266	266	75	310	286	8.3	382545	**1,390.20**
Type 3 x 266	266	100	310	286	10.7	382546	**1,468.60**

Milling Vises

- During machining operations, horizontal vises provide secure and accurate positioning of the workpiece
- An operator controls the opening and closing of the jaws on the workpiece for manual vises



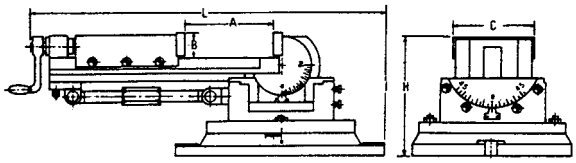


Model No.	A	B	C	Overall Length	b	c	d	e	With Swivel	Price $	Without Swivel	Price $	Swivel Only	Price $
CH-4	4	1-1/8	4	12-9/16	6-1/2	3-1/2	9-3/4	1-1/4	326405	**603.69**	326420	**571.37**	326423	**66.94**
CH-6	6	1-1/2	5-3/4	16-3/4	8-1/4	4-3/8	11-3/4	1-5/8	326410	**717.80**	326425	**649.31**	326427	**168.59**
CH-8	8	2	8	21-3/4	11-5/8	5-5/16	15	1-7/8	326415	**1,536.28**	326430	**1,463.13**	326433	**215.43**

3-Way Angle Milling Vises

The universal 3-way angle vise is a new design which makes the angle setting in all directions possible to meet the needs of elaborate work.

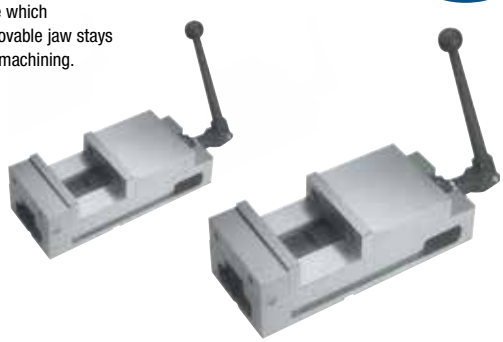
- Operation is smooth and easy
- Swivel base is scaled in 360°
- Each base can be fixed by four special bolts
- Precision angle setting is scaled in all directions
- Moveable part touches the bore in V-shape and is adjustable
- Upper angle setting base can incline from the horizontal position to the vertical position

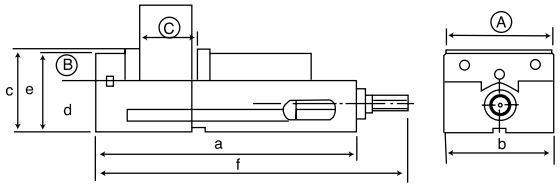


Model No.	Width C	Jaw A	B	H	L	Height at Vertical Position	Gross Weight (kg)	Measure CFT	Code No.	Price $
KAV-75	80	90	30	144	400	385	(C) 15	0.7	326100	**578.30**
KAV-100	106	105	38	172	460	470	(C) 32	1.2	326102	**703.30**
KAV-125	132	140	40	205	625	590	(W) 50	1.6	326104	**969.00**

Precision Milling Vises

This vise has a feature which guarantees that the movable jaw stays securely down during machining.





Model No.	A	B	C	a	b	c	d	e	f	Weight	Code No.	Price $
AMC-40	102	40	120	332	105	108	68	100	372	20 kg	327150	**632.71**
AMC-60	152	44	146	370	154	117	73	111	438	30 kg	327155	**804.65**

Tilting Hydraulic Machine Vises

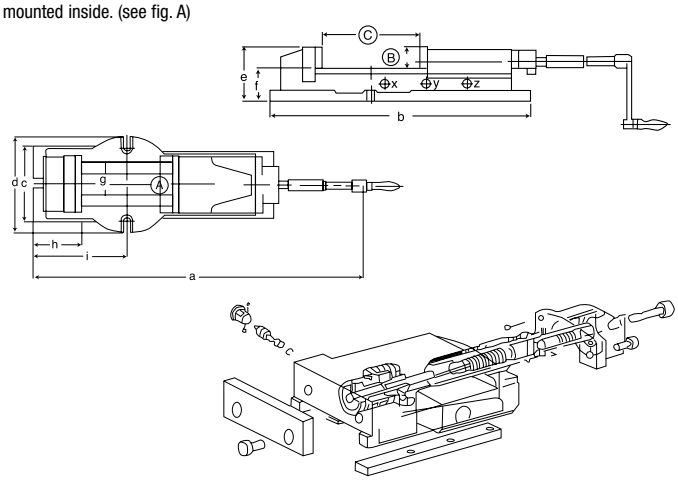
- Angle setting ranges from 0° ~ 50° Tilting degrees graduated for easy reading
- Swivel base graduated to 360° and fixable in any position
- Accuracy within 0.02mm
- Tilting seat set by two locking screws

Model	Jaw Width	Jaw Height	Jaw Opening	Weight (kg)	Code No.	Price $
VHT-4	110mm	36mm	170mm	33.3	326105	**2,534.74**
VHT-6	154mm	54mm	300mm	88	326107	**3,066.46**

Precision Hydra Power Machine Vises

Hydraulic Booster System

Hydraulic Booster provides a steady clamping force against shocks and vibrations during the operations, since it fastens the work piece resiliently with the aid of the disc-springs mounted inside. (see fig. A)



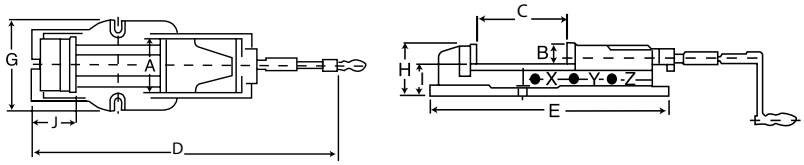
Seal Kits

Vise Model	Code No.	Price $
HP-40	327201	**52.83**
HP-50	327211	**61.55**
HP-60	327221	**58.16**
HP-80	327231	**72.45**

Model No.	A	B	C	a	b	c	d	e	f	g	h	i	Clamp Force	Wt. (kg) Plain	Plain Base Code No.	Price $	Wt (kg) with Swivel Base	With Swivel Base Code No.	Price $
HP-40	100	36	170	525	430	130	160	94	60	78	100	155	2500kg	16	327200	**1,237.78**	22	327205	**1,334.09**
HP-50	125	46	220	670	540	165	185	118	72	97	117	185	3500kg	32	327210	**1,258.51**	42	327215	**1,471.52**
HP-60	150	51	300	800	620	200	240	133	82	116	125	247	4400kg	54	327220	**1,306.55**	70	327225	**1,519.70**
HP-80	200	62	300	900	700	240	280	162	100	160	165	266	6600kg	95	327230	**2,420.57**	125	327235	**2,723.09**

Hydraulic Machine Vises

- Ruggedly constructed for milling, drilling, shaping, grinding and many other machine shop applications
- Body is made of high quality ductile cast iron, resists deflection or bending

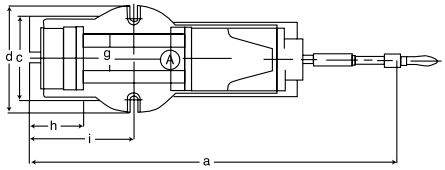


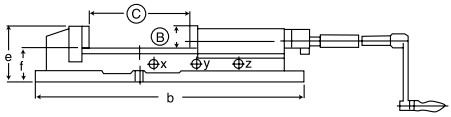
Model No.	A	B	C	D	E	G	H	I	J	Clamp Force	G.W. (kg)	Plain Base Code No.	Price $	Wt (kg) with Swivel Base	With Swivel Base Code No.	Price $
HP-40G	100	36	170	525	430	160	94	60	78	2500kg	22	329205	**945.50**	26	329200	**1,394.70**
HP-50G	127	46	220	670	540	185	118	72	97	4500kg	45	329215	**1,000.30**	52	329210	**1,209.70**
HP-60G	150	51	300	800	620	240	133	82	116	6000kg	64	329225	**1,076.80**	74	329220	**1,317.50**
HP-80G	200	65	300	800	710	280	158	100	161	8500kg	109	329235	**2,078.50**	125	329230	**2,586.40**

Mechanical Power Machine Vises

Mechanical Power Booster System

The Ball-Design mechanical booster provides steady clamping forces against shocks and vibrations.
It helps vises clamp workpieces resiliently, during operations, with an aid of the inside-mounted disc-spring.





Model No.	A	B	C	a	b	c	d	e	f	g	h	i	Clamp Force	Wt. (kg) Plain	Plain Base Code No.	Price $	Wt (kg) Swivel Base	Swivel Base Code No.	Price $
HP-60 II	150	51	300	800	620	200	240	133	82	116	125	247	4400	54	327240	**1,306.55**	16	327245	**165.10**

Toolmaker Vises

- Solid one piece body
- High quality alloy steel, surface hardened to 58-62 HRC
- Parallelism: 0.005mm / 100mm
- Perpendicularity: 0.005mm
- Angled centre channel provides extra jaw capacity

Model No.	Length (mm)	Width (mm)	Jaw Opening (mm)	Jaw Height (mm)	Code No.	Price $
QKG50	140	50	65	25	230815	**89.51**
QKG63	175	63	85	32	230820	**109.41**
QKG73	190	73	100	35	230825	**118.68**
QKG88	235	88	125	40	230830	**182.08**
QKG100	245	100	125	45	230835	**240.40**
QKG125	285	125	160	50	230836	**362.81**

Milling Machine Vises For Round Workpieces

These vises are used for clamping round workpieces with diameters from 2" to 6.3" for use on a milling machine or drill press.

Jaw Width	Shaft Capacity	Weight (lb)	Code No.	Price $
6	2 to 6.3	165	401003	**3,672.59**

EDM Tool Maker Vises

- Parallelism: ±0.002mm / 100mm
- Squareness: ±0.002mm / 100mm
- Stainless Steel
- VSTV-50W designed specifically for wire cutter use

VSTV-50W

VSTV-100W

VSTV-150W

Model	Max Opening	Thickness	Jaw Depth	Weight (kg)	Code No.	Price $
VSTV-50W	55mm	27mm	25mm	1.0	230840	**662.57**
VSTV-100W	100mm	24mm	50mm	4.9	230842	**1,718.93**
VSTV-150W	150mm	24mm	60mm	6.8	230844	**4,044.87**

Heavy Duty Bench Vises With Swivel

Manufactured from high quality grey iron castings - a very strong material with excellent shock absorbing capacity and immense strength under compression. These rigid and robust vises, machined to close tolerances, are designed for smooth operation and reliability.

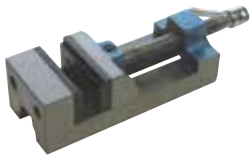
Jaw Width (in.)	Max. Jaw Opening (mm)	Throat Depth (mm)	Code No.	Price $
4	127	55	231400	**212.81**
5	152	70	231405	**308.68**
6	178	80	231410	**411.57**

Drill Press Vises

- High tensile iron casting
- Cold rolled screw thread
- Plain jaws of special steel

Jaw Width (in.)	Opening (in.)	Jaw Depth (in.)	Weight (lb)	Code No.	Price $
3	3	1-1/8	6	370206	**55.03**
4	4	1-3/8	10	370211	**71.90**
5	5	1-1/2	17-1/2	370216	**126.76**
6	6	1-1/2	23	370221	**147.49**

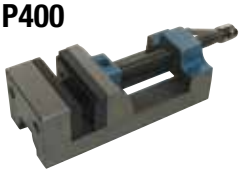
Drill Press Vise P250



- High tensile iron casting
- Jaw plates – one grooved and one plain
- Accurate machining and assembling
- Four sides and one end machined

Jaw Width (in.)	Jaw Depth (in.)	Opening (in.)	Length (in.)	Weight (lb)	Code No.	Price $
2-1/2	1-1/2	2-9/16	7-1/4	5-1/2	370226	**64.09**

Drill Press Vises P350 & P400



- Rugged 3 inch and 4 inch
- Precision cut ACME thread screw
- Hexagonal screw head for tight clamping

Jaw Width	Jaw Depth	Opening (in.)	Length	Weight (lb)	Code No.	Price $
3	1-3/4	3	9-1/4	9-3/4	370236	**75.42**
4	1-3/4	4	10-3/4	17	370241	**117.79**

Unigrip Drill Press Vises

- Manufactured from graded cast iron, these vises have a precision ground base and vise bed for smooth lateral movement of the movable jaw.
- Longitudinal and transversal prisms in the fixed jaw allow for firm gripping of round jobs of different sizes both horizontally and vertically. Special seat in jaws facilitates retaining of flat workpieces.
- Equipped with a convenient unigrip mechanism which increases the scope of application of this range of vises. Spindle moves inside the hollow hand grip allowing the vise to be used at a location away from the table edge.
- Available with 3 mounting options via 2 additional precisely ground surfaces: end face and side face. This allows for drilling along all axes with a single setting of the job and holding of long workpieces which are difficult to manage in regular vises.

Model No.	Jaw Width	Opening (in.)	Jaw Depth	Code No.	Price $
DPV/UG-75	3	2-3/4	13/16	370925	**123.55**
DPV/UG-100	4	3-1/2	13/16	370930	**144.00**
DPV/UG-125	5	4-15/32	1-3/8	370935	**219.54**
3 WAY Drill Press Vise					
DPV/UG/3/100	4	3-1/2	13/16	370940	**195.52**

SG Iron Unigrip Drill Press Vise

- Manufactured from SG Iron, making them amongst the strongest vises in the market - virtually unbreakable
- Only drill vise that can also be used as a milling vise
- Equipped with long mounting slots for easy adjustment on the machine table
- Fixed jaw has horizontal and vertical V slots for holding round jobs
- Both jaws have a seat for retaining flat and low height workpieces
- Movable steel jaw is supported by a jaw seat imparting rigidity and further strength

Model No.	Jaw Width	Opening (in.)	Code No.	Price $
DPV/SG-80	3-3/16	3-9/64	370945	**144.28**

Piston Vises

- Easy and speedy
- Quick grip drill press vises

Model No.	Jaw Width	Jaw Depth	Opening (in.)	Code No.	Price $
V-75	3	1-1/4	3	326485	**318.30**
V-100	4	1-15/16	4-11/16	326490	**378.50**

"G" Clamps

- SG iron with a tensile strength over 60,000 psi
- Powder coated finish
- Swiveling pad
- Handle designed to bend before the frame can be overstressed

Model	Clamp Capacity (in.)	Throat Depth (in.)	Load Capacity (lb)	Code No.	Price $
GCL/13D/100	4	2-11/32	1200	231442	**30.00**
GCL/13D/150	6	3	1400	231443	**38.19**
GCL/13D/200	8	3-1/8	1700	231444	**48.37**
GCL/13D/250	10	3-1/2	2200	231445	**67.51**

Free Style Vises

- Free style clamping
- Light duty

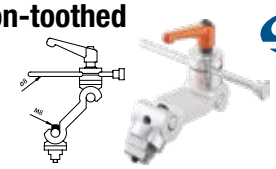
Model	Dimensions WxHxL	Clamping Capacity HxL	Weight (2pcs) (kg)	Code No.	Price $
FV-350	75x67x150mm	140x350mm	7.5	326450	**308.16**
FV-450	100x90x200mm	180x450mm	14	326455	**366.81**
FV-550	125x120x250mm	250x550mm	23	326460	**528.14**

Heavy Duty Free Style Vises

- Free style clamping
- Heavy duty

Model	Height (mm)	Width (mm)	Length (mm)	Weight (2pcs) (kg)	Code No.	Price $
SV-62	59.5-80.5	64	139	5.8	326465	**426.66**
SV-85	86-110	86.5	192	11	326470	**680.30**
SV-125	84-117	127	218	21	326475	**946.96**

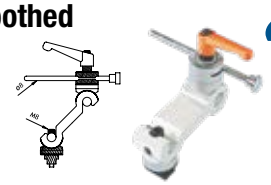
U/N Work Stopper — Non-toothed



- Locking lever can be rotated a full 360°
- Arm made of anodized aluminum
- Steel hinge pins

Model	T-Slot Size	Stop Pin Length	Height	Arm Length	Code No.	Price $
VWS-123	16mm	160mm	200mm	132mm	326440	**310.68**

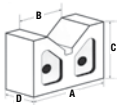
U/N Work Stopper — Toothed



- Locking lever can be rotated a full 360°
- Arm made of anodized aluminum
- Steel hinge pins
- Slip adjustment of the stop pin before it is locked into place

Model	T-Slot Size	Stop Pin Length	Height	Arm Length	Code No.	Price $
VWS-125	16mm	160mm	200mm	132mm	326445	**320.40**

Vee Blocks — Cast Iron



- Made from close grained cast iron, these blocks are precisely ground and machined square and parallel
- The vee's are 90° centered and true
- The blocks are manufactured and supplied in numbered pairs and come in handy for holding large jobs where clamping is not necessary
- Squareness and Parallelism of Vee grooves: within 0.0012" (30 microns)

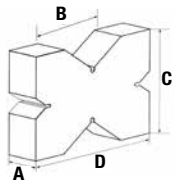
Width (A) (in.)	Vee Width (B) (in.)	Height (C) (in.)	Thickness (D) (in.)	Model No.	Code No.	Price $
3	1-3/4	2-3/8	1-5/16	VB/C-3	231102	**65.69**
4	2-3/16	2-9/16	1-9/16	VB/C-4	231104	**85.24**
5	2-7/16	3-1/8	2	VB/C-5	231106	**116.23**
6	3-1/16	3-1/2	2-7/16	VB/C-6	231108	**185.83**
8	4-1/2	5-1/2	4	VB/C-8	231110	**450.63**
10	5	6-1/2	5	VB/C-10	231112	**799.19**
12	5-1/8	8	6	VB/C-12	231114	**1,170.93**

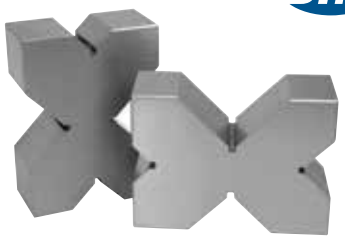
Vee Blocks — Cast Iron

Supplied in matched and numbered pairs, these vee blocks are manufactured from high quality castings, properly seasoned against distortion, and are accurately machined square and parallel. The 90° vee is centered and true.

Vee Width (in.)	Vee Depth (in.)	Width (in.)	Height (in.)	Thickness (in.)	Weight (lb)	Code No.	Price $
1	1/2	2	1-1/4	1-7/8	0.9	370556	**36.99**
1-3/4	7/8	3	2-3/8	2-5/8	2.5	370561	**45.12**
2-1/8	1	4	2-5/8	3-1/4	5	370566	**61.11**
2-3/8	1-1/8	5	3-1/8	4	8	370571	**91.56**
3-1/8	1-9/16	6	3-1/2	5	15	370576	**123.70**
3-5/8	1-13/16	7	4-1/2	6	28	370581	**191.15**
4-1/2	2-1/4	8	5-1/2	8	44	370586	**263.28**
5	2-1/2	10	6-5/8	10	69	370591	**447.79**
5-1/8	2-1/2	12	8	12	132	370596	**869.84**

4 Way Vee Blocks — Cast Iron





- Made from close grained cast iron, these Vee Blocks are precisely ground and machined square and parallel
- Each Block incorporates four different sized vee's thereby supporting a wide range of sizes
- Manufactured and supplied in matched and numbered pairs, these are very useful for marking and checking of cylindrical parts
- The larger sizes incorporate a cavity on either side for convenience in handling during usage

Thickness (A) (mm)	Block Width (D) (mm)	Height (C) (mm)	Vee Cap. (B) (mm)	Model No.	Code No.	Price $
35	95	70	20 x 30 x 40 x 50	VB/QD/95-70-35	231116	**114.35**
30	100	100	20 x 30 x 40 x 50	VB/QD/100-100-30	231118	**123.53**
35	120	120	30 x 40 x 50 x 60	VB/QD/120-120-35	231120	**168.20**

Magnetic V-Blocks

Used to hold cylindrical workpieces for grinding. Will hold both itself and the work on any flat ferrous surface, including a permanent magnet chuck (without energizing the chuck.) There are two vees:

- The smaller for workpieces up to 0.750" diameter and the larger for workpieces up to 2.500" diameter
- Sold Individually

Description	Code No.	Price $
Magnetic Vee Blocks	225710	**117.70**

Magnetic V-Blocks

All Vee's and faces can be energized or de-energized simultaneously by turning the rotary action gun metal control knob. Gun metal construction of the knob ensures no interference with the magnetic field.

Block Length (in.)	Block Width (in.)	Block Height (in.)	Type	Model No.	Code No.	Price $
4	3	3-3/4	Single	MVB/4S	231084	**365.21**
4	3	3-3/4	Pair	MVB/4P	231086	**730.28**
3-3/16	2-3/8	3-3/4	Single	MVB/5S	231088	**282.24**
3-3/16	2-3/8	3-3/4	Pair	MVB/5P	231090	**564.47**

Tool Maker's V-Block & Clamp Sets — Precision

This range of Vee blocks is made from finely selected tool steel fully hardened to 55-60 HRC. Manufactured and numbered in matched pairs, each pair has two 90° Vees of different capacities which are identical to the Vees of its matching block. The Vee's are ground central, parallel and square with the ends and sides.

Block Length (in.)	Block Width (in.)	Block Height (in.)	Type	Model No.	Code No.	Price $
1-19/32	1-1/4	1-1/4	Regular	VB/SP/T-30	231072	**81.77**
2	1-1/2	1-1/2	Regular	VB/SP/T-35	231074	**97.84**
2-3/4	1-3/4	1-5/8	Regular	VB/SP/T-70	231076	**138.70**

Precision V-Block Sets

Our ultra precision V-block set offers a quick, accurate and positive means of holding work pieces for layout, machining, grinding or inspection. One reversible swing-away clamp is provided with each V-block. The versatile clamp, plus the unique offset hole pattern in the top of the V-block, offers a large variety of clamping to almost any work surface.

- All V-blocks are parallel, square and centered within 0.0002"

90° V-Block Dimensions			Dia. To Be Inspected or Scribed			
Length	Width	Height	Min.	Max.	Code No.	Price $
2-3/8	2-3/8	2	13/64	1-3/16	230135	**114.95**

Tool Maker's V-Block & Clamp Sets — Precision

This range of Vee blocks is made from finely selected tool steel fully hardened to 55-60 HRC. Manufactured and numbered in matched pairs, each pair has two 90° Vees of different capacities which are identical to the Vees of its matching block. The Vee's are ground central, parallel and square with the ends and sides.

Block Length (in.)	Block Width (in.)	Block Height (in.)	Type	Model No.	Code No.	Price $
1-19/32	1-1/4	1-1/4	Regular	VB/SP/T-30	231072	**81.77**
2	1-1/2	1-1/2	Regular	VB/SP/T-35	231074	**97.84**
2-3/4	1-3/4	1-5/8	Regular	VB/SP/T-70	231076	**138.70**

Precision V-Block Sets

Our ultra precision V-block set offers a quick, accurate and positive means of holding work pieces for layout, machining, grinding or inspection. One reversible swing-away clamp is provided with each V-block. The versatile clamp, plus the unique offset hole pattern in the top of the V-block, offers a large variety of clamping to almost any work surface.

- All V-blocks are parallel, square and centered within 0.0002"

90° V-Block Dimensions			Dia. To Be Inspected or Scribed			
Length	Width	Height	Min.	Max.	Code No.	Price $
2-3/8	2-3/8	2	13/64	1-3/16	230135	**114.95**

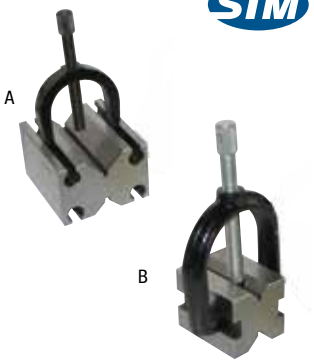
Ultimate V-Block & Clamp Set

Manufactured from selected steel, Vee Blocks are fully hardened and ground. Adjustable side screw with cap in the clamp supports the block and prevents tilting. Four 3/8"-16 tapped holes, two in the base and one on each side allow attachment to an angle iron which can then be attached to a lathe face plate or held by a magnetic chuck.

- Sold Individually

Block Length (in.)	Block Height 9in.)	Block Width (in.)	Model No.	Code No.	Price $
3-19/32	1-7/8	1-7/8	VB/S-48	231082	**122.44**

V-Blocks & Clamps



All sides are ground square and parallel to each other. Models are designed so the clamps do not protrude over the sides; thus the tool can be used on its sides.

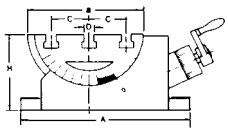
- Compares with other V-blocks costing twice as much
- Matched accuracy 0.0002". 90° vees are ground central, parallel and square with the ends precision ground
- Clamps included
- Matched and numbered in pairs
- Hardened and ground chrome steel
- Sold in precision matched pairs only

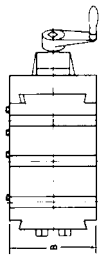
Cap.	Dimensions (W x H x L)	Type	Code No.	Price $
2-1/8	2-3/4 x 3-1/2 x 4-7/8	A	205120	**926.63**
1	1-3/8 x 1-5/8 x 1-3/4	B	205105	**142.73**

Adjustable Swivel Angle Plate

Special Features:

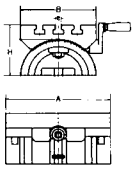
- The CL Adjustable Swivel Angle Plate is mainly used for precise angle finishing, suitable for wide purposes
- **CL-1 is Bolt Lock Style**

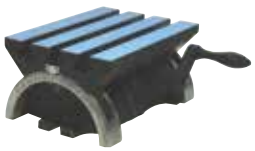




Model No.	A	a	B	C	D	H	T-Slots	Weight Capacity	Code No.	Price $
CL-1	252	180	125	55	14	115	3	20 kg	326126	**791.70**
CL-2	300	240	180	65	16	150	3	30 kg	326128	**941.19**

Angle Plate





BRA-180 BRA-250 BRA-380

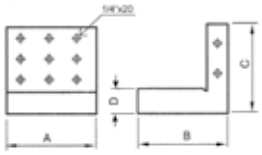
- Low profile
- Micro reading 5 min
- Adjustable 45° each side
- Special design for angle setting on various machine tools

Model No.	Table B	A	H	T-Slot E	Weight (kg)	Code No.	Price $
BRA-180	130	180	91	10	7.5 kg	326120	**508.00**
BRA-250	178	250	133	12	22.5 kg	326122	**750.20**
BRA-380	260	380	185	16	69 kg	326124	**1,226.80**

Precision Steel Angle Plates

VRS Precision Steel Angle Plates

- Material: YK30 Alloy Steel
- Hardness: 58HRC
- Accuracy: 0.005/100mm



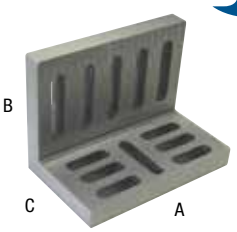
Model No.	A	B	C	D	Net Wt.	Code No.	Price $
VRS-33	75	75	100	25	2.2 kg	370400	**328.24**
VRS-44	100	100	100	25	3.7 kg	370402	**357.37**
VRS-46	100	100	150	25	4.5 kg	370404	**411.64**
VRS-85	200	120	200	40	14.3 kg	370406	**1,114.01**
VRS-1206	300	150	300	50	32.3 kg	370408	**1,801.28**

Slotted Angle Plates — Webbed & Open

Made of high-tensile cast iron seasoned against distortion, skillfully machined square and parallel, these plates are supplied in two types, Type A and Type B, the former having side webs.

Type A-Webbed: Machined on outside surfaces and edges only.

Type B-Opened: Machined all over, except slots.



A	B	C	Webbed Code No.	Price $	Open Code No.	Price $
3	2-1/2	2	370306	**50.79**	-	-
3-1/2	3	2-1/2	370311	**57.18**	-	-
4-1/2	3-1/2	3	370316	**65.07**	370356	**80.90**
6	5	4-1/2	370321	**103.09**	370361	**118.92**
7	5-1/2	4-1/2	370326	**125.18**	370366	**152.16**
8	6	5	370331	**160.86**	370371	**177.59**
9	7	6	370336	**200.40**	370376	**244.80**
10	8	6	370341	**247.21**	370381	**277.35**
12	9	8	370346	**379.51**	370386	**421.46**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Cross Table VCT-512

Applied in general machines such as compounding machine, drilling machine, etc., or large objects of special shape which cannot be clamped by common vises.

- Lateral moving travel on surface: 11"
- Longitude moving travel on surface: 6"

Model No.	Table (mm)	Height (mm)	Travel (mm)	Base (mm)	Dial Grad. (mm)	Net Weight (kg)	Code No.	Price $
VCT-512	300 x 140	115	200 x 125	225 x 200	0.03	16.6	230965	**854.39**

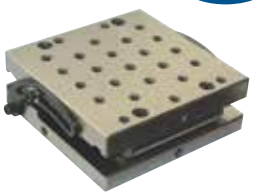
Sine Bar

- Effectively cancels the angle being measured to check its accuracy
- Ground flat, square and parallel within 0.0002"
- Steel hardened to 52HRC

Model No.	Length (in.)	Width (in.)	Height (in.)	Centre Distance (in.)	Parallel	Hardness	Block Dia.	Material	Net Wt.	Code No.	Price $
YCT-S25	6-3/8	1	1-1/4	5"	0.00012	52HRC	3/4	SK2	1.0kg	230760	**93.80**
YCT-S50	6-3/8	2	1-1/4	5"	0.00012	52HRC	3/4	SK2	1.9kg	230765	**125.10**

Sine Plates

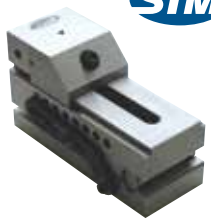
YCT-66/YCT-47 Sine Plates
Precision ground, hardened to 58HRC and normalized by a sub-zero treatment. Rolls are hardened and ground to an accuracy of 0.001mm. High precision of parallelism within 0.002mm and squareness within 0.005mm. Set-up and dressing time reduced to a bare minimum due to simplicity of set up. (Angle 0°, 60°)



Model No.	Width x Length (in./mm)	H (in./mm)	Code No.	Price $
YCT-47	4 x 7	2.37	230780	**468.90**
YCT-66	6 x 6	2.37	230785	**500.20**
YCT-47M Magnetic	100 x 175 mm	60 mm	230770	**1,094.00**
YCT-66M Magnetic	150 x 150 mm	60 mm	230775	**1,203.30**

Sine Vises

- Body is one solid piece of steel, hardened like the rest of the sine vise to 58-62 HRC
- Dual 0.200" minute steps for setting small angles with standard gauge blocks are built into the gauge block roll
- All 7" x 3-1/2" sine vises have small horizontal and vertical vees in the moveable jaw
- Provides a quick and accurate means of holding a workpiece at an angle for machining, drilling or grinding



Model No.	Size (in.)	Code No.	Price $
YCT-SV25	3-1/2 x 2-1/2	230705	**196.09**
YCT-SV30	3-1/2 x 2-7/8	230710	**268.93**
YCT-SV200	2-3/8 x 2	230715	**547.00**
YCT-SV250	2-7/8 x 2-1/2	230720	**515.80**
YCT-SC300	3-3/8 x 3	230725	**703.30**

Arbor Presses

Capacity Ton	Shipping Weight (lb)	Throat Depth (in.)	Height of Press	Base Dimensions	Largest Arbor	Size	Length	Stroke	Code No.	Price $
1/2	22	2-7/8	10	4 x 9-1/2	1-1/8	3/4 x 3/4	7-1/2	4-1/2	326090	**113.49**
1	37	3-1/4	12	5 x 11	1-3/8	1 x 1	9-1/2	5-1/4	326092	**163.64**
2	86	5	17	6-3/4 x 17	1-3/4	1-1/4 x 1-1/4	14	8-1/2	326094	**375.96**
3	152	5-3/4	21-1/2	8 x 18	2-1/2	1-1/2 x 1-1/2	18	12-1/2	326096	**658.87**
5	308	8-3/4	35-3/4	10 x 26-3/4	3-1/4	2 x 2	26-3/4	18-1/8	326098	**1,971.08**

Ratchet Type Arbor Press

Capacity Ton	Shipping Weight (lb)	Throat Depth (in.)	Height of Press	Base Dimensions	Max. Height	Largest Arbor	Size	Length	Stroke	Code No.	Price $
3	152	5-3/4	21-1/2	8 x 18	12-1/2	2-1/2	1-1/2 x 1-1/2	18	12-1/2	326099	**766.32**

Lathe Chucks

STM LATHE CHUCKS H17
3-Jaw Self Centering Scroll Chucks H17-18
4-Jaw Independent Chucks H19
Technical Data For STM Chucks H20

POWER CHUCKS
Soft Top Jaws H22-25
Soft Jaw Forming Ring H25
Pie Jaws H26
Hard Top Jaws H27
T-Nuts H28

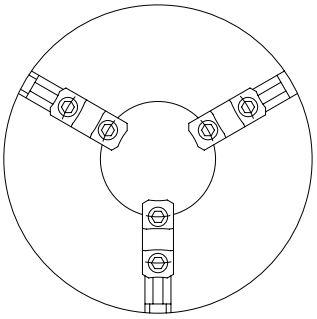
PRECISION LATHE CHUCKS

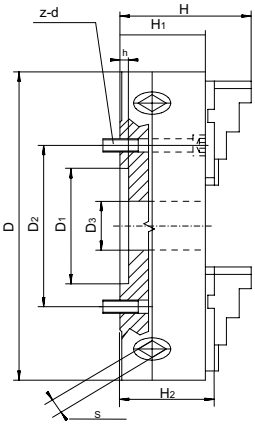
3-Jaw Cast Iron Scroll Chucks — Hard Solid Jaws

Features:
- 3-Jaw, self-centering scroll chuck with manual gripping and a high quality cast iron body
- Smart design, allowing inner parts to be replaced quickly
- Mounted on the machine-tool spindle from the back of the chuck, using the adapter plate

Application:
- This chuck is designed for all types of workshop machining operations on conventional lathes and milling fixtures

Replacement parts not available





Plain Back

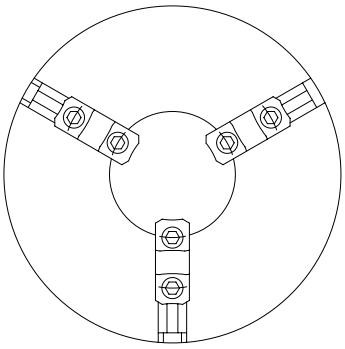
Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	H2 (in.)	h (in.)	S (in.)	z-d	Max. Torque (ft/lbs)	Max Speed (r/min.)	Weight (lbs.)	Code No.	Price $
3	2.165	2.598	0.630	2.598	1.969	-	0.138	0.315	3-M6	29.50	4,000	4.18	4440504	**271.80**
4	2.835	3.307	0.866	2.933	2.165	-	0.138	0.315	3-M6	44.26	3,500	7.04	4440505	**284.35**
5	3.740	4.252	1.181	3.307	2.283	-	0.157	0.394	3-M8	73.76	3,000	11.00	4440510	**303.26**
6	5.118	5.591	1.575	3.740	2.559	-	0.197	0.394	3-M8	118.02	2,500	19.36	4440515	**432.11**
8	6.496	7.087	2.559	4.291	2.953	-	0.197	0.472	3-M10	184.40	2,000	34.10	4440520	**511.82**
10	8.110	8.898	3.150	4.724	3.150	-	0.197	0.472	3-M12	236.03	1,600	56.54	4440525	**683.09**
12	10.236	11.22	3.937	5.787	3.543	-	0.236	0.551	3-M16	295.04	1,200	103.40	4440530	**1,175.10**

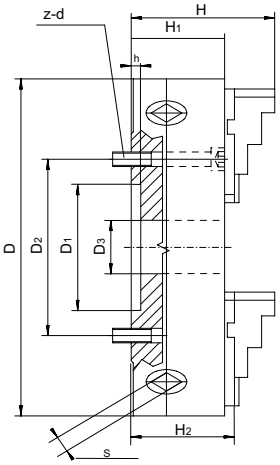
3-Jaw Plain Back Cast Iron Body Scroll Chucks — 2pc Hard Rev. Jaws

Features:
- 3-Jaw, self-centering scroll chuck with manual gripping and a high quality cast iron body
- Smart design, allowing inner parts to be replaced quickly
- Mounted on the machine-tool spindle from the back of the chuck, using the adapter plate

Replacement parts not available

Application:
- This chuck is designed for all types of workshop machining operations on conventional lathes and milling fixtures

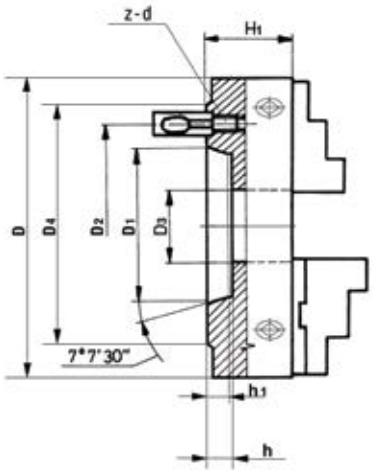




Plain Back

Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	H2 (in.)	h (in.)	S (in.)	z-d	Max. Input Torque (ft/lbs)	Max Speed (r/min.)	Weight (lbs.)	Code No.	Price $
6	5.118	5.591	1.575	4.291	2.559	2.795	0.197	0.394	3-M8	118.02	2,500	18.26	4440710	**549.66**
8	6.496	7.087	2.559	4.803	2.953	3.150	0.197	0.472	3-M10	184.40	2,000	31.02	4440715	**657.01**
10	8.110	8.898	3.150	5.354	3.150	3.386	0.197	0.472	3-M12	236.03	1,600	50.60	4440720	**871.83**
12	10.236	11.220	3.937	6.024	3.543	3.740	0.236	0.551	3-M16	295.04	1,200	90.20	4440725	**1,364.50**
16	13.386	14.488	5.433	6.772	3.937	4.252	0.236	0.669	3-M16	368.80	1,000	156.20	4440730	**1,800.42**

3-Jaw Camlock Mount Cast Iron Body Scroll Chucks — 2pc Hard Rev. Jaws



Camlock Mount

Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)	H1 (in.)	h (in.)	h1 (in.)	z-d	Max. Input Torque (ft/lbs)	Max Speed (r/min.)	Weight (lbs.)	Code No.	Price $
6 D1-4	2.501	3.252	1.575	4.606	2.756	0.512	0.394	3-M10x1	118.02	2500	22.00	4440910	**716.23**
8 D1-4	2.501	3.252	1.969	4.606	3.386	0.512	0.394	3-M10x1	184.40	2000	37.40	4440920	**846.31**
8 D1-6	4.188	5.252	1.969	7.126	3.386	0.630	0.512	6-M16x1.5	184.40	2000	37.40	4440930	**884.37**
10 D1-6	4.188	5.252	2.756	7.126	3.858	0.630	0.512	6-M16x1.5	236.03	1600	70.40	4440940	**1,161.43**
12 D1-8	5.501	6.748	4.134	8.858	4.075	0.709	0.551	6-M20x1.5	295.04	1200	112.20	4440950	**1,743.45**

4-Jaw Plain Back Cast Iron Body Independent Chucks — Hard Solid Jaws

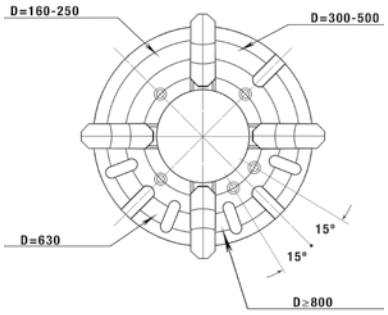
Features:

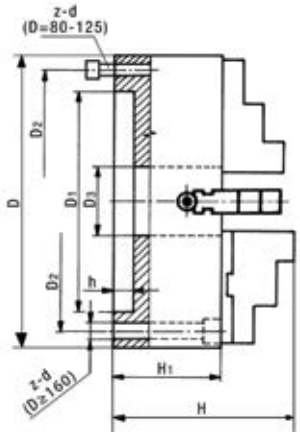
- 4-Jaw, independent chuck with manual gripping, and a high quality cast iron body
- Chuck bodies in sizes up to 6" diameter, are made from steel
- 4-Jaws ensure the precise centering of square-shaped workpieces with maximum permitted gripping force
- Chucks with diameters 10" and above are equipped with additional T-slots, permitting the addition of extra jaws
- Mounted on the machine tool spindle from the back of the chuck, using the adapter plate

Application:

- This precision chuck, with increased gripping accuracy, is made for all types of very high precision workshop machining operations on conventional lathes
- Suitable for machining square and round workpieces

Replacement parts not available

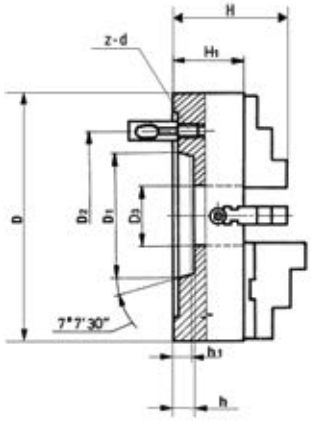




Plain Back

Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	h (in.)	z-d	Max. Input Torque (ft/lbs)	Max Speed (r/min.)	Weight (lbs.)	Code No.	Price $
5	3.740	4.252	1.181	3.071	2.205	0.177	4-M8	36.88	3000	11.00	4445803	**259.04**
6	2.559	3.740	1.772	3.661	2.556	0.197	4-M10	51.63	2500	19.80	4445804	**435.92**
8	3.150	4.409	2.205	4.213	2.953	0.236	4-M10	73.76	2000	33.00	4445805	**512.38**
10	4.331	5.118	2.953	4.724	3.150	0.236	4-M12	110.64	1600	50.60	4445810	**619.06**

4-Jaw Camlock Mount Cast Iron Body Independent Chucks — Hard Solid Jaws

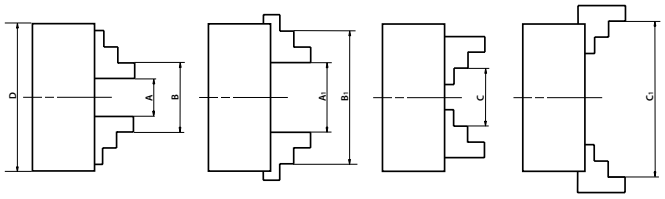


Camlock Mount

Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	h (in.)	h1 (in.)	z-d	Max. Input Torque (ft/lbs)	Max Speed (r/min.)	Weight (lbs.)	Code No.	Price $
10 D1-6	4.188	5.252	2.953	4.724	3.150	0.630	0.512	6-M16x1.5	110.64	1600	50.60	4450130	**770.74**
12 D1-6	4.188	5.252	3.740	5.276	3.543	0.630	0.512	6-M16x1.5	132.77	1200	88.00	4450135	**1,105.46**
12 D1-8	5.501	6.748	3.740	5.276	3.543	0.709	0.551	6-M20x1.5	132.77	1200	88.00	4450140	**1,118.11**
16 D1-8	5.501	6.748	4.921	5.630	3.740	0.709	0.551	6-M20x1.5	206.53	1000	121.00	4450150	**1,547.66**
20 D1-11	7.751	9.252	6.299	6.339	4.173	0.787	0.630	6-M22x1.5	258.16	800	224.40	4450165	**2,659.49**

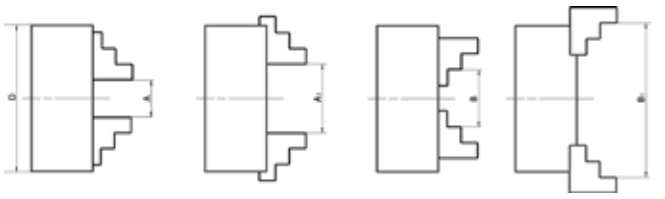
Clamping Ranges for 3 & 4-Jaw Chucks

Clamping Range — 3 Self Centering Scroll Chucks



Chuck Size (in.)	Internal Jaws Clamping Range A-A1 (in.)	Internal Jaw Jamming Range B-B1 (in.)	External Jaws Clamping Range C-C1 (in.)
3	0.079 - 0.866	0.984 - 2.756	0.866 - 2.480
4	0.079 - 1.181	1.181 - 3.543	1.181 - 3.150
5	0.098 - 1.575	1.496 - 4.921	1.496 - 4.331
6	0.118 - 2.165	1.969 - 6.299	2.165 - 5.709
8	0.157 - 3.346	2.559 - 7.874	2.559 - 7.874
10	0.236 - 4.331	3.150 - 9.843	3.543 - 9.843
12	0.394 - 5.512	3.740 - 12.402	3.937 - 12.402
16	0.591 - 8.268	4.724 - 15.748	4.724 - 15.748
20	0.984 - 11.024	5.906 - 19.685	5.906 - 19.685
25	1.969 - 13.780	6.693 - 24.803	6.693 - 24.803

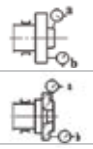
Clamping Range — 4-Jaw Independent Chucks



Chuck Size (in.)	Internal Jaws Clamping Range A-A1 (in.)	External Jaws Clamping Range B-B1 (in.)
3	0.197 - 1.378	1.378 - 3.150
4	0.236 - 1.772	1.575 - 3.937
5	0.276 - 2.244	1.890 - 4.921
6	0.315 - 3.150	1.969 - 6.299
8	0.394 - 3.937	2.480 - 7.874
10	0.591 - 5.118	3.150 - 9.843
12	0.787 - 6.693	3.937 - 12.402
16	0.984 - 9.843	4.646 - 15.748
20	1.378 - 11.811	4.921 - 19.685
25	1.969 - 15-748	6.299 - 24.803
32	2.756 - 21.260	7.874 - 31.496

Spindle Runout For Self-Centering Scroll Chucks & 4-Jaw Independent Lathe Chucks

3-Jaw Self Centering

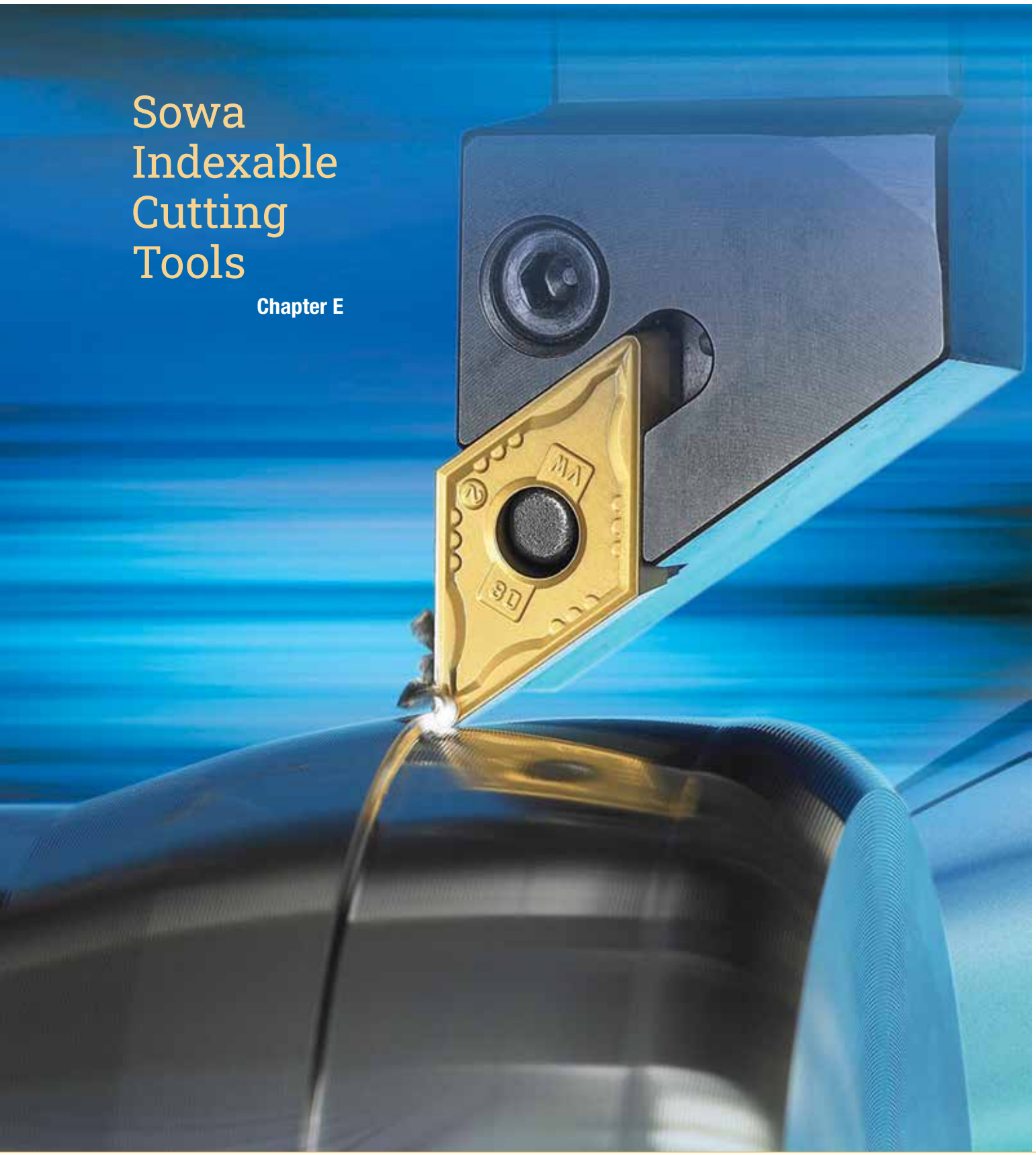
Diagram of Test	Test Item	Chuck Diameter								
		<6"				8"~10"		12"~16"		20
		3	4	5	6	8	10	12	16	20
	a. Radial run-out b. Axial run-out	a : 0.0002" b : 0.0002"								
	Radial run-out of chuck	0.0012"/				0.0016"/		0.0024"/		0.0031"/
		0.0012"/				0.0016"/		0.0024"/		0.0031"/
	Axial run-out of chuck	0.0025"/ L=2.00"				0.0031"/ L=2" (8"), L=3" (10")		0.0039"/ L=3"		0.005"/ L=4"
	Radial run-out of test bar	0.0024"/				0.0024"/		0.0031"/		0.0039"/
	Radial run-out of test ring	0.0013"/				0.0016"/		0.0019"/		0.0025"/
	Axial run-out of test ring	0.0024"/				0.0024"/		0.0031"/		0.0039"/
	Radial run-out of test ring	0.0013"/				0.0016"/		0.0019"/		0.0025"/

4-Jaw Independent

Diagram of Test	Test Item	Chuck Diameter											
		3"~5"		6"		8"~10"		12"		16"		20"~25"	
		3"	5"	6"		8"	10"	12"		16"		20"	25"
	a. Radial run-out b. Axial run-out	a : 0.0002" b : 0.0002"											
	Radial run-out of chuck	0.0013"/		0.0013"/		0.0024"/		0.0024"/		0.0024"/		0.0031"/	
	Axial run-out of chuck	0.0006"/		0.0006"/		0.0009"/		0.0009"/		0.0013"/		0.0013"/	
	Axial run-out of step of jaw	0.0009"/		0.0009"/		0.0013"/		0.0013"/		0.0016"/		0.0016"/	
	Linearity of front face of chuck	—		—		—		0.0013"/ (—)		0.0013"/ (—)		0.0016"/ (—)	

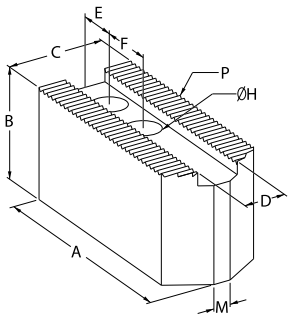
Sowa Indexable Cutting Tools

Chapter E



Metric Serrated Soft Top Jaws — Pointed

STM Jaws
- For Autoblok, Howa, Kitagawa, Matsumoto, Shunk

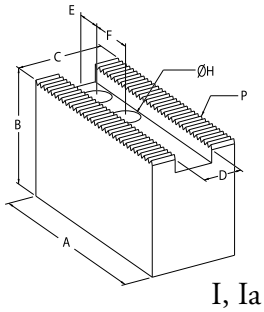


Chuck Dia.	Serration	A	B	C	D	E	F	H	M	Wt. (kg)	Model No.	STM Code No.	Individual Price $	STM Code No.	Set of 3 Price $
135	1.5x60°	55	30	25	10	10	18	9	5	0.239	HKM.13.01	491230	**32.37**	-	**-**
135	1.5x60°	55	25	25	10	14	19	9	4	0.192	HKM.13.05	491245	**32.93**	-	**-**
165(6")	1.5x60°	80	30	30	12	19	20	11	7	0.40	HKM.16.05	491255	**34.03**	491256	**106.66**
165(6")	1.5x60°	75	60	30	12	19	20	11	7	0.76	HKM.16.08	491275	**55.11**	-	**-**
210(8")	1.5x60°	95	40	35	14	24	25	13	5	0.80	HKM.21.00	491290	**41.47**	-	**-**
210(8")	3x60°	95	40	40	14	24	25	13	12	0.96	HKM.21.3.01	491390	**47.57**	-	**-**
210(8")	1.5x60°	95	40	40	14	20	25	13	12	0.97	HKM.21.01	491300	**41.47**	491301	**124.18**
210(8")	1.5x60°	95	50	40	14	20	25	13	12	1.20	HKM.21.02	491320	**51.44**	-	**-**
210(8")	1.5x60°	95	60	40	14	20	25	13	12	1.44	HKM.21.03	491330	**57.88**	-	**-**
210(8")	1.5x60°	95	80	40	14	20	25	13	12	1.82	HKM.21.04	491340	**84.04**	-	**-**
210(8")	1.5x60°	95	100	40	14	20	25	13	12	2.43	HKM.21.05	491350	**98.00**	-	**-**
210-254(8")	1.5x60°	95	40	40	16	20	25	13	12	0.96	HKM.21.10	491365	**42.90**	-	**-**
254-270(10")	1.5x60°	110	40	40	16	30	30	13	12	1.11	HKM.25.01	491400	**43.24**	491401	**135.03**
254-270(10")	1.5x60°	130	40	40	16	30	30	13	12	1.36	HKM.25.01 L130	491415	**54.21**	-	**-**
254-270(10")	1.5x60°	110	60	40	16	30	30	13	12	1.70	HKM.25.02	491440	**60.31**	-	**-**
254-270(10")	1.5x60°	110	80	40	16	30	30	13	12	2.28	HKM.25.03	491455	**86.71**	-	**-**
254-270(10")	1.5x60°	110	100	40	16	30	30	13	12	2.90	HKM.25.04	491475	**103.78**	491476	**311.34**
254(10")	1.5x60°	110	45	45	18	25	30	15	15	1.57	HKM.25.10	491485	**48.55**	-	**-**
304-381(12")	1.5x60°	130	50	50	18	25	30	15	20	2.05	HKM.30.01	491490	**65.08**	491491	**195.24**
304-381(12")	1.5x60°	130	60	50	18	25	30	15	22	2.55	HKM.30.02	491500	**71.18**	-	**-**
304-381(12")	1.5x60°	130	80	50	18	25	30	15	22	3.44	HKM.30.03	491505	**98.89**	-	**-**
304-381(12")	1.5x60°	130	100	50	18	25	30	15	22	4.30	HKM.30.04	491520	**109.87**	491521	**329.39**
304(12")	1.5x60°	130	50	50	21	22	30	17	20	2.04	HKM.30.10	491535	**65.08**	491536	**201.22**
304(12")	1.5x60°	130	100	50	21	22	30	17	20	4.20	HKM.30.13	491555	**129.28**	491556	**387.60**
304(12")	1.5x60°	130	50	50	21	22	35	17	20	2.04	HKM.30.15	491565	**65.08**	-	**-**
381(15")	1.5x60°	155	60	60	22	37	43	21	-	3.65	HKM.38.00	491580	**129.28**	491581	**387.60**
381-454(15")	1.5x60°	165	70	70	22	37	43	21	-	5.40	HKM.38.01	491590	**158.99**	-	**-**
381(15")	1.5x60°	156	70	70	22	30	60	21	-	5.10	HKM.38.05	491620	**158.99**	-	**-**
381-454(15")	3x60°	155	60	60	22	30	50	21	-	3.65	HKM.38.3.00	491665	**129.28**	491666	**387.60**
381-454(15")	3x60°	156	70	70	22	30	50	21	-	5.10	HKM.38.3.01	491675	**158.99**	-	**-**
381(15")	1.5x60°	135	60	50	25.5	26	43	21	-	2.49	HKM.38.10	491640	**89.92**	491641	**269.42**
381-454(15")	1.5x60°	165	70	70	25.5	37	43	21	-	5.40	HKM.38.11	491655	**158.99**	491656	**476.74**
381(15")	1.5X60°	135	100	50	25.5	26	43	21	-	4.14	HKM.38.12	491672	**152.56**	-	**-**
454-610(18")	3x60°	200	70	70	25	40	60	21	-	6.60	HKM.53.3.01	491700	**194.91**	-	**-**

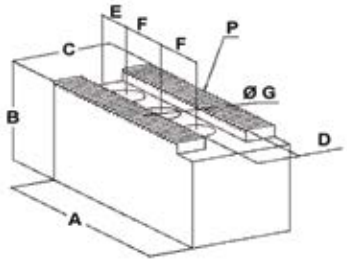
Inch Serrated Soft Top Jaws — Rectangular

STM Jaws (Type I, Ia, III)

- Type I: For SMW, Berg, Gamet, Shunk, Rohm, Forkardt
- Type Ia: For self contained pneumatic power chucks
- Type III: For SMW Autoblok



I, Ia



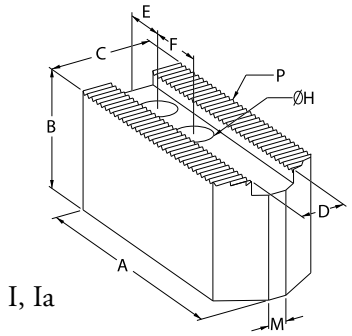
III

Chuck Dia.	Serration	Type	A	B	C	D	E	F	G	H	Wt. (kg)	Model No.	Code No.	Individual Price $
125	1/16x90°	I	68	40	30	11	-	18	-	M8	-	192200/S	491848	**47.01**
160	1/16x90°	I	88	50	35	14	-	25	-	M10	-	192201/S	491850	**55.11**
160	1/16X90°	I	70	60	40	17	15	22	-	M12	1.05	242200/F	491130	**50.23**
200	1/16x90°	Ia	88	50	38	17	-	28	-	1/2"	-	HKM200	491800	**91.60**
200	1/16x90°	I	98	50	40	17	-	29	-	M12	-	192202/S	491852	**58.32**
200	1/16X90°	I	90	60	40	17	25	22	-	M12	1.40	242201/F	491131	**51.77**
250	1/16x90°	I	108	70	50	21	-	30	-	M14	-	192203/S	491854	**69.40**
250	1/16X90°	I	120	80	50	21	30	28	-	M16	3.08	242202/F	491132	**73.17**
250-315	1/16x90°	Ia	120	38	50	21	-	30	-	1/2"	-	HKM250-315	491802	**127.93**
300	1/16X90°	I	140	90	60	25.5	30	35	-	M20	4.70	242203/F	491133	**129.83**
315	1/16x90°	I	120	70	50	21	-	30	-	M16	-	192204/S	491856	**96.57**
315	1/16X90°	I	140	70	50	21	-	30	-	M16	-	192204/S L140	491086	**116.97**
400	3/32x90°	Ia	160	75	63	25	-	40	-	3/4"	-	HKM400	491804	**196.13**
400	3/32x90°	Ia	160	100	63	25	-	35	-	M18	-	HKM400S	491806	**266.51**
400	3/32x90°	I	160	80	60	25.5	-	40	-	M18	-	192205/S	491090	**152.89**
400-500	3/32x90°	Ia	172	63	63	25	-	38	-	M20	-	HKM400-500L6.75A	491820	**278.93**
400-500	3/32x90°	I	200	90	60	25.5	-	35	-	M20	-	242204/F L200	491862	**218.42**
400-500	3/32x90°	I	250	90	60	25.5	-	35	-	M20	-	242204/F L250	491864	**267.20**
400-500	3/32X90°	I	155	90	60	25.5	30	35	-	M20	6.40	242204/F	491135	**145.79**
500	3/32x90°	Ia	160	75	63	25	-	40	-	3/4"	-	HKM500	491808	**233.19**
500	3/32x90°	Ia	200	100	63	25	-	40	-	M18	-	HKM500S	491810	**364.63**
500	3/32x90°	III	170	60	60	28	27	38	38	M20	3.62	102210/A	491050	**158.09**
500	3/32x90°	III	170	60	60	25.5	27	38	38	M20	3.62	102210/A c25.5	491055	**158.09**
630	3/32x90°	Ia	210	88	88	30	-	63	-	1"	-	HKM630	491812	**429.01**
630	3/32x90°	Ia	241	88	75	30	-	65	-	M24	-	HKM630S	491814	**471.86**
630	3/32x90°	Ia	242	83	83	30	-	50	-	M24	-	HKM630AL9.50	491822	**471.86**
800	3/32x90°	Ia	210	88	88	30	-	63	-	1"	-	HKM800	491816	**429.01**
800	3/32x90°	Ia	300	88	75	30	-	65	-	M24	-	HKM800S	491818	**536.23**
800-1000	3/32x90°	Ia	318	83	83	30	-	50	-	M24	-	HKM800-1000AL12.5	491824	**557.66**

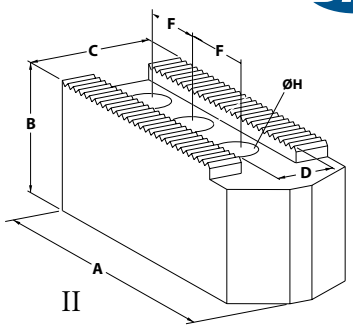
Inch Serrated Soft Top Jaws — Pointed

STM Jaws

- Type I: For SMW Autoblok
- Type Ia: SMW, Berg, Gamet, Shunk, Rohm, Forkardt
- Type II: For self contained pneumatic power chucks



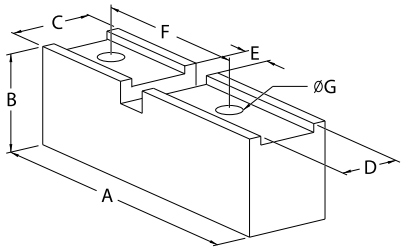
I, Ia



II

Chuck Dia.	Serration P	Type	A	B	C	D	E	F	H	M	Wt. (kg)	Model No.	Code No.	Individual Price $
125	1/16x90°	II	2.50"	1.50"	1.00"	0.433"	-	0.660"	5/16"	-	-	HKM125P	491826	**150.28**
125-130	1/16X90°	Ia	60mm	30mm	30mm	12mm	15mm	16mm	9mm	10mm	0.32	102201/A	491126	**28.16**
160	1/16x90°	II	3.25"	1.50"	1.50"	0.522"	-	0.875"	3/8"	-	-	HKM160P	491828	**150.28**
165	1/16x90°	I	75mm	35mm	35mm	14mm	16mm	16mm	11mm	8mm	0.54	102202/A	491000	**30.05**
170-180	1/16X90°	Ia	85mm	40mm	40mm	14mm	19mm	20mm	11mm	10mm	0.82	102203/A	491127	**33.59**
200	1/16x90°	II	4.25"	2.00"	1.50"	0.669"	-	0.875"	1/2"	-	-	HKM200P	491830	**101.74**
200-220	1/16x90°	I	95mm	40mm	40mm	17mm	20mm	23mm	13mm	12mm	0.96	102205/A	491005	**36.70**
200-220	1/16x90°	I	95mm	50mm	40mm	17mm	20mm	23mm	13mm	12mm	1.18	102205/A H50	491010	**49.01**
200-220	1/16x90°	I	95mm	60mm	40mm	17mm	20mm	23mm	13mm	12mm	1.42	102205/A H60	491015	**53.32**
250	1/16x90°	I	115mm	50mm	50mm	21mm	20mm	30mm	17mm	20mm	1.76	102207/A	491020	**50.11**
250	1/16x90°	I	115mm	60mm	50mm	21mm	20mm	30mm	17mm	20mm	2.10	102207/A H60	491030	**69.63**
250-350	1/16x90°	I	125mm	80mm	50mm	21mm	20mm	30mm	17mm	20mm	3.15	102207-8/A H80	491025	**92.13**
300-350	1/16x90°	I	130mm	50mm	50mm	21mm	22mm	30mm	17mm	20mm	2.10	102208/A	491040	**59.43**
300-350	1/16x90°	I	130mm	60mm	50mm	21mm	22mm	30mm	17mm	22mm	2.38	102208/A H60	491045	**79.60**

Soft Top Jaws For TOS Chucks



Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Individual Price $
282200/T	100	50	20	20	14	12	20	5.5	0.117	491196	**36.37**
282201/T	125	65	25	25	16	12	28	5.5	0.26	491197	**37.58**
282202/T	160	80	35	25	18	12	38	7	0.42	491198	**39.69**
282204/T	200	100	40	30	22	14	48	11	0.74	491200	**45.34**
282206/T	250	125	40	30	25	14	55	11	0.96	491205	**49.67**
282207/T	315	155	60	40	32	20	60	13	2.25	491210	**76.38**
282208/T	400-630	165	70	40	32	20	70	13	3.00	491211	**104.11**

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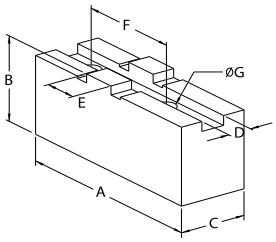
Images are representational only and may not reflect actual product.

Soft Top Jaws — Metric Tongue & Groove

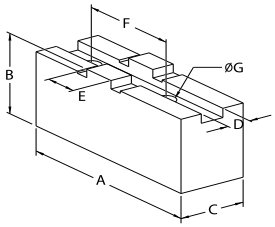
- **For SMW/Autoblok, Berg, Forkardt, Rohm, Schunk**



Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Individual Price $
232200/F	160	85	40	20	8	18	32	9	0.38	491095	**38.69**
232201/F	200	105	50	25	10	20	40	9	0.62	491102	**42.80**
232202/F	250	125	50	30	12	20	40	13	1.12	491105	**54.66**
232203/F	315	145	60	35	12	26	54	13	1.93	491115	**75.28**
232204/F	400	180	80	50	18	30	60	17	4.56	491125	**135.70**

Soft Top Jaws — American Tongue & Groove

- **For Rohm Models ZG, ZS, ZGU, ZSU**

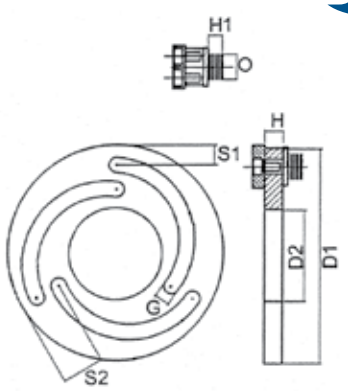


Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Individual Price $
262200/R	100	53	30	25	7.96	9.49	24	7	0.24	491151	**37.58**
262201/R	125	62	40	25	7.96	12.67	32	9	0.36	491155	**40.14**
262202/R	160	74	45	30	7.96	12.67	38.1	9	0.61	491160	**46.57**
262203/R	200	87	45	30	7.96	12.67	44.45	9	0.76	491165	**49.55**
262204/R	250	103	50	35	12.72	19.02	53.95	13	1.1	491170	**54.11**
262205/R	315	120	60	40	12.72	19.02	63.50	13	1.87	491180	**67.52**
262205/R	315	140	60	40	12.72	19.02	63.50	13	2.2	491181	**113.64**
262206/R	350-400	140	70	50	12.72	19.02	76.20	17	3.0	491190	**129.83**
262207/R	450-800	160	80	50	12.72	19.02	76.20	21	3.5	491195	**170.74**

Soft Jaw Forming Ring

The forming ring is used for cutting soft jaws by clamping and extending the through hole to increase the accuracy of clamping the workpiece.

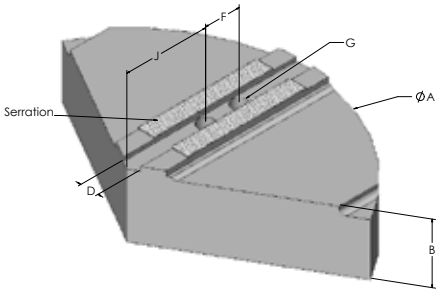
- The size can be adjusted against the helical slot.
- Pin can be rotated 180° to extend the clamping range.
- No need to drill new hole. The hole on the soft jaw can be used directly for pin.
- Hardened and ground steel for durability.



Model No.	For Chuck Dia.	H (mm)	D1 (mm)	D2 (mm)	S1 (mm)	S2 (mm)	G (mm)	H1 (mm)	O (mm)	Weight kg.	Code No.	Price $
VFR-05	5"	12	140	60	12	28	10	9	13.5	1	326250	**280.24**
VFR-06	6"	12	168	80	12	32	10	9	16.5	1.5	326255	**381.05**
VFR-08	8"	12	218	115	17	36	10	9	18.5	2.4	326260	**438.77**
VFR-10	10"	12	258	150	15	40	10	9	18.5	3.2	326265	**462.04**
VFR-12	12"	15	316	118	21	50	10	9	21.5	5	326270	**692.80**

Pie Jaws 1.5mm x 60° Serrations

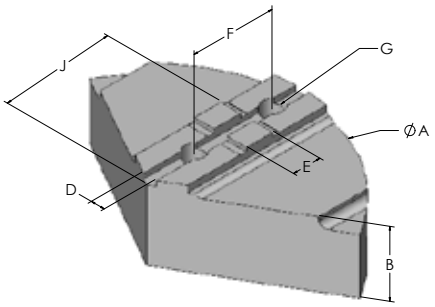
- Made with 6061 billet aluminum



Chuck Dia.	Aluminum Model No.	A Diameter	B Height	D Slot	F Hole Spacing	G Bolt Size	J Dim	Weight lbs.	Set of 3 Code No.	Set of 3 Price $
6	KTT6P	6	2	0.472	0.787	10mm	1-21/32	5.7	658236	**99.00**
6	KTT6P1	6	4	0.472	0.787	10mm	1-21/32	10.8	658238	**165.00**
6	KTT8-6P	8	2	0.472	0.787	10mm	1-21/32	10.2	658240	**132.00**
8	KTT8P	8	2	0.551	0.984	12mm	2"	10.2	658242	**132.00**
8	KTT8P1	8	4	0.551	0.984	12mm	2"	19.8	658244	**214.50**
8	KTT10-8P	10	2	0.551	0.984	12mm	2"	16.2	658246	**214.50**
8	KTT12-8P	12	2	0.551	0.984	12mm	2"	23.4	658248	**280.50**
10	KTT10P	10	2	0.630	1.181	12mm	2-1/2	16.2	658250	**214.50**
10	KTT10P1	10	4	0.630	1.181	12mm	2-1/2	31.5	658252	**313.50**
10	KTT12-10P	12	2	0.630	1.181	12mm	2-1/2	23.4	658254	**280.50**
10	KTT15-10P	15	3	0.630	1.181	12mm	2-1/2	53.7	658256	**693.00**
12	KTT12P	12	2	0.709	1.181	14mm	3-1/2	23.4	658258	**280.50**
12	KTT12P1	12	4	0.709	1.181	14mm	3-1/2	45.3	658260	**445.50**
12	KTT15-12P	15	3	0.709	1.181	14mm	3-1/2	53.7	658262	**693.00**
12	KTTB212P	12	2	0.827	1.181	14mm	3-1/2	23.4	658264	**280.50**
12	KTTB212P1	12	4	0.827	1.181	14mm	3-1/2	45.3	658266	**445.50**
15	KTT15P	15	3	0.866	1.693	20mm	4-5/16	36.6	658268	**693.00**
15	KTT15P1	15	4	0.866	1.693	20mm	4-5/16	53.7	658270	**858.00**

Pie Jaws American Standard Tongue & Groove

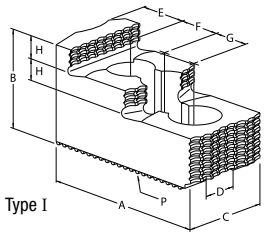
- Made with 6061 billet aluminum



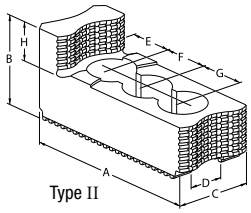
Chuck Dia.	Aluminum Model No.	A Dia.	B Height	D Slot	E Tongue	F Hole Spacing	G Bolt Size	J Dim.	Weight lbs.	Set of 3 Code No.	Set of 3 Price $
6	TG6MDP	6	2	0.313	0.500	1.500	3/8	2"	5.7	658272	**108.90**
6	TG6MDP1	6	4	0.313	0.500	1.500	3/8	2"	10.8	658274	**181.50**
6	TG8-6MDP	8	2	0.313	0.500	1.500	3/8	2"	10.2	658276	**148.50**
8	TG8MDP	8	2	0.313	0.500	1.750	3/8	2-3/4	10.2	658278	**148.50**
8	TG8MDP1	8	4	0.313	0.500	1.750	3/8	2-3/4	19.8	658280	**231.00**
8	TG10-8MDP	10	2	0.313	0.500	1.750	3/8	2-3/4	16.2	658282	**231.00**
10	TG10MDP	10	2	0.500	0.750	2.125	1/2	3-1/2	16.2	658284	**231.00**
10	TG10MDP1	10	4	0.500	0.750	2.125	1/2	3-1/2	31.5	658286	**330.00**
10	TG12-10MDP	12	2	0.500	0.750	2.125	1/2	3-1/2	23.4	658288	**297.00**
10	TG15-10MDP	15	3	0.500	0.750	2.125	1/2	3-1/2	45.3	658290	**709.50**
12	TG12MDP	12	2	0.500	0.750	2.500	1/2	4-1/4	23.4	658292	**297.00**
12	TG12MDP1	12	4	0.500	0.750	2.500	1/2	4-1/4	45.3	658294	**462.00**
12	TG15-12MDP	15	3	0.500	0.750	2.500	1/2	4-1/4	53.7	658296	**709.50**
15	TG15MDP	15	3	0.500	0.750	3.000	5/8	5-1/4	53.7	658298	**709.50**
15	TG15MDP1	15	4	0.500	0.750	3.000	5/8	5-1/4	70.8	658300	**874.50**
15	TG15HDP	15	3	0.500	0.750	3.000	3/4	5-1/4	53.7	658302	**709.50**
15	TGHDP1	15	4	0.500	0.750	3.000	3/4	5-1/4	70.8	658304	**874.50**

Hard Top Jaws — 90° Serrations

- **Hard Top Jaws Serrated 90° for Autoblok, Berg, Forkardt, Gamet, M.P.T, Rohm, SMW**



Type I

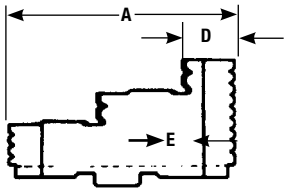


Type II

Model No.	Chuck Dia.	Serration	Drawing No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	Weight kg.	Set of 3 Code No.	Price $
3101/MTR	125-160	1/16x90°	I	58	34	29	12	14	16	16	8.5	0.2	491712	**1,191.40**
3102/MTR	160	1/16x90°	I	65	39	34	14	18	16	16	10	0.3	491714	**1,394.40**
3103/MTR	200-220	1/16x90°	I	82	45	40	17	19	23	23	10.5	0.6	492000	**1,746.08**
3104/MTR	250-315	1/16x90°	I	105	56	45	21	28	30	30	13.5	0.98	492002	**2,044.10**
3105/MTR	315-350	1/16x90°	I	122	56	50	21	43	30	30	13.5	1.43	492005	**2,809.43**
3106/MTR	400	1/16x90°	I	120	74	55	21	31	34	34	22	1.9	492006	**2,955.67**
3107/MTR	400	1/16x90°	I	152	74	55	21	57	34	34	22	2.58	492007	**3,651.14**
3108/MTR	500	3/32x90°	II	147	73	55	28	46	38	38	32	2.23	492008	**4,736.33**
3109/MTR	610-800	3/32x90°	II	147	75	70	28	46	38	38	32	3.2	492009	**5,128.70**
3110/MTR	500-630	3/32x90°	II	147	73	55	25.5	46	38	38	32	2.25	492011	**4,963.95**
3111/MTR	610-800	3/32x90°	II	147	75	70	25.5	46	38	38	32	3.23	492012	**5,389.36**

Hard Top Jaws American Tongue And Groove

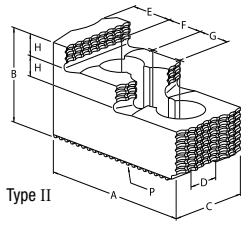
For most manual lathe chucks.



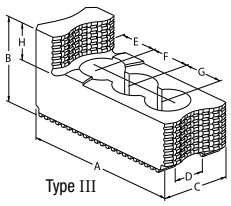
Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Code No.	Price $
250-315	90	20	40	-	-	492030	**1,191.40**

Hard Top Jaws — 60° Serrations

Hard Top Jaws Serrated 60° for Kitagawa, Howa, Matsumoto, Suga, Nikko And Other Brands



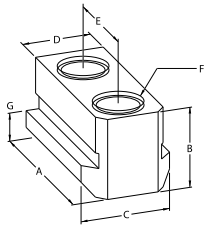
Type II



Type III

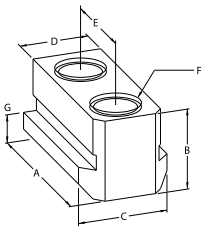
Chuck Dia.	Drawing No.	Serration	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Sold By	Code No.	Price $
6"	III	1.5x60°	67.5	36	31	12	14.5	20	Set	492010	**1,433.99**
12"	III	1.5x60°	98	55	50	18	20	30	Set	492015	**2,701.66**
15"	II	1.5x60°	149	86	62	22	27	43	Set	492020	**4,333.65**
15"	II	1.5x60°	149	86	62	25.5	27	43	Set	492025	**4,333.65**

T-Nuts For Matsumoto Chucks



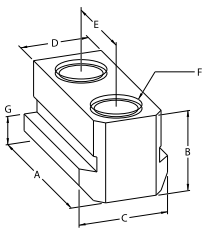
Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Price $
2903/GT20	125-150	32	20	16.5	11	20	M8	7	0.04	494126	**50.44**
2905/GT22	150-200	45	22	20	14	25	M12	8.5	0.08	494124	**57.76**
2905/GT23	200-280	53	23	22	16	30	M12	8	0.12	494075	**55.81**
2907/GT33.5	300	55	33.5	25	18	30	M12	13.5	0.2	494110	**61.06**
2909/GT50	381-457	90	39.5	33	22	50	M20	19.5	0.52	494130	**228.38**

T-Nuts For Kitagawa Chucks



Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Price $
2902/GT13.5	110	25	13.5	11.3	8	15	M6	4.5	0.015	494052	**50.44**
2903/GT18	100	28	18	15	10	14	M8	5.5	0.028	494053	**50.44**
2903/GT15-14	100-130	26	15	15	10	14	M8	5.5	0.021	494055	**48.74**
2903/GT18-19	125	32	18	15	10	19	M8	5.5	0.02	494056	**50.44**
2903/GT15.5	135	30	15	14	10	18	M8	5.2	0.025	494057	**50.44**
2904/GT22	160	40	22	18	12	20	M10	7	0.068	494073	**50.44**
2904/GT18.5	160	40	18.5	18	12	20	M10	7.5	0.071	494060	**48.74**
2905/GT24.5	200-210	45	24.5	20	14	25	M12	8.5	0.096	494080	**55.81**
2905/GT20.5	200-210	45	20	20	14	25	M12	8	0.08	494070	**55.81**
2906/GT24.5	250	53	24.5	22	16	30	M12	8.5	0.136	494095	**55.81**
2906/GT21.5	250	53	21.5	22	16	30	M12	8.5	0.124	494085	**55.81**
2907/GT33.5	300	55	33.5	25	18	30	M14	13.5	0.218	494110	**61.06**
2907/GT30	300	55	30	25	18	30	M14	9.5	0.180	494111	**63.20**
2909/GT28	300	58	28	30	21	30	M16	11.5	0.225	494115	**73.27**
2910/GT43	381-457	80	45.5	34	24	43	M20	16.5	0.511	494135	**224.31**
2911/GT50	457	90	45	37.5	25	50	M20	19	0.695	494140	**228.38**
2911/GT60	457	100	45	37.5	25	60	M20	19	0.800	494141	**236.37**
2912/GT	381	80	39.2	35	25.5	43	M20	19	0.548	494150	**228.38**
2912/GT60	457	100	54	37.5	25	60	M20	19	0.925	494145	**236.10**

T-Nuts For Howa Chucks



Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Price $
2904/GT22	160	40	22	18	12	20	M10	7	0.068	494073	**50.44**
2905/GT23	200-210	45	23	20	14	25	M12	8.5	0.083	494075	**55.81**
2906/GT23	250	53	23	22	16	30	M12	8	0.12	494090	**55.81**
2906/GT26.5	250	45	26.5	22	16	25	M12	8.5	0.12	494100	**55.81**
2907/GT27.5	300	55	27.5	25	18	30	M14	9.5	0.161	494105	**61.06**
2907/GT33.5	300	55	33.5	25	18	30	M14	13.5	0.2	494110	**61.06**
2909/GT29	300	68	29	30	21	40	M16	10.5	0.264	494120	**73.27**
2909/GT29-35	300	61	29	30	21	35	M16	10.5	0.24	494125	**73.27**
2909/GT40	381-610	82	40	34	26	50	M20	23	0.52	494127	**236.37**

OTHER T-NUTS AVAILABLE ON REQUEST

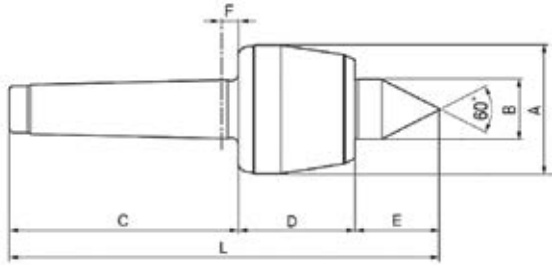
Lathe Accessories

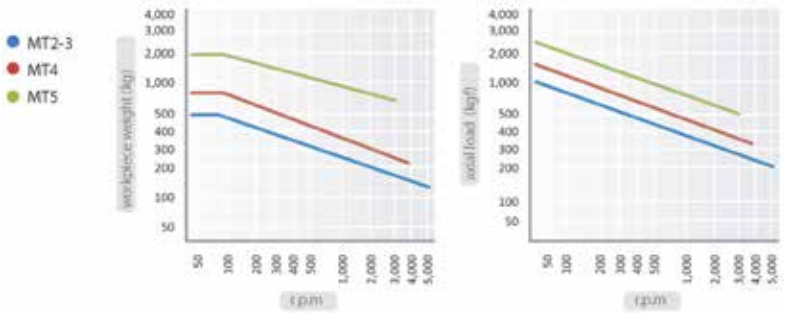
GS Live Centres H30-34
STM Live Centres H35
Skoda Live Centres. H35-38
Skoda Live Centre Sets. H39
STM Carbide Tipped Dead Lathe Centres H39
Quick Change Tool Posts & Holders H40

CNC High Speed Live Centres — Standard Point

Features

- Accuracy guaranteed to 0.003mm TIR (0.0001")
- Excellent for CNC and conventional machines
- Heat treated point to 60±2HRC
- High performance lip seal and deflected shaft design protects bearing space from ingress by dust and coolant
- 4-Bearing System: a double row angular contact bearing, a radial ball bearing, and a rear needle roller bearing combine to provide excellent rigidity and high precision point concentricity
- Heat treated drop-forged body (50±2HRC) for extra strength, rigidity, and long life
- Shaft borehole for easy dismounting





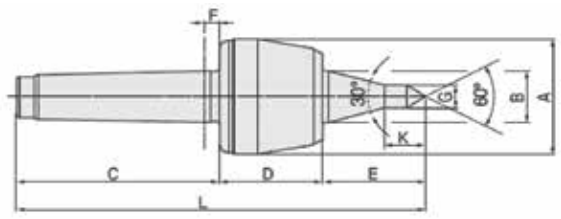
Dimensions

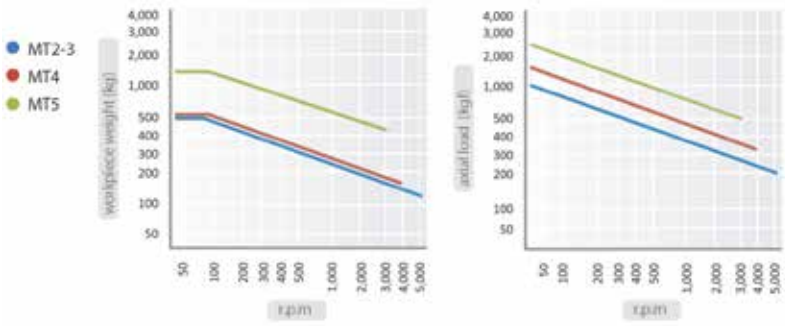
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
2	50	25	68	43.5	29.5	6	141	500 kg	5,000	0.7 kg	0.003mm	311011	**533.28**
3	50	25	85	43.5	29.5	6	158	500 kg	5,000	0.8 kg	0.003mm	311012	**455.98**
4	69	32	108	55	40	8	203	800 kg	3,800	1.85 kg	0.003mm	311013	**567.53**
5	88	40	136	70	50.5	8	256.3	2,000 kg	3,000	4.2 kg	0.003mm	311014	**618.41**
6	105	50	189	81.5	57.5	10	328	3,500 kg	2,800	8.7 kg	0.005mm	311015	**1,467.75**

CNC High Speed Live Centres — Extended A Type Point

Features

- Accuracy guaranteed to 0.003mm TIR (0.0001")
- Excellent for CNC and conventional machines
- Specially shaped elongated centre point improves tool clearance and machining flexibility for cramped area work
- Heat treated point to 60±2HRC
- High performance lip seal and deflected shaft design protects bearing space from ingress by dust and coolant
- 4-Bearing System: a double row angular contact bearing, a radial ball bearing, and a rear needle roller bearing combine to provide excellent rigidity and high precision point concentricity
- Heat treated body for extra strength, rigidity, and long life





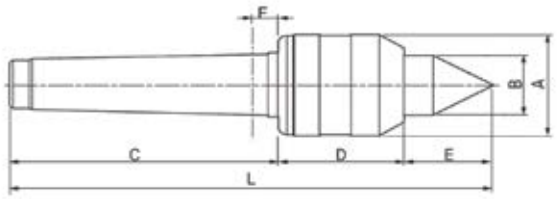
Dimensions

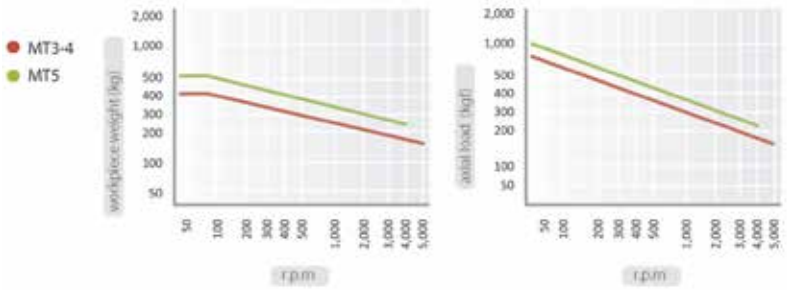
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	K (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
2	50	25	68	43.5	50	6	10	19	161.5	500 kg	5,000	0.7 kg	0.003mm	311016	**444.24**
3	50	25	85	43.5	50	6	10	19	178.5	500 kg	5,000	0.8 kg	0.003mm	311017	**455.98**
4	69	32	108	55	63.5	8	12.5	23.5	226.5	550 kg	3,800	1.9 kg	0.003mm	311018	**567.53**
5	88	40	136	70	80	8	12.5	23.5	286	1,500 kg	3,000	4.4 kg	0.003mm	311019	**618.41**

High Performance Live Centres

Features

- Accuracy guaranteed to 0.003mm TIR (0.0001")
- Excellent for light/medium duty work on conventional lathe machines
- Heat treated point to 60±2HRC
- Slim diameter improves tool clearance
- Triple Bearing System: 2 radial ball bearings and a thrust bearing provide good overall load ratings and improved performance
- Rear bearing is sealed, protecting the assembly from coolant and chips
- Live centre made of wear-resistant, drop-forged tool steel





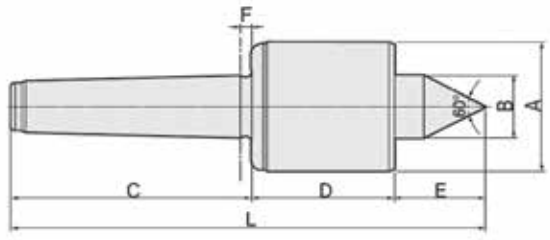
Dimensions

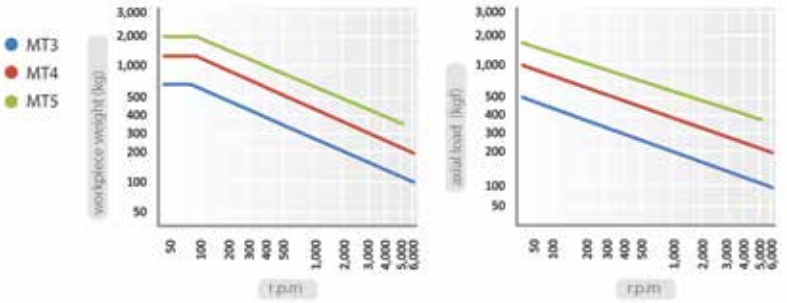
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	L (mm)	Workpiece Weight	Max Axial Load	Max RPM	Weight	Max Runout	Code No.	Price $
3	44.5	25	85	44	32.5	5.3	161.5	400 kg	600 kg	5,000	1 kg	0.003mm	311024	**197.66**
4	44.5	25	108	44	32.5	5.3	184.5	400 kg	600 kg	5,000	1.2 kg	0.003mm	311025	**262.24**
5	63	28	136	58	35	6.3	229	500 kg	750 kg	4,000	2.8 kg	0.003mm	311031	**356.17**

High Speed Live Centres

Features

- Accuracy guaranteed to 0.002mm TIR (0.0001")
- Excellent for grinders, CNC machines, and high speed light duty machining
- Heat treated point to 60±2HRC
- High RPM (up to 6,000)
- Five Bearing System: A double row angular contact bearing, two single row angular contact bearings, and a rear needle roller bearing combine to provide improved runout, greater stability, longer tool life, and superior performance
- Anti-friction seal for coolant deflection and high speed
- Heat treated body for extra strength, rigidity, and long life
- Shaft borehole for easy, efficient dismounting
- Drop forged body (50±2HRC) for long life





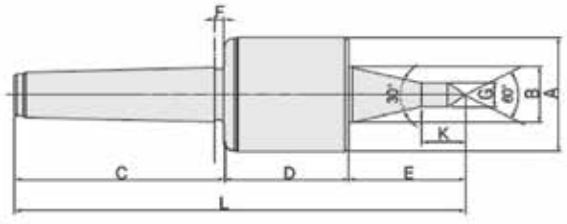
Dimensions

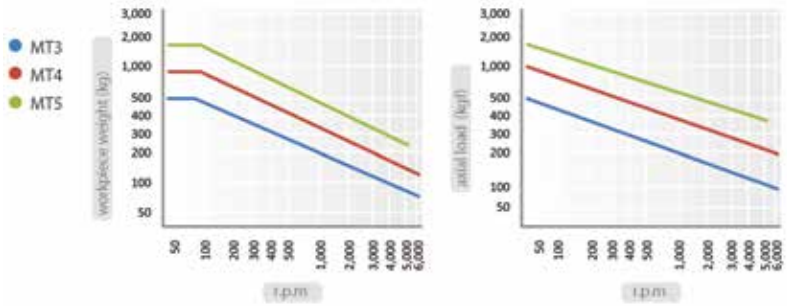
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
3	50	20	85	58	23	4.5	166	750 kg	6,000	1.9 kg	0.002mm	311034	**1,023.73**
4	66	30	108	71	35	5.3	214	1,300 kg	6,000	2.4 kg	0.002mm	311026	**665.38**
5	80	35	136	76	38	6.3	250	2,000 kg	5,000	5.3 kg	0.002mm	311027	**710.39**

High Speed Live Centres — Extended A Type Point

Features

- Accuracy guaranteed to 0.002mm TIR (0.0001")
- Excellent for grinders, CNC machines, and high speed light duty machining
- Heat treated point to 60±2HRC
- High RPM (up to 6,000)
- Five Bearing System: A double row angular contact bearing, two single row angular contact bearings, and a rear needle roller bearing combine to provide improved runout, greater stability, longer tool life, and superior performance
- Anti-friction seal for coolant deflection and high speed
- Heat treated body for extra strength, rigidity, and long life
- Shaft borehole for easy, efficient dismounting
- Drop forged body (50±2HRC) for long life





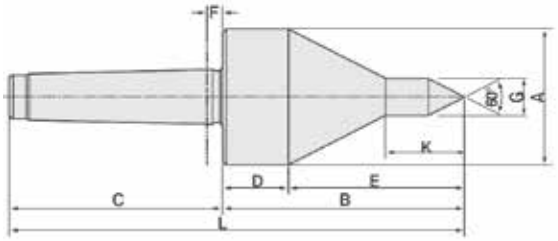
Dimensions

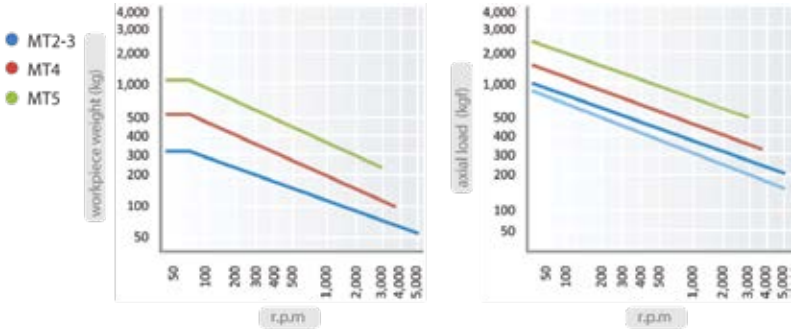
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	K (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
3	50	20	85	58	37	4.5	10	15	180	500 kg	6,000	1.9 kg	0.002mm	311028	**791.82**
4	66	31	107	71	63.5	5.3	12.5	23	241.5	900 kg	6,000	2.4 kg	0.002mm	311029	**665.38**
5	80	35	136	78	70	6.3	12.5	23.5	284	1,700 kg	5,000	5.3 kg	0.002mm	311030	**710.39**

60° Bull Head Live Centres — Extended A Type Point

Features

- Accuracy guaranteed to 0.003mm TIR (0.0001")
- Heat treated point to 60±2HRC
- For pipe work, tube work, and parts with extra-large centre holes
- 4-Bearing System: double row angular contact bearing, thrust ball bearing, and a radial ball bearing combine to provide excellent rigidity and high precision point concentricity
- Used both as a centering taper for hollow bodies and as a centre for machining standard workpieces
- Elongated centre point is specially shaped for improved tool clearance





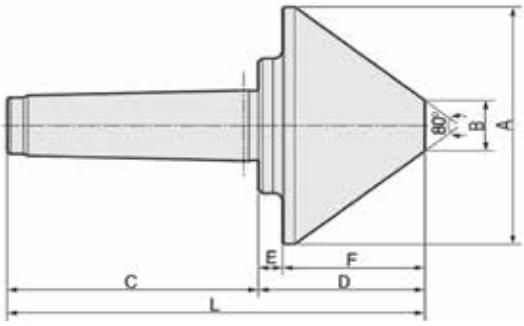
Dimensions

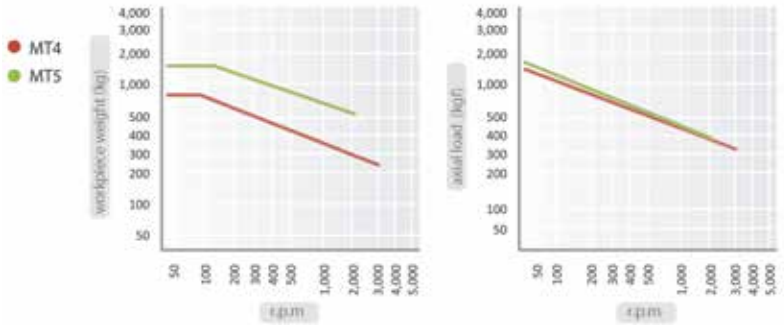
MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	K (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
3	56	86	85	28.9	57.1	6	12	19	171	320 kg	5,000	1.0 kg	0.003mm	311032	**422.71**
4	78	103.5	108	26.3	77.2	8	16	23.5	211.5	560 kg	3,800	2.3 kg	0.003mm	311023	**487.29**
5	96	140	136	41.6	98.4	8	19	30	276	1,200 kg	3,000	5.0 kg	0.003mm	311033	**661.47**

80° Bull Nose Live Centres — Standard Point

Features

- Accuracy guaranteed to 0.003mm TIR (0.0001")
- Excellent for heavy duty lathe applications
- Heat treated point to 60±2HRC
- For pipe work, tube work, and part with extra-large centre holes
- Triple Bearing System: a taper roller bearing, thrust bearing, and a high-precision radial ball bearing combine to provide excellent rigidity and superior performance
- The design prevents ingress of coolant and chips
- Shaft borehole for easy, efficient dismounting
- Drop forged shaft (50±2HRC)





Dimensions

MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
4	125	29	108	77	13	64	185	800 kg	3,000	3.9 kg	0.003mm	311036	**884.56**
5	150	32	136	90	13	77	226	1,600 kg	2,000	6.9 kg	0.003mm	311035	**1,414.91**

Indexable External Turning Toolholders

Requires fewer tool changes than solid tools in high level metalworking.

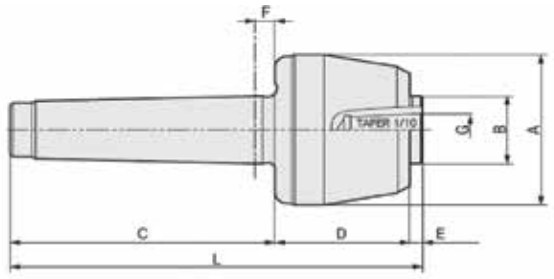
See Pages E44-E59

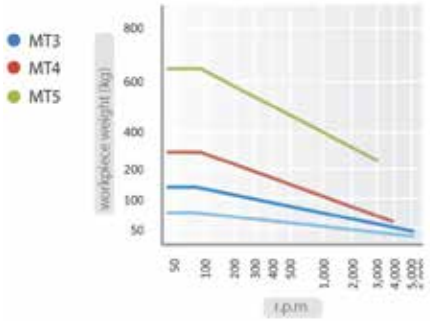
Interchangeable Points Live Centres

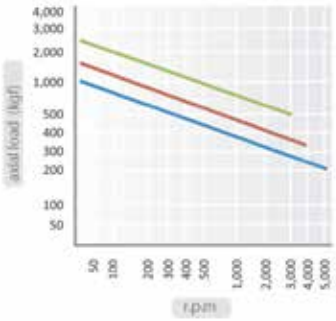
Features

Each holder comes with the 60° H insert. Other inserts available individually (see below)

- Accuracy for centre inner diameter guaranteed to 0.003mm
- Accuracy after point locking guaranteed to 0.005mm
- Excellent for individual production of various workpieces through different insert shafts
- Heat treated point to 60±2HRC
- 4 types of standard point are available
- 4-Bearing System: a double row angular contact bearing, a radial ball bearing, and a rear needle roller bearing combine to provide excellent rigidity and superior performance
- Because of the insert shafts the allowed workpiece weight is limited
- Mounting taper of point is 1/10
- Drop forged (50±2HRC) body
- Shaft borehole for easy, efficient dismounting







Dimensions

MT	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	L (mm)	Workpiece Weight	Max RPM	Weight	Max Runout	Code No.	Price $
3	50	25	85	43.5	5	6	12	133.5	150 kg	5,000	0.8 kg	0.005mm	311020	**602.76**
4	69	32	108	55	5	8	15	168	250 kg	3,800	1.7 kg	0.005mm	311021	**888.96**
5	88	40	136	70	6	8	22	212	650 kg	3,000	3.9 kg	0.005mm	311022	**1,005.90**

Interchangeable Points

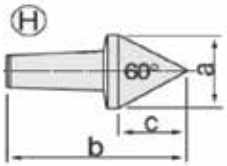
Features

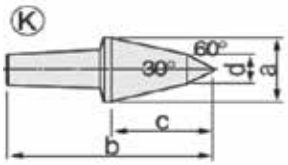
Each holder comes with the 60° H insert and a point lever.
Other inserts available individually (see below)

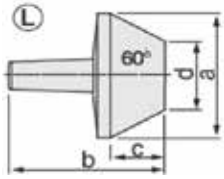
- Accuracy for centre inner diameter guaranteed to 0.003mm
- Accuracy after point locking guaranteed to 0.005mm
- Mounting taper of point is 1/10

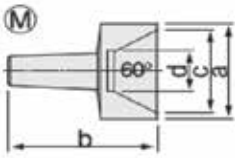
Disassembling Tool

MT	Inserts	a (mm)	b (mm)	c (mm)	d (mm)	Code No.	Price $
3	H	24	51.5	20	-	311037	**82.19**
	K	18	54	25	8	311038	**101.76**
	L	45	51	17.5	25	311039	**125.25**
	M	22	60	18	6.5	311040	**97.85**
	Disassembling Tool					311068	**43.05**
4	H	28	61.5	23.5	-	311041	**93.94**
	K	26	73	36	12	311042	**115.46**
	L	55	61.5	21.5	30.2	311043	**205.49**
	M	40	55	35	16.5	311044	**109.59**
	Disassembling Tool					311069	**43.05**
5	H	38	78	32	-	311045	**135.03**
	K	32	90	46	13	311046	**182.00**
	L	70	74	20	40	311047	**254.41**
	M	52	65	45	25.4	311048	**162.43**
	Disassembling Tool					311070	**45.01**









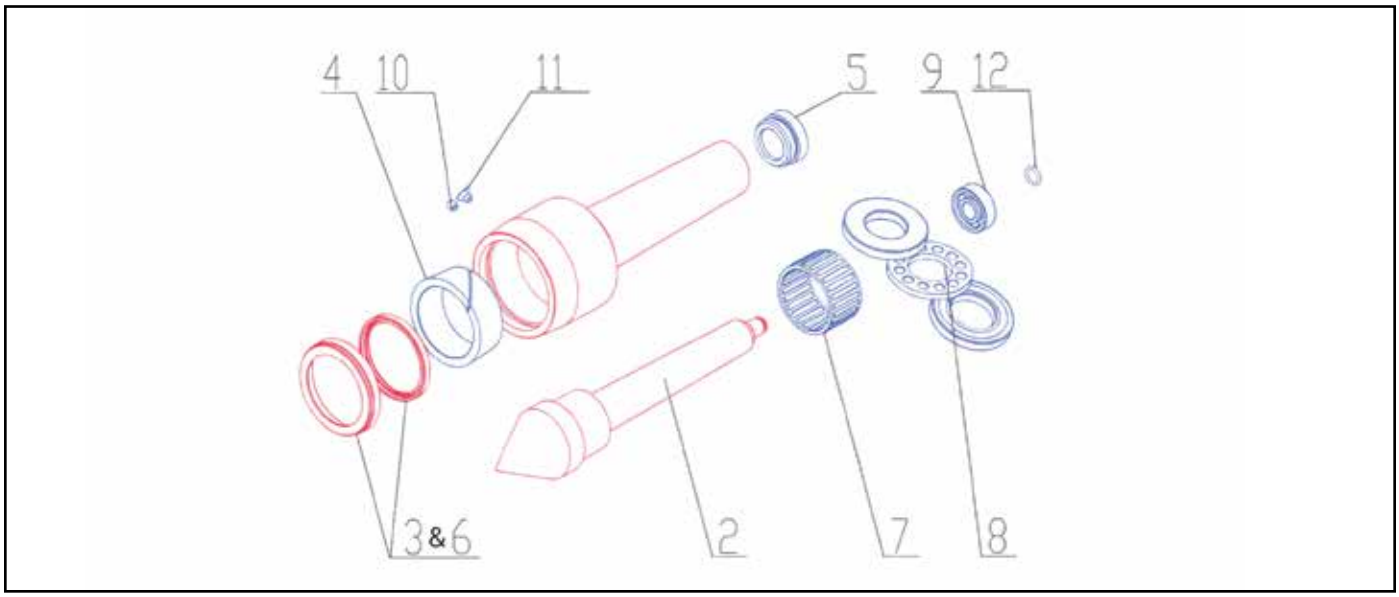
Skoda Heavy Duty Silver Line Live Centres — CSN 243324M

Features

- The rotating spindle is extended right through the tapered shank
- Two specially designed adjustable needle-roller bearings carry all radial loads
- A heavy duty ball thrust bearing takes all axial thrust
- Complete protection of bearings form the ingress of coolant, dirt or swarf is provided by the built-in oil-seal, which also prevents loss of lubricant

Morse Taper	Centre Point Angle	Body Dia. (in)	Body Dia. (in)	Body Length (in)	Maximum RPM	Maximum Weight of Work Piece	SKODA Code No.	Price $	STM Code No.	Price $
1	60°	5/8	1-3/8	4-3/8	6,000	200 lb	310105	**176.60**	-	**-**
2	60°	7/8	1-1/2	5	6,000	750 lb	310110	**220.98**	320110	**167.94**
3	60°	1-1/8	1-7/8	6-1/4	5,000	880 lb	310115	**263.29**	320115	**200.10**
4	60°	1-1/2	2-3/16	7-1/2	4,000	2860 lb	310120	**334.76**	320120	**254.42**
5	60°	1-3/4	2-3/4	9-1/2	3,500	4400 lb	310125	**482.99**	320125	**367.07**
6	60°	2-3/8	3-1/2	12-3/4	2,500	8800 lb	310130	**796.71**	-	**-**

PARTS FOR HEAVY DUTY LIVE CENTRES



Parts For Heavy Duty Live Centres

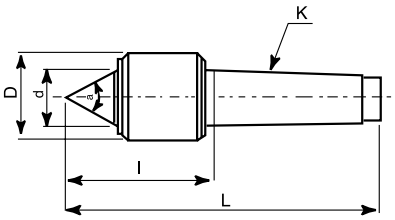
Morse Taper	2-Point		3 & 6-Ring & Seal		4-Sleeve		5-End Plug		7-Roller Bearing	
	Code No.	Price $	Code No.	Price $	Code No.	Price $	Code No.	Price $	Code No.	Price $
2	310205M	**144.70**	310211	**45.41**	310215	**102.29**	310220	**14.71**	310230	**67.87**
3	310305M	**149.53**	310311	**64.63**	310315	**114.66**	310320	**18.43**	310330	**103.10**
4	310405M	**195.77**	310411	**70.14**	310415	**127.18**	310420	**17.55**	310430	**111.43**
5	310505M	**292.46**	310511	**79.33**	310515	**177.60**	310520	**20.37**	310530	**140.43**
6	310605M	**541.73**	310611	**181.80**	310615	**233.51**	310620	**45.73**	310630	**244.18**

Morse Taper	8-Thrust Bearing		9-Ball Bearing		10-Set Screw		11-Slot Screw		12-Ring	
	Code No.	Price $	Code No.	Price $	Code No.	Price $	Code No.	Price $	Code No.	Price $
2	310235	**69.00**	310240	**38.30**	310245	**1.94**	310250	**2.27**	310255	**1.62**
3	310335	**79.35**	310340	**45.73**	310345	**1.94**	310350	**2.27**	310355	**1.94**
4	310435	**89.69**	310440	**47.51**	310445	**1.94**	310450	**1.95**	310455	**4.04**
5	310535	**111.66**	310540	**55.59**	310545	**1.94**	310550	**1.95**	310555	**4.04**
6	310635	**170.99**	310640	**66.10**	310645	**3.08**	310650	**3.08**	310655	**4.04**

Skoda Extra Heavy Duty Live Centres — CSN 243325

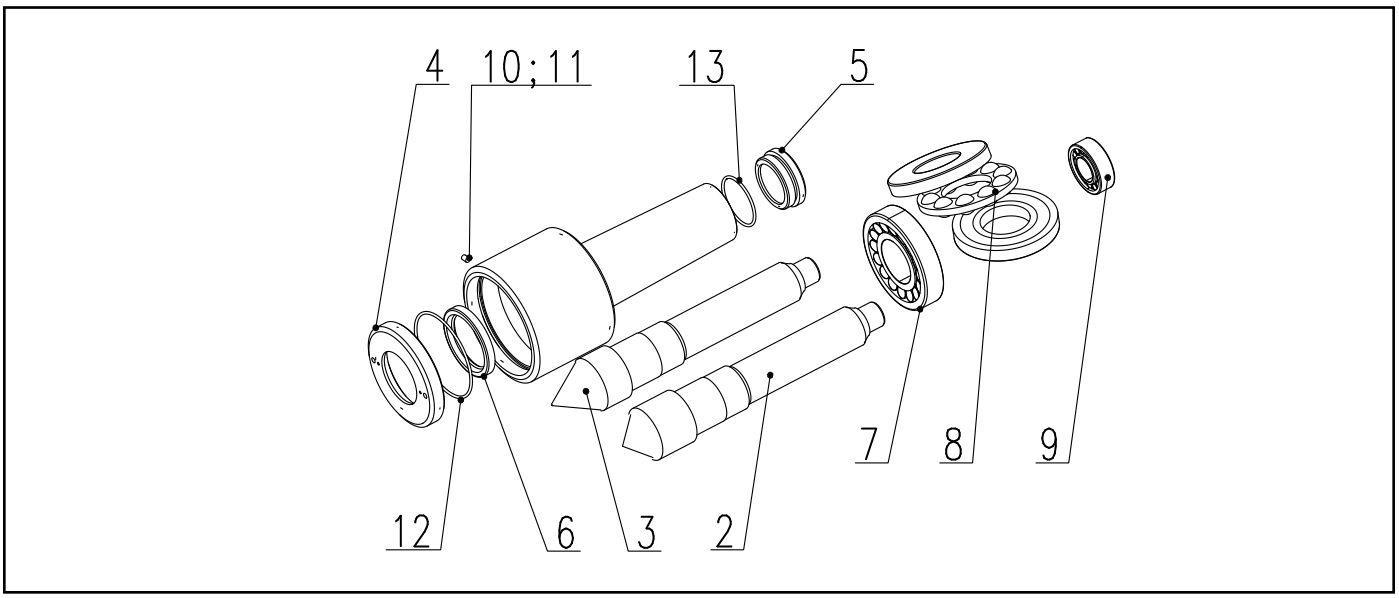
For clamping of heavy workpieces at lathes.

- The rigid structure and seating of the turning part is characterized by long service life
- The model EXTRA is commonly used for work at grinding machines
- Centres with the apex angle of 60° for reduction of deformations of the machine (tailstock, bed, headstock) from axial clamping forces
- The live centres are provided with shanks according to DIN 228 and ISO 296 (without clamping thread)



Morse Taper	D (in.)	d (in)	a	l (in.)	L (in.)	Maximum RPM	Load (lb)	Weight (lb)	Code No.	Price $
4	3.14	1.58	60°	4.10	7.85	3,200	3300	5	310920	**1,392.90**
5	3.54	1.65	60°	5.60	9.48	2,700	5500	9	310925	**1,718.31**
6	4.92	2.16	60°	6.42	13.38	1,900	11000	27	310930	**3,248.76**
7	5.70	2.56	60°	7.80	15.25	1,600	17600	45	310935	**5,649.24**

SPARE PARTS FOR EXTRA HEAVY DUTY LIVE CENTRES



Spare Parts For Extra Heavy Duty Live Centres

Parts No.	Description	Code No.	Price $
MT 4-02	90° Point	310802	**495.83**
4-03	60° Point	310803	**510.36**
4-04	Ring	310804	**202.52**
4-05	End Plug	310805	**7.14**
4-06	Sealing	310806	**10.23**
4-07	Roller Bearing	310807	**146.46**
4-08	Thrust Bearing	310808	**206.46**
4-09	Radial Bearing	310809	**234.05**
4-10	Lock Screw	310810	**1.85**
4-11	Packing Piece	310811	**66.77**
4-12	Packing Ring	310812	**2.59**
4-13	Packing Ring	310813	**2.09**
MT 5-02	90° Point	310816	**617.04**
5-03	60° Point	310817	**591.42**
5-04	Ring	310818	**270.02**
5-05	End Plug	310819	**18.47**
5-06	Sealing	310820	**14.53**
5-07	Roller Bearing	310821	**218.78**
5-08	Thrust Bearing	310822	**245.26**
5-09	Radial Bearing	310823	**246.12**
5-10	Lock Screw	310824	**1.85**
5-11	Packing Piece	310825	**143.64**
5-12	Packing Ring	310826	**3.32**
5-13	Packing Ring	310827	**2.09**

Spare Parts For Extra Heavy Duty Live Centres

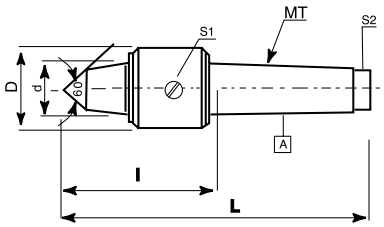
Parts No.	Description	Code No.	Price $
MT 6-02	90° Point	310830	**1,443.73**
6-03	60° Point	310831	**1,496.95**
6-04	Ring	310832	**168.15**
6-05	End Plug	310833	**141.17**
6-06	Sealing	310834	**18.47**
6-07	Roller Bearing	310835	**318.44**
6-08	Thrust Bearing	310836	**509.99**
6-09	Radial Bearing	310837	**381.63**
6-10	Lock Screw	310838	**2.96**
6-11	Packing Piece	310839	**293.55**
6-12	Packing Ring	310840	**6.90**
6-13	Packing Ring	310841	**1.85**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

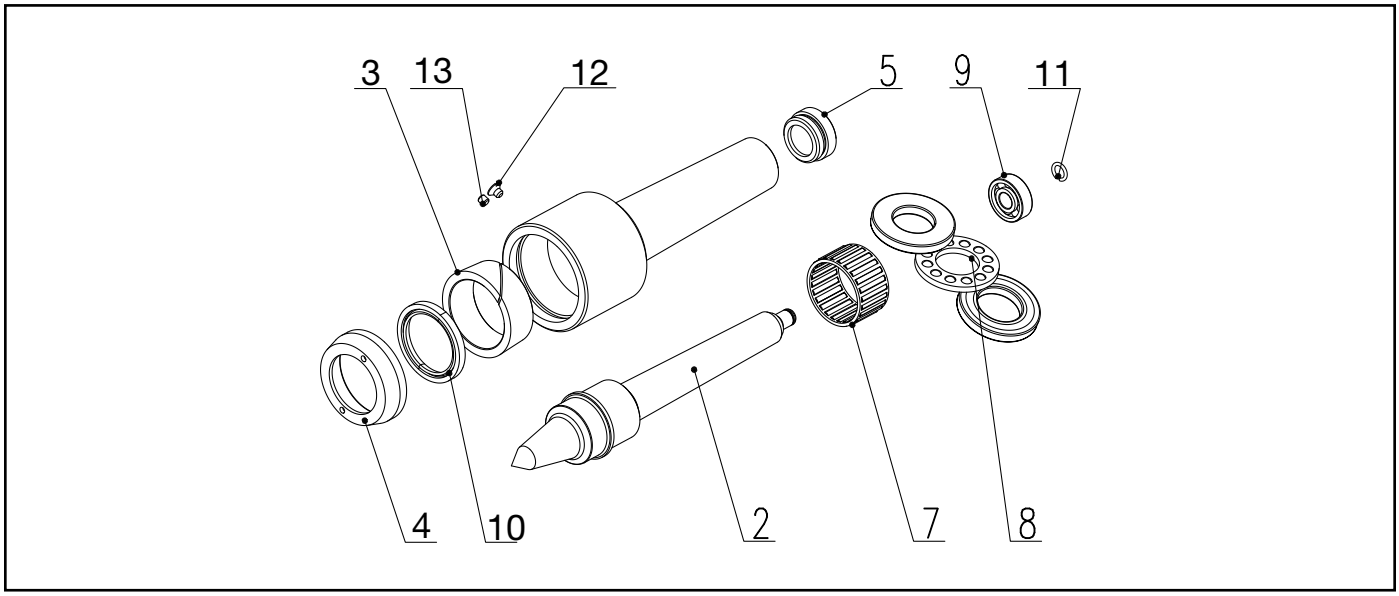
Skoda Precision CNC Silver Line Live Centres — CSN 243327-II

- The centres are intended for NC lathes. Their face parts are formed to allow easy access of the tool to the workpiece, which is an advantage with workpieces of complex shapes
- A special ring is used to set the radial clearance of the centre. It also prevents cutting lubricant from leaking into the centre bearing space, and so extends the centre's operational life
- Spindle-like point extends into shank where it is supported by a needle bearing, increasing rigidity, reducing point deflection and dampening vibration



Morse Taper	D (in.)	d (in)	L (in.)	l (in.)	Maximum RPM	Load (lb)	Code No.	Price $
2	1.5	0.695	5.25	2.65	6,000	594	310010	**419.58**
3	1.85	0.750	6.75	3.50	5,000	704	310015	**442.98**
4	2.20	1.125	8.15	3.95	4,000	2200	310020	**514.79**
5	3.10	1.375	10.50	4.85	3,500	3520	310025	**648.13**

SPARE PARTS FOR CNC LIVE CENTRES



Spare Parts For CNC Live Centres

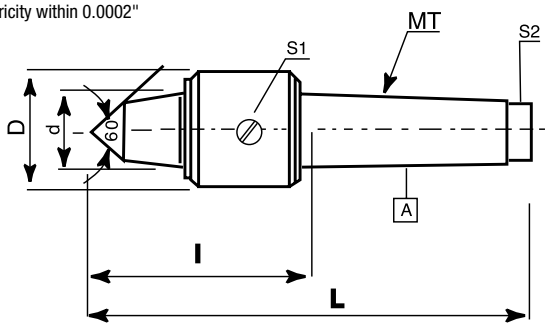
Parts No.	Description	Code No.	Price $
MT 2-02	Point	310855	**411.44**
2-03	Ring	310857	**101.48**
2-05	End Plug	310858	**16.97**
2-07	Needle Bearing	310860	**67.87**
2-08	Thrust Bearing	310861	**79.35**
2-09	Radial Bearing	310862	**135.75**
2-11	Snap Ring	310865	**16.61**
2-12	Countersink Screw	310863	**2.27**
2-13	Lock Screw	310864	**1.94**
MT 3-02	Point	310869	**698.89**
3-03	Ring	310871	**105.85**
3-05	End Plug	310872	**17.55**
3-07	Needle Bearing	310874	**103.10**
3-08	Thrust Bearing	310875	**91.62**
3-09	Radial Bearing	310876	**136.06**
3-11	Snap Ring	310879	**13.74**
3-12	Countersink Screw	310877	**2.90**
3-13	Lock Screw	310878	**2.34**

Spare Parts For CNC Live Centres

Parts No.	Description	Code No.	Price $
MT 4-02	Point	310882	**768.14**
4-03	Ring	310884	**126.69**
4-05	End Plug	310885	**18.43**
4-07	Needle Bearing	310887	**117.00**
4-08	Thrust Bearing	310888	**103.10**
4-09	Radial Bearing	310889	**150.29**
4-11	Snap Ring	310892	**21.37**
4-12	Countersink Screw	310890	**2.97**
4-13	Lock Screw	310891	**2.34**
MT 5-02	Point	310895	**981.18**
5-03	Ring	310897	**120.10**
5-05	End Plug	310898	**19.33**
5-07	Needle Bearing	310900	**142.69**
5-08	Thrust Bearing	310901	**123.79**
5-09	Radial Bearing	310902	**219.45**
5-11	Snap Ring	310905	**27.15**
5-12	Countersink Screw	310903	**2.90**
5-13	Lock Screw	310904	**2.34**

Skoda Extended Point Silver Line Live Centres — CSN 243328

- Designed to keep dust, chips and coolant from coming inside the bearings
- Hardened and ground to 61-65 Rockwell
- Concentricity within 0.0002"



Morse Taper	D (in.)	d (in)	L (in.)	l (in.)	Maximum RPM	Load (lb)	Weight (lb)	Point Angle	Code No.	Price $
2	1.417	0.866	5.059	2.560	6,000	594	0.79	60°	310160	**242.67**
3	1.850	1.181	6.575	3.386	5,000	704	1.85	60°	310165	**288.20**
4	2.165	1.378	8.169	4.094	4,000	2200	3.19	60°	310170	**362.67**
5	2.736	1.772	10.197	5.078	3,500	3960	7.04	60°	310175	**474.58**
6	3.504	2.362	13.425	6.319	2,500	7040	17.05	60°	310180	**877.51**

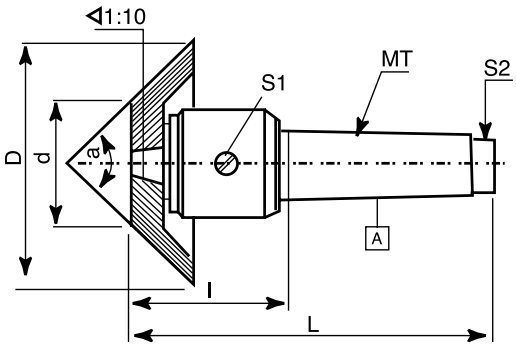
Extended Points

Morse Taper	Code No.	Price $
2	310200	**204.22**
3	310300	**226.16**
4	310400	**298.27**
5	310500	**406.39**
6	310600	**680.09**

Skoda Heavy Duty Bull Nose Silver Line Live Centres — CSN 243319

Designed to hold pipe and hollow work. Pipe head can be used as an all-round centre for light work. Two matched angular contact bearings preloaded at the factory. This achieves good thrust and radial capacities. Bearings are protected by a combination steel shield and neoprene seal.

- Accuracy: ±0.0001"



Morse Taper	a	D (in)	d (in.)	L (in.)	l (in.)	Maximum RPM	Load (lb)	Weight (lb)	Code No.	Price $
3	60°	3.150	1.378	6.380	3.189	5,000	880	4.62	310140	**871.79**
4	60°	4.527	1.732	7.637	3.622	4,000	2860	9.68	310145	**1,404.23**
5	60°	5.314	1.811	9.449	4.331	3,500	4400	17.60	310150	**1,987.33**
6	60°	6.693	2.520	12.125	4.961	2,500	8800	51.70	310155	**4,757.59**

Skoda Silver Line Live Centre Sets — CSN 243326

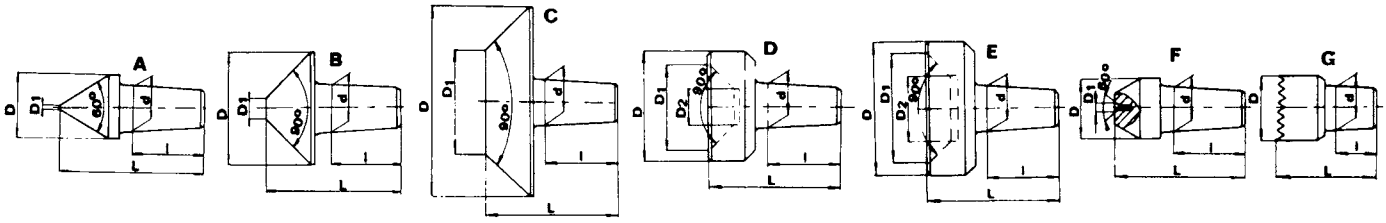
Features

- The rotating spindle is extended right through the tapered shank
- Two specially designed adjustable needle-roller bearings carry all radial loads
- A heavy duty ball thrust bearing takes all axial thrust
- Complete protection of bearings from the ingress of coolant, dirt or swarf is provided by the built-in oil-seal, which also prevents loss of lubricant

Morse Taper	All		A	B-G	A		B		C		D			E			F		G		
	d	l	L	L	D	D1	D	D1	D	D1	D	D1	D2	D	D1	D2	D	D1	D	Code No.	Price $
3	0.590	0.984	1.968	1.771	0.787	0.019	1.417	0.236	2.480	1.299	1.417	1.102	0.472	1.771	1.496	0.866	0.787	0.098	0.984	310705	**1,104.77**
4	0.784	1.181	2.362	2.086	0.984	0.019	1.771	0.393	2.755	1.378	1.771	1.456	0.669	2.480	2.086	1.181	0.984	0.196	1.259	310710	**1,356.37**
5	0.984	1.496	2.874	2.559	1.259	0.039	2.204	0.551	3.149	1.496	2.204	1.732	0.787	2.775	2.362	1.417	1.259	0.196	1.771	310715	**1,635.29**
6	1.181	1.811	3.543	3.149	1.417	0.039	2.755	0.708	3.937	1.968	2.755	2.283	0.950	3.937	3.464	2.126	1.417	0.315	2.204	310720	**2,358.92**

Morse Taper	Max Load (lb)
3	880
4	2860
5	4400
6	8800

Maximum weight of workpiece is independent of the individual point being used.



Parts For Skoda Live Centre Sets

Morse Taper	Part A Code No.	Price $	Part B Code No.	Price $	Part C Code No.	Price $	Part D Code No.	Price $	Part E Code No.	Price $	Part F Code No.	Price $	Part G Code No.	Price $
3	310724	**170.79**	310726	**246.32**	310728	**447.22**	310730	**259.97**	310732	**380.07**	310734	**277.51**	310736	**288.91**
4	310744	**195.35**	310746	**230.71**	310748	**447.51**	310750	**268.11**	310752	**412.13**	310754	**309.02**	310756	**313.72**
5	310764	**210.85**	310766	**298.13**	310768	**676.70**	310770	**307.96**	310772	**661.33**	310774	**358.01**	310776	**354.19**
6	310784	**343.90**	310786	**566.11**	310788	**897.28**	310790	**588.30**	310792	**854.54**	310794	**404.48**	310796	**474.80**

Additional Items For Skoda Live Centre Sets

Morse Taper	Live Centre Only Code No.	Price $	Internal Point Code No.	Price $	Wooden Case Code No.	Price $	Drift Key Code No.	Price $
3	310722	**560.29**	310723	**126.38**	310738	**266.13**	310740	**260.91**
4	310742	**722.09**	310743	**143.89**	310758	**304.81**	310760	**276.11**
5	310762	**879.29**	310763	**175.05**	310778	**346.64**	310780	**295.98**
6	310782	**1,363.12**	310783	**254.13**	310798	**391.64**	310800	**359.59**

STM Carbide Tipped Dead Lathe Centre

With Morse Taper. Included angle is 60°. They are precision made, hardened and ground to closest tolerances.

Morse Taper	Length	Code No.	Price $
1	3-3/16	420905	**87.57**
2	3-15/16	420910	**72.02**
3	4-15/16	420915	**136.64**
4	6-5/16	420920	**195.48**
5	7-7/8	420925	**217.13**
6	11	420930	**455.67**

40 Position Quick Change Tool Posts & Holders

Outstanding Features:
Toolpost and toolholder profile-ground. Easy to operate. Any number of different toolholders can be used. 40 tool-bit positions. Adjustment for height of the tool bit is controlled by a knurled head screw without using packing plates or shims. Loosening and locking of any toolholder is performed by simple eccentric clamping. Save time by changing the toolholder from the top without moving longitudinal ortraverse slides. Bore with longitudinal feed by using toolholder with inner taper. Eliminates complicated boring with the tailstock.

- Repeatability Accuracy: ≤0.01mm

Mounting on Lathe:
Profile-ground serrated toolpost to be mounted with support clamping bolt. The centering disk should be bored to the dimension of the clamping bolt (snug fit not necessary).

It is recommended that the toolpost with clamped toolholder and boring bar be aligned at a right angle to the face plate. The toolpost is locked on the support by means of two set pins. The marking point should then be set on "0" and the nut of the clamping bolt tightened.

Toolpost

Toolholder 'S'

Toolholder 'B'

Toolholder 'D'

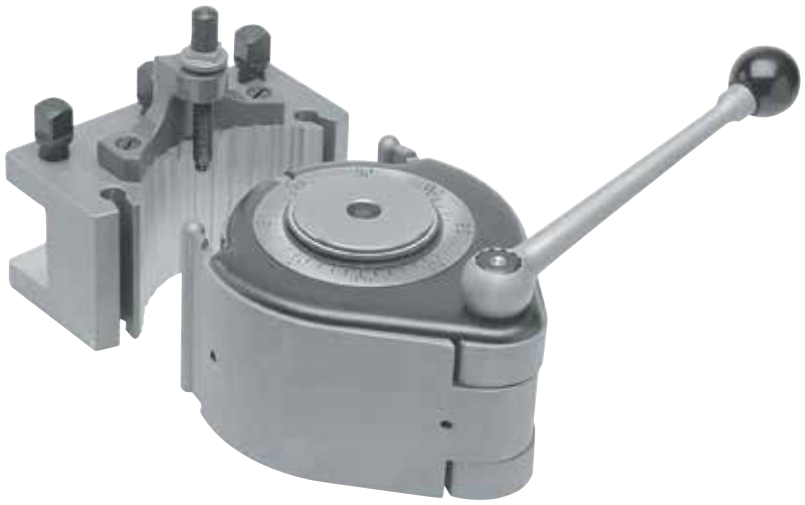
Technical Data
Min. dimension "S" required for height of tool "h":

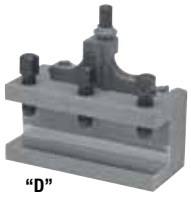
	Size A0 "S" (in)	Size A1 "S" (in)	Size E5 "S" (in)		Size B2 "S" (in)		Size C 3 "S" (in)			Size D 4 "x"		
"h" (in)	D 12	D 20	D 20	D 25	D 25	D 32	D32	D 40	D 45	D 40	D 50	D 63
16/64	15/32											
5/16	9/16	43/64										
25/64	5/8	3/4	51/64	7/8	57/64							
15/32	23/32	53/64	7/8	59/64	31/32	1-1/32						
9/16		29/32	61/64	1	1-3/64	1-7/64	1-9/64					
5/8		63/64	1-1/32	1-5/64	1-1/8	1-3/16	1-7/32	1-17/64				
25/32		1-9/64	1-13/64	1-15/64	1-9/32	1-11/32	1-3/8	1-27/64	1-29/64			
63/64				1-7/64	1-31/64	1-35/64	1-17/32	1-3/64	1-41/64	1-49/64		
1-3/16					1-47/64	1-49/64	1-13/16	1-27/32	1-31/32	2-1/64		
1-17/64					1-13/16	1-7/8	1-57/64	1-59/64	2-3/64	2-3/32	2-1/8	
1-37/64								2-13/64	2-1/4	2-23/64	2-13/32	2-7/16
1-31/32											2-51/64	2-53/64
2-31/64												3-11/32

SIZE			A 0	A 1	E 5		B 2			C 3			D 4	
Size of Exchangeable Toolholder			D 12	D 20	D 20	D 25	D 25	D 32	D 32	D 40	D 45	D 40	D 50	D 63
Weight		lbs.	0.77	2.86	6.18	6.18	9.04	9.04	22.93	22.93	22.93	37.48	37.48	37.48
Max. driving power		HP	1.5	3	6	6	9	9	18	18	18	30	30	30
Max. width of slide		in.	3-5/32	4	5	5	6	6	7-1/8	7-1/8	7-1/8	7-7/8	7-7/8	7-7/8
Total height	"g"	in.	1-17/64	2-3/32	2-11/16	2-11/16	2-61/64	2-61/64	4-1/8	4-1/8	4-1/8	4-51/64	4-51/64	4-51/64
Total width	"b"	in.	2-3/4	4	5	5	5-29/32	5-29/32	7-9/16	7-61/64	7-61/64	9-3/64	9-15/64	9-17/32
Max. throat	"m"	in.	1-3/16	1-57/64	2-3/8	2-3/8	2-51/64	2-51/64	3-10/16	4	4	4-13/32	4-39/64	4-7/8
Standard bore	"t"	in.	31/64	25/32	25/32	25/32	1-1/4	1-1/4	1-37/64	1-37/64	1-37/64	1-37/64	1-37/64	1-37/64
Max. bore	"tmax."	in.	–	1-7/32	1-7/32	1-7/32	2	2	2-3/4	2-3/4	2-3/4	3-5/32	3-5/32	3-5/32
Max. depth of bore	"a"	in.	–	1-3/8	1-3/8	1-3/8	1-49/64	1-49/64	2-61/64	2-61/64	2-61/64	2-61/64	2-61/64	2-61/64
Max. height of tool	"h"	in.	15/32	25/32	25/32	63/64	63/64	1-17/64	1-17/64	1-37/64	1-49/64	1-37/64	1-31/32	2-31/64
Tool rest	"st"	in.	15/64	23/64	25/64	7/16	1/2	35/64	19/32	5/8	43/64	25/32	53/64	55/64
Vertical adjustability	"hv"	in.	5/16	7/16	43/64	19/32	25/32	7/16	1-37/64	1-3/8	1-3/16	1-3/8	1-3/16	25/32
Min. height of cutting edge	"s"		"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"	"h"+"st"
Max. height of cutting edge			"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"	"s"+"hv"

40 Position Quick Change Tool Posts & Holders

Swing	
A0T	Up to 9"
A1T	6" - 13"
ET	10" - 18"
BT	13" - 20"
CT	18" - 30"
DT	22" - 35"





"D"

"B"

"S"

"A"

Quick Change Tool Posts & Holders

Toolpost			Toolholder "D" Flat				Toolholder "B" V-Groove				Toolholder "S" Boring Bar Holder				Toolholder "A" Part Off	
Toolholder Size	Code No.	Price $	*NH mm	L mm	Code No.	Price $	*NH mm	L mm	Code No.	Price $	*D mm	L mm	Code No.	Price $	Code No.	Price $
A0T	388005	**346.84**	12	50	388010	**104.94**	12	50	388015	**111.82**	15	50	388020	**159.25**		
A1T	388035	**435.51**	20	80	388040	**115.27**	18	80	388045	**122.54**	30	80	388050	**185.01**	388055	**262.27**
E5T	388100	**554.22**	20	100	388105	**154.98**	30	100	388115	**180.04**	30	100	388120	**228.04**	388130	**298.21**
			25	100	388110	**198.89**					40	100	388125	**239.48**		
			25	120	388185	**180.04**										
			25	140	388190	**214.32**										
B2T	388180	**633.18**	32	120	388195	**183.77**	32	130	388205	**205.43**	40	120	388210	**295.46**	388215	**335.21**
			32	140	388200	**235.37**										
			32	150	388270	**280.72**										
			32	170	388275	**319.32**										
C3T	388265	**1,187.12**	40	150	388280	**305.94**	32	160	388295	**327.66**	40	150	388305	**467.42**	388315	**396.18**
			40	170	388285	**347.41**	40	170	388300	**339.72**	50	150	388310	**490.84**		
			45	170	388290	**364.57**										
D4T	388375	**1,969.81**	40	180	388380	**519.53**	50	180	388395	**752.43**	63	180	388400	**795.96**		
			50	180	388385	**554.45**										
			63	180	388390	**604.34**										

* Notch Height

* Notch Height

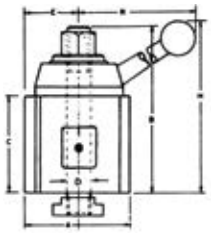
* Diameter

Quick Change Tool Posts Parts

Toolholder Size	Square Head Screw		Cheese Head Screw		Adjusting Top		Height Adj. Nut		Height Adj. Screw	
A0T	388501	**3.14**	388502	**1.47**	388503	**6.96**	388504	**8.58**	388505	**3.16**
A1T	388506	**3.14**	388507	**1.47**	388508	**7.18**	388509	**8.58**	388510	**3.16**
B2T	388516	**5.81**	388517	**1.88**	388518	**11.33**	388519	**10.28**	388520	**4.61**
C3T	388521	**6.73**	388522	**3.47**	388523	**12.46**	388524	**11.60**	388525	**4.82**
D4T	388526	**9.28**	388527	**4.76**	388528	**17.69**	388529	**15.99**	388530	**7.14**
E5T	388511	**3.14**	388512	**1.88**	388513	**10.86**	388514	**8.58**	388515	**4.16**

Piston Type Tool Post

- All working parts hardened and ground
- Maximum rigidity for chatter-free performance
- No time wasted with shims
- Speed up your lathe operations 90%
- Completely sealed for maintenance-free operation

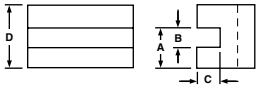


470 Series

A	B	C	D	E	H	R	Swing	Code No.	Price $
2 1/2	3 7/8	2 1/4	9/16	1 3/8	4 11/16	5 3/4	Up To 12"	470100	**168.11**
3	4 5/8	2 3/4	5/8	1 5/8	5 9/16	7 5/16	10-15"	470200	**202.68**
3 1/2	5 1/8	3	3/4	1 7/8	6 1/8	7 7/8	13-18"	470300	**291.27**
4	6 1/4	3 5/8	7/8	2 1/8	7	9	14-20"	470400	**555.04**

Turning & Facing Holder (#1)

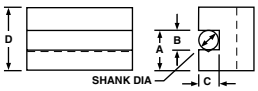
Takes various sizes of bits. Turning and facing tools can be locked in together. Saves time and labor when changing operations.



A	B	C	D	Tool Bit	Code No.	Price $
15/16	1/2	7/16	1 1/2	3/16 - 1/2	470101	**41.31**
1 1/8	5/8	1/2	1 3/4	1/4 - 5/8	470201	**44.85**
1 7/16	3/4	5/8	2 1/8	1/2 - 3/4	470301	**73.47**
1 11/16	1"	3/4	2 1/2	1/2 - 1"	470401	**92.03**

Boring, Turning & Facing Holder (#2)

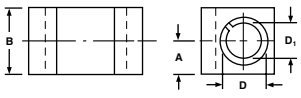
"V" groove holds round shank boring bars and tools as well as square tool bits.



A	B	C	D	Tool Bit	Shank	Code No.	Price $
15/16	1/2	7/16	1 1/2	3/16 - 1/2	7/16	470102	**43.05**
1 1/8	5/8	1/2	1 3/4	1/4 - 5/8	1/2	470202	**49.07**
1 7/16	3/4	5/8	2 1/8	1/2 - 3/4	3/4	470302	**76.46**
1 11/16	1"	3/4	2 1/2	1/2 - 1"	13/16	470402	**96.21**

Heavy Duty Boring Bar Holder (#4)

Equipped with a split bushing to accommodate a boring bar of smaller diameter. It grips bar with extreme rigidity, cuts smoothly without chatter.

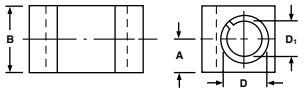


A	B	D	D1	Code No.	Price $
3/4	1 1/2	3/4	5/8	470104	**60.18**
1"	2	1"	3/4	470204	**72.15**
1"	2	1"	3/4	470304	**107.08**
1 3/8	2 3/4	1 1/4	1"	470404	**126.19**

Tool holders do not include tool bits, boring bars, drills or carbide inserts.

Heavy Duty Boring Bar Holder (#41)

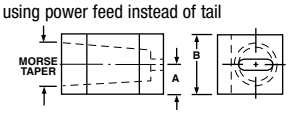
Equipped with a split bushing to accommodate a boring bar of smaller diameter. It grips bar with extreme rigidity, cuts smoothly without chatter.



A	B	D	D1	Code No.	Price $
7/8	1 3/4	1"	3/4	470141	**61.05**
1"	2	1 1/4	1"	470241	**85.85**
1 1/8	2 1/4	1 1/4	1"	470341	**100.14**
1 3/8	2 3/4	1 1/2	1 1/4	470441	**125.56**

Morse Taper Holder For Drilling (#5)

Drills with carriage by using power feed instead of tail stock. Easily centered. For No. 2, 3 and 4 Morse Taper Drills.



A	B	Taper Hole Size	Code No.	Price $
3/4	1 1/2	#2 M.T.	470105	**73.03**
7/8	1 3/4	#2 M.T.	470205	**77.44**
1"	1 1/2	#3 M.T.	470305	**86.38**
1 1/4	2 1/2	#3 M.T.	470405	**106.69**

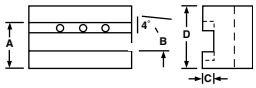
Morse Taper Holder For Drilling (#53)

- Refer to diagram above (#5)

A	B	Taper Hole Size	Code No.	Price $
3/4	1 1/2	#3 M.T.	470153	**91.14**
7/8	1 3/4	#3 M.T.	470253	**95.35**
1 1/16	2 1/8	#4 M.T.	470354	**102.02**
1 1/4	2 1/2	#4 M.T.	470454	**120.48**

Universal Parting Blade Holder (#7)

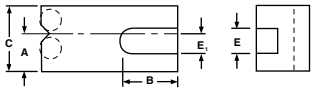
For bevel as well as T-cut blades. Enables you to cut-off close to chuck. Absence of vibration prevents breaking blades.



A	B	C	D	Blade Height	Code No.	Price $
13/16	1/2	3/16	1 1/2	1/2	470107	**63.64**
1"	11/16	3/16	1 3/4	11/16	470207	**68.66**
1 7/16	3/4	3/16	2	3/4	470307	**103.15**
1 7/16	7/8	1/4	2 1/2	7/8	470407	**119.29**

Knurling, Turning & Facing Holder (#10)

"V" groove holds round shank boring bars and tools as well as square tool bits. For turning and facing as well as knurling. Supplied with a set of high speed precision ground and lapped medium diamond knurls. Easily replaceable.



A	B	C	E	E1	Tool Bit	Code No.	Price $
7/8	2 1/2	1 9/16	1/2	3/8	3/16 - 1/2	470110	**67.98**
1"	2 5/8	1 3/4	5/8	1/2	1/4 - 5/8	470210	**83.43**
1 3/16	3 1/8	2	3/4	5/8	1/2 - 3/4	470310	**126.78**
1 7/16	3 3/4	2 1/2	1"	3/4	1/2 - 1	470410	**135.00**

Turret Type Quick Change Tool Post

Production of a lathe machine, even of high capacity, is conditioned to the speed and time required for changing tools. Fast tool changing and simplicity increase machine production. Our turrets are designed and constructed to achieve these essential requirements.

Our Turrets offer these advantages:

1 - No chatter or vibrations

2 - Save long set-up work for centering tool to centre of rotation axle

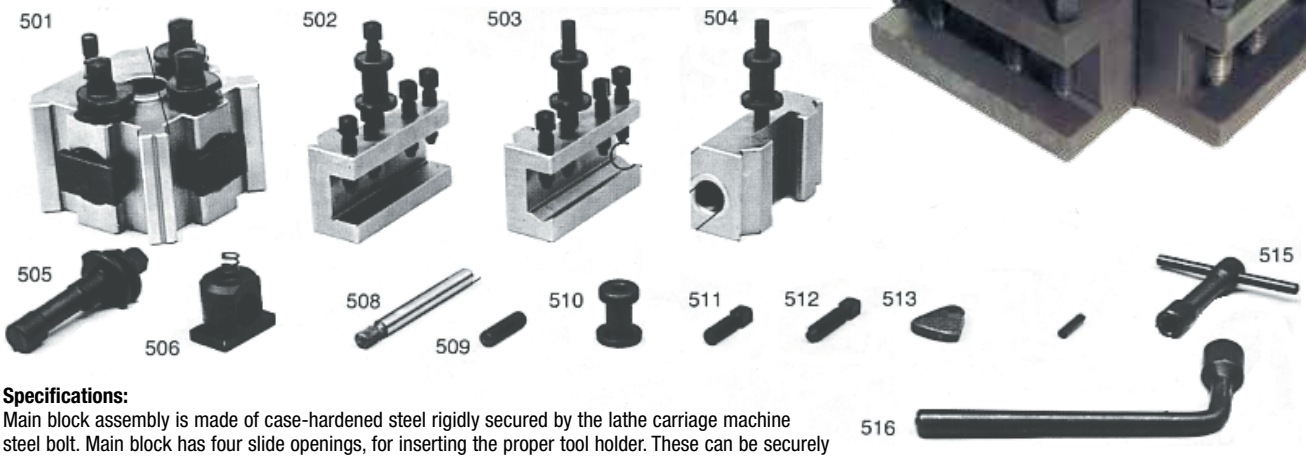
3 - No tool breakages, caused by poor or irregular setting of the tool on the shims

Price of Set Includes:

3 Tool-holders of flat section

1 Tool-holder with V-seat for round tools

2 Standard spanners



Specifications:

Main block assembly is made of case-hardened steel rigidly secured by the lathe carriage machine steel bolt. Main block has four slide openings, for inserting the proper tool holder. These can be securely fastened by a simple and safe eccentric device, which also adjusts individual tool holder height. Tool shank is held securely by four hardened screws.

Quick Change Tool Posts & Holders

Size	Dimensions For Lathes with Swing (in.)	Max Height of Turret Body (in.)	Max. Square and Rect. Tools (in.)	Diameter Round Tool (in.)	Taper Shank	Max Adjust. Tool Holder (in.)	Sets Code No.	Price $
M	7 - 10	2-3/4 x 2-3/4 x 1-3/4	5/8	1/2	1	1/2	385105	**692.05**
A	10 - 14	3-7/8 x 3-7/8 x 2-3/8	3/4	5/8	2	9/16	385110	**795.43**
B	14 - 18	4-5 x 5 x 3-3/8	1-1/8	13/16	3	15/16	385115	**1,022.72**
C	18 - 24	5-5/8 x 5-5/8 x 3-3/4	1-1/4	15/16	4	1	385120	**1,307.07**
D	over	6-7/8 x 6-7/8 x 4-3/4	1-1/2	1-1/4	4	1-1/2	385125	**3,302.72**

Fig.	Size Description	M Code No.	M Price $	A Code No.	A Price $	B Code No.	B Price $	C Code No.	C Price $	D Code No.	D Price $
STANDARD HOLDERS											
502	Flat tool holder	385205	**68.09**	385210	**81.06**	385215	**106.36**	385220	**137.23**	385225	**495.67**
503	V tool holder	-	**-**	385310	**86.74**	385315	**112.70**	385320	**144.45**	-	**-**

Fig.	Size Description	M Code No.	M Price $	A Code No.	A Price $	B Code No.	B Price $	C Code No.	C Price $	D Code No.	D Price $
501	Master blocks	-	**-**	-	**-**	386103	**650.75**	386104	**824.29**	386105	**1,526.75**
505	Eccentric clamp pivot	386111	**41.20**	386112	**50.18**	386113	**68.14**	386114	**72.30**	-	**-**
506	Clamping block	-	**-**	386122	**40.21**	386123	**51.28**	386124	**59.26**	-	**-**
508	Dowel pin	-	**-**	-	**-**	-	**-**	386144	**33.09**	386145	**57.78**
509	Tool holder height adjusting screw	-	**-**	386152	**1.78**	386153	**3.51**	386154	**3.51**	386155	**6.39**
510	Bobbin for height adjusting screw	386161	**11.94**	386162	**13.86**	386163	**16.46**	386164	**20.10**	386165	**35.23**
511	Set screw for tool holder height adjust.	-	**-**	386172	**1.78**	386173	**2.88**	386174	**2.88**	386175	**4.09**
512	Set screw/tool holder	386181	**2.11**	386182	**2.11**	386183	**3.17**	386184	**3.17**	386185	**4.84**
513	Drift for drill holder	-	**-**	386192	**20.10**	386193	**24.77**	386194	**24.77**	386195	**43.93**
515	T-key for set screws	-	**-**	386212	**27.73**	386213	**32.51**	386214	**40.71**	386215	**70.94**
516	Hex. wrench for tool	-	**-**	386222	**25.99**	386223	**27.73**	386224	**45.50**	386225	**79.50**

STM Super Clamp Kits

Super Clamp Kits with Steel Blocks
Each set contains:

- 24 studs with flats, 4 each 3, 4, 5, 6, 7, 8" lengths
- 4 coupling nuts
- 4 flange nuts
- 4 T-slot nuts
- 6 serrated end clamps
- 6 step blocks
- 1 T-slot cleaner
- 1 holder
- Sets shipped in all wood holders

Inch Kits

Model No.	Table T-Slot Size	Stud Size	STM Code No.	Price $
With 1" Thick Steel Step Blocks				
S-437-SS	7/16	3/8-16	333546	**231.81**
S-500-SS	1/2	3/8-16	333548	**231.81**
S-560-SS	9/16	3/8-16	333549	**240.44**
S-562-SS	9/16	1/2-13	333551	**257.87**
S-625-SS	5/8	1/2-13	333552	**257.87**
S-686-SS	11/16	1/2-13	333553	**115.06**
S-687-SS	11/16	5/8-11	333555	**295.15**
S-750-SS	3/4	5/8-11	333554	**299.19**
S-8125-SS	13/16	5/8-11	333557	**310.88**

STM Machinist Clamping Kits — Inch

Each set contains:

- 24 Studs 4 each 3, 4, 5, 6, 7, 8" lengths
- 6 T-slot nuts
- 6 Flange nuts
- 4 Coupling nuts
- 6 Step blocks
- 6 Serrated end clamps
- 1 T-slot cleaner
- 1 Metal holder

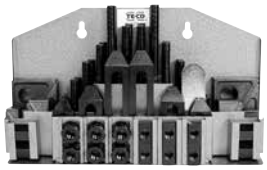


Table T-Slot Size	Stud Size	STM Code No.	Price $
With 1" Thick Steel Step Blocks			
7/16	3/8-16	333530	**195.50**
1/2	3/8-16	333532	**244.39**
9/16	3/8-16	333534	**249.78**
9/16	1/2-13	333536	**256.97**
5/8 *	1/2-13	333550	**110.01**
11/16	1/2-13	333538	**247.09**
11/16	5/8-11	333540	**221.25**
3/4	5/8-11	333542	**319.86**
13/16	5/8-11	333544	**333.34**

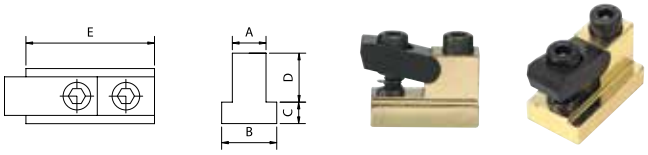
* Comes with 5/8" height t-nuts

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

T-Slot Clamp Sets

- 1 set consists of 4 vises
- For thin or small workpieces
- Good clamping force
- Quick setting
- Suitable for light duty cutting on milling, drilling, or EDM machines



Model	A	B	C	D	E	Code No.	Price $
CK-3712	11.5	18	7	16	42	333920	**149.63**
CK-3714	13.5	22	8	18	42	333922	**160.66**
CK-3716	15.5	25	10	20	45	333924	**177.69**
CK-3718	17.5	28	11	24	45	333926	**183.67**
CK-3720	19.5	32	12	26	53	333928	**254.43**

Parallel Clamps

- Designed for maximum strength and rigidity
- Ideal for various toolmaking and machine set-ups
- Made of alloy steel, black oxide finish
- Hardened and tempered jaws
- Screw heads drilled allowing use of pin for tightening
- All sizes equipped with spring clip and retaining groove

BLACK OXIDE

Capacity	Jaw Length	Model	Code No.	Price $
3-1/2"	5"	PC/5	231294	**38.80**
6"	8"	PC/8	231298	**97.81**

Pivot Clamp (Pair)

- Adjustable clamping height
- Brass plate under the clamp arm to protect the workpiece
- Spherical flange nut assures material will be tightly clamped
- Clamping arm is forged

Table T-Slot Size (in.)	Stud Size (in.)	Code No.	Price $
Inch			
5/8	1/2 - 13 x 5	326750	**97.02**
3/4	5/8 - 11 x 6	326755	**117.30**
Metric			
16mm	M12 x 5	326745	**147.90**
20mm	M16 x 6	326746	**161.46**
22mm	M20 x 7	326747	**214.13**
28mm	M24 x 8	326748	**331.57**

U-Clamps (Pair)

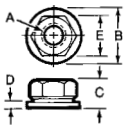
- Material: S45C
- Adjustable clamping height

Model	Dimensions (LxWxH)	Stud Size	Weight 2pcs (kg)	Code No.	Price $
VCA-404	105x45x35mm	M12x5"	1.5	326740	**125.42**
VCA-405	126x54x40mm	M16x6"	2.6	326741	**149.36**
VCA-406	155x58x55mm	M20x7"	4.2	326742	**192.05**
VCA-408	190x70x65mm	M24x8"	8.2	326743	**308.43**

Flange (Collar) Nuts

UNC

- Case hardened
- Black oxide finish

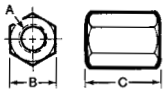


BLACK OXIDE

Model No.	Thread A	B	C	D	E	STM Code No.	Price $
Inch							
FN-38	3/8-16	7/8	1/2	1/8	11/16	333652	**2.23**
FN-12	1/2-13	1-1/8	11/16	3/16	7/8	333654	**2.89**
FN-58	5/8-11	1-3/8	13/16	3/16	1-1/16	333656	**3.41**
FN-34	3/4-10	1-5/8	1	1/4	1-1/4	333658	**5.52**
FN-10	1-8	2	1-1/4	1/4	1-5/8	333662	**11.69**

Coupling (Extension) Nuts

- Case hardened
- Black oxide finish



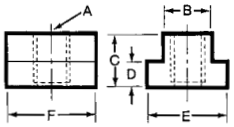
BLACK OXIDE

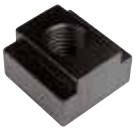
Model No.	Thread A (in/mm)	B (in/mm)	C (in/mm)	STM Code No.	Price $
Inch					
CN-38	3/8-16	11/16	1	333672	**2.79**
CN-12	1/2-13	7/8	1-1/4	333674	**3.38**
CN-58	5/8-11	1-1/16	1-5/8	333676	**4.91**
CN-34	3/4-10	1-1/4	1-7/8	333678	**6.80**

T-Slot Nuts — Inch

Last thread incomplete to prevent stud from turning through bottom of nut into machine table.

- Case hardened
- Black oxide finish
- Tapped through T-nuts available upon request





BLACK OXIDE

Model No.	Table Slot	Thread A	B	C	D	E	F	STM Code No.	Price $
Inch									
437	7/16	3/8-16	0.427	1/2	0.208	11/16	7/8	333604	**2.56**
500	1/2	3/8-16	0.490	1/2	0.271	7/8	7/8	333606	**2.56**
562	9/16	3/8-16	0.552	5/8	0.333	7/8	1-1/8	333608	**2.94**
563	9/16	1/2-13	0.552	5/8	0.333	7/8	1-1/8	333614	**2.87**
625	5/8	1/2-13	0.615	5/8	0.333	1	1-1/8	333616	**3.26**
687	11/16	1/2-13	0.677	3/4	0.427	1-1/8	1-1/4	333618	**3.50**
688	11/16	5/8-11	0.677	3/4	0.427	1-1/8	1-1/4	333620	**3.69**
751	3/4	5/8-11	0.740	3/4	0.458	1-1/4	1-1/4	333622	**3.87**
812	13/16	5/8-11	0.802	1	0.552	1-1/4	1-1/2	333624	**5.60**
813	13/16	3/4-10	0.802	1	0.552	1-1/4	1-1/2	333626	**6.17**
875	7/8	3/4-10	0.865	1	0.552	1-1/2	1-1/2	333628	**6.68**
1000	1	3/4-10	0.990	1	0.615	1-5/8	1-3/4	333630	**9.59**
1010	1-1/16	3/4-10	1.052	1-1/8	0.677	1-5/8	2	333632	**11.69**
1063	1-1/16	1-8	1.052	1-1/8	0.677	1-5/8	2	333636	**19.49**

Driver Studs — Inch

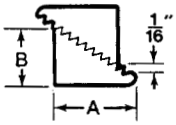
- Black oxide finish
- Medium carbon steel
- Most studs have wrench flats
- Special lengths and sizes will be quoted on request

BLACK OXIDE

Length	3/8-16 Code No.	Price $	1/2-13 Code No.	Price $	5/8-11 Code No.	Price $	3/4-10 Code No.	Price $	7/8-9 Code No.	Price $	1-8 Code No.	Price $
2	-	-	-	-	-	-	-	-	-	-	-	-
3	333718	**1.59**	333734	**1.97**	333757	**2.31**	333780	**2.63**	333804	**5.69**	333827	**7.07**
4	333720	**1.71**	333736	**2.10**	333759	**2.66**	333782	**3.15**	333806	**6.46**	333829	**7.54**
5	333722	**1.84**	333738	**2.23**	333761	**2.76**	333784	**3.55**	333808	**7.32**	333831	**8.54**
6	333724	**1.97**	333740	**2.50**	333763	**3.15**	333786	**4.07**	333810	**8.04**	-	-
7	333726	**2.23**	333742	**2.76**	333765	**3.41**	333788	**4.60**	333812	**8.97**	-	-
8	333728	**2.36**	333744	**3.02**	333767	**3.94**	333790	**5.12**	333814	**10.03**	-	-
9	-	-	-	-	333768	**5.78**	-	-	-	-	-	-
10	-	-	-	-	333769	**6.30**	333792	**8.38**	333816	**12.48**	333839	**14.57**
12	-	-	-	-	333770	**7.49**	333793	**9.44**	333817	**13.43**	333840	**16.31**
14	-	-	333748	**6.68**	333771	**8.54**	333794	**10.26**	333818	**14.60**	333841	**17.98**
16	-	-	333749	**8.53**	333772	**9.59**	333795	**11.43**	333819	**15.88**	333842	**19.48**
18	-	-	-	-	333773	**10.90**	333796	**12.07**	333820	**17.17**	333843	**21.63**
20	-	-	-	-	333774	**11.95**	333798	**13.07**	333821	**18.41**	333844	**23.49**

Steel Step Blocks

- Case hardened
- Black oxide finish
- Teeth match all serrated end clamps



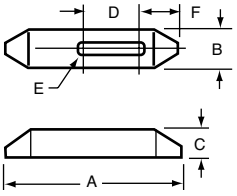
NOTE:
2 pieces = 1 block

BLACK OXIDE

Width (in.)	A (in.)	B (in.)	Height Adj. Range (in.)	STM Code No.	Price $
1	1-1/16	11/16	3/4-1-5/8	333875	**7.75**
1	1-39/64	1-1/16	1-1/8-2-1/2	333876	**10.50**
1	3-3/4	2-15/32	2-1/2-6	333877	**30.21**
1-1/2	2-17/32	1-43/64	1-3/4-4	333878	**13.44**
1-1/2	3-3/4	2-15/32	2-1/2-6	333879	**26.62**
1-1/2	5-21/64	3-7/16	3-1/2-9	333880	**47.97**

Plain Clamps

- Case hardened
- Black oxide finish

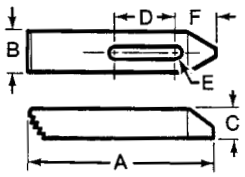


BLACK OXIDE

Model No.	A	B	C	D	Stud Size E	F	Weight (lb/100)	STM Code No.	Price $
Inch									
P-1225	2-1/2	1-1/8	1/2	11/16	1/2	29/32	24	333862	**11.56**
P-124	4	1-1/4	3/4	1-5/16	1/2	1-5/32	67	333864	**24.17**
P-126	6	1-1/4	7/8	2-1/16	1/2	1-9/32	37	333866	**31.04**
P-5825	2-1/2	1-1/4	5/8	9/16	5/8	31/32	31	333868	**13.19**
P-584	4	1-1/2	3/4	1-3/16	5/8	1-9/32	83	333870	**24.78**
P-586	6	1-1/2	7/8	1-15/16	5/8	1-13/32	150	333872	**30.20**

Serrated Clamps

- Case hardened
- Black oxide finish
- Teeth match all step blocks

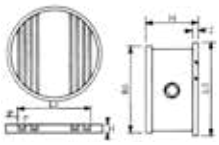


BLACK OXIDE

Model No.	A	B	C	D	Stud Size E	F	Weight (lb/100)	STM Code No.	Price $
Inch									
S-1225	2-1/2	1-1/8	1/2	11/16	1/2	29/32	27	333850	**12.02**
S-124	4	1-1/4	3/4	1-5/16	1/2	1-5/32	72	333852	**22.80**
S-126	6	1-1/4	7/8	2-1/16	1/2	1-5/32	134	333854	**31.54**
S-5825	2-1/2	1-1/4	5/8	9/16	5/8	31/32	33	333856	**15.02**
S-584	4	1-1/2	3/4	1-3/16	5/8	1-7/32	87	333858	**26.27**
S-586	6	1-1/2	7/8	1-15/16	5/8	1-11/32	160	333860	**38.09**

Magnetic Plate

- 7mm poles, 2mm separators
- Magnetic field intensity: > 650 gauss
- Suitable for light cutting and grinding on lathe, grinder, EDM, and rotary tables



Model	Diameter (B0)	Height (H)	Plate Diameter (L0)	L1	Code No.	Price $
VGD-08	200mm	78mm	200mm	137mm	230626	**1,999.52**

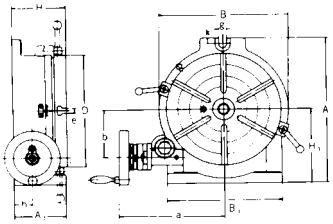
Magnetic Adjustable Link

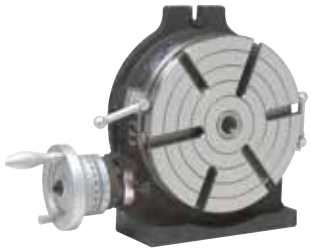
- Overall length 4-1/8"
- Overall width 2-1/8"
- For holding and welding
- Magnetic blocks can be set at any angle by adjustment and locking of the wing nut. When used in multiples, a number of sheets can be held in complicated arrangement
- Compact size for holding work in confined spaces

Model	Block Dimensions (mm)	Code No.	Price $
VCP-5	2" x 1" x 1"	230638	**72.98**

Horizontal & Vertical Rotary And Dividing Tables (HV)

- This HV Type Rotary Table is so designed as to permit machining operations at a higher dimension than that of RT Type Rotary tables
- The base can be used in a vertical position to enable to carry out centre work





Model	A1	Table OD D	Height H	H1	Base Dim. A	B	T-Slot Width	Bolt Slots	Centre Sleeve	Weight (kg/lb)	Worm Gear	Table Code No.	Price $	Tailstock Code No.	Price $	Indexing Plates Code No.	Price $
HV-4	70	110	80	85	145	115	11	12	MT-2	7.5	90:1	326498	**664.60**	326552	**282.63**	326549	**218.25**
(mm)	2.76	4.33	3.15	3.35	5.71	4.53	0.43	0.47		16.50							
HV-6	78	150	80	100	200	160	11	15	MT-2	12	90:1	326500	**664.60**	326552	**282.63**	326549	**218.25**
(mm)	3.07	5.91	3.11	3.94	7.87	6.30	0.43	0.59		26.4							
HV-8	100	200	105	135	265	220	14	17	MT-3	30.0	90:1	326505	**1,028.62**	326553	**282.63**	326550	**296.72**
(mm)	3.94	7.87	4.13	5.31	10.43	8.66	0.55	0.67		66.1							
HV-10	110	250	115	165	325	280	14	17	MT-3	45.0	90:1	326510	**1,278.53**	326554	**286.75**	326551	**296.72**
(mm)	4.33	9.84	4.53	6.50	12.80	11.02	0.55	0.67		99.0							
HV-12	130	300	135	195	388	330	16	18	MT-4	85	90:1	326515	**1,591.88**	326554	**286.75**	326551	**296.72**
(mm)	5.12	11.81	5.32	7.68	15.27	12.99	0.63	0.71		187.0							
HV-14	130	350	140	230	450	380	16	18	MT-4	100	90:1	326520	**2,036.36**	326555	**389.16**	326551	**296.72**
(mm)	5.12	13.78	5.51	9.06	17.72	14.95	0.63	0.71		220.0							
HV-16	150	406	155	255	500	430	16	18	MT-4	135	90:1	326525	**3,005.67**	326555	**389.16**	326551	**296.72**
(mm)	5.90	15.98	6.10	10.03	19.69	16.93	0.63	0.71		297							

Tailstocks for Rotary Tables

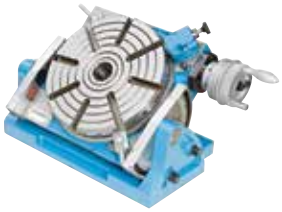
Cast iron offers good vibration, resistance, good wear resistance and machinability. It is heavier and more economical than steel.

Model No.	Adjustable Highest (mm)	Adjustable Lowest (mm)	For Models	Net Weight (kg)	Code No.	Price $
TS-1	108	80	HV-4, HV-6, BS-0	3.9	326552	**282.63**
TS-2	145	115	HV-8, CC-6, SX-6, BS-1, BS-2	5.5	326553	**282.63**
TS-3	200	130	HV-10, HV-12, CC-8, SX-8, BS-2	8.1	326554	**286.75**
TS-4	260	190	HV-14, HV-16	11.9	326555	**389.16**

Universal Tilting Rotary Table

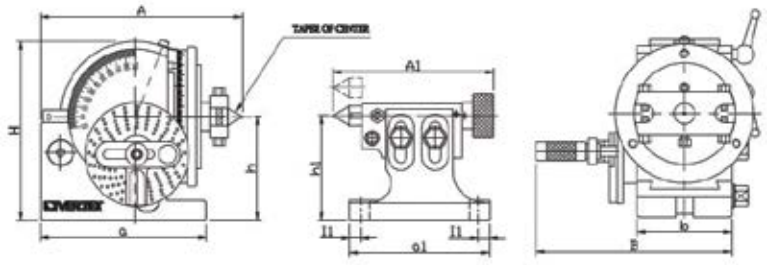
Model VU-100, VU-150, VU-300

- Tilting range 90° from horizontal to vertical position
- 1 rotation of handle equals 3 degrees, 5 minutes tilting reading
- 10 Second vernier scale
- Table Dial 1 minute graduations
- Fast degrees: Dividing notch pin and 24 holes in 15° around, insures rapid accurate spacing
- Minimum set-up time
- Rugged construction



	VU-100		VU-150		VU-300	
	Code No.	Price $	Code No.	Price $	Code No.	Price $
	326560	**1,263.37**	326562	**1,446.38**	326175	**5,985.53**
Specifications						
Size	4" 100mm		6" 150mm		12 300mm	
Table Height	117mm		140mm		185mm	
Table O/A Height (Vertical)	177mm		216mm		370mm	
Centre Hole					MT 5	
Centre Height (Vertical)	80mm		90mm		208mm	
Direct Indexing	24-div.		24-div.		24-div.	
Gear Ratio	90:1		90:1		90:1	
Weight (approx)	13.5 kg		21 kg		125 kg	

Universal Dividing Head



This Universal Index Centre has been designed to carry out all types of gear-cutting, precision dividing and spiral work (except Type BS-0, and BS-1) with greater precision and efficiency than has been possible before. The centre face can be tilted from a horizontal position of 90° down to – 10° from vertical, and inclinations can be read off a scale graduated in degrees. The centre is built to highest engineering standards and is factory-inspected and tested to assure complete satisfaction. The ratio of worm to gear is 1:40.

Applicable Chuck: 6", 7" or 8"

Model	Height H	Machine Body Length A	Width B	Centre h	Base Length a	Base Width b	Bolt Slots g	Centre Taper	Weight Screw	Ship Weight (kg/lb)	cu.ft.	Code No.	Price $	Flange Only Code No.	Price $
BS-2	236 9.29	365 14.37	272 10.71	132.7 5.22	213 8.39	134 5.28	16 0.63	MT4	M55 x P3	65 143	3.4	326054	**2,574.88**	326055	**353.38**

Semi-Universal Index Centre BS-0 & BS-1

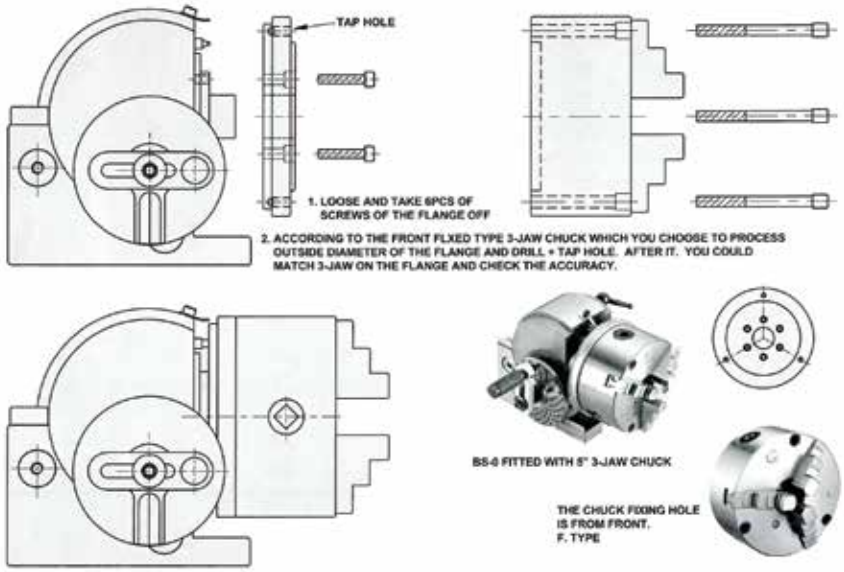
Standards of Accuracy (Tolerances):

Testing Objective	Tolerances Unit (max. in. permit)
1. True running of centre:	0.0006
2. True running of inside taper of dividing spindle:	
• Measured at spindle nose	0.0004
• Measured at arbor 8" long	0.0012
3. Axial movement of dividing spindle	0.0004
4. Dividing accuracy of worm drive, maximum cumulative spacing error	1'30"

Note:
BS 0 applicable chuck: 4" or 5"
BS 1 applicable chuck: 5" or 6"

Model	Height H	Machine Body Length A	Width B	Centre h	Base Length a	Base Width b	Bolt Slots g	Centre Taper	Weight Screw	Ship Weight (kg/lb)	cu.ft.	Code No.	Price $	Flange Only Code No.	Price $
BS-0	173 6.81	177 6.97	188 7.40	100 3.94	160 6.30	91 3.58	16 0.63	MT2	M30 x P3	20 44	0.8	326050	**1,151.38**	326051	**240.73**
BS-1	220 8.66	245 9.65	230 9.06	128 5.04	205 8.07	114 4.49	16 0.63	MT3	M40 xP3	33 72.6	1.3	326052	**1,494.26**	326053	**298.59**

How To Install A 3-Jaw Chuck



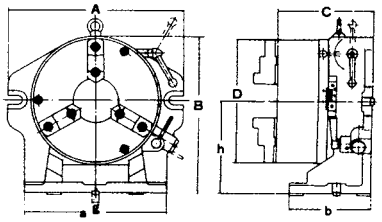
Simple Index

The Simple Index is a heavy-duty base on which is mounted a hardened and ground precision turntable. It can be used in either a horizontal and vertical position. Using one of the masking plates provided, the index can carry out many dividing functions. Indexing of 2, 3, 4, 6, 8, 12 and 24 divisions can be rapidly and simply carried out. The specially-made 3-jaw scroll chuck also simplifies the indexing of long workpieces.

Optional Equipment: Master indexing plate with 20 or 30 notches can be supplied to special order. When used with the suitable masking plates dividing into 2, 4, 5, 10, and 2, 3, 5, 6, 10, 15 are possible.

Special Accessories

- 3-jaw scroll chuck dia. 8" 1 piece
- Adjustable tailstock
- Face plate 10" (maximum)
- Masking plates 2, 3, 4, 6, 8, 12 one piece of each



Standards of Accuracy (Tolerances):

Testing Objective	Tolerances Unit (max. in. permit)
1. Parallelism of table surface to base 0.00 (0.0004)	per 12"
2. True running of axial movement of table surface	0.0008
3. True running of centre boss	0.0006
4. Squareness of base to angle face 0.0008	per 12"
5. True running of chuck centre	0.0016
6. Dividing accuracy individual spacing error	± 35"

Options

Description	Code No.	Price $
Optional Tailstock for CC-6	326553	**282.63**
Optional Tailstock for CC-8	326554	**286.75**

No. of Dividing	Outer Dia.	Chuck Inner Jaw	Outer Jaw	Inner Hold	A	B	C	D	a	b	h	g	Weight kg/lb	Shipping Meas. cu.ft.	Code No.	Price $
2,3,4,6, 8,12,24	165 6.5	3-62 0.12-2.44	60-120 2.36-4.72	34 1.34	260 10.24	218 8.58	138 5.43	166 6.54	220 8.66	130 5.12	130 5.12	16 0.63	35 77.1	0.64	CC-6 326136	**1,400.62**
2,3,4,6, 8,12,24	210 8.27	3-100 0.12-3.94	10-220 0.39-8.66	63 2.48	312 12.28	257.25 10.13	169.3 6.67	210 8.27	258 10.16	48 5.83	149.2 5.87	16 0.63	54 119.0	1.8	CC-8 326138	**1,949.38**

Super Dex

This index combines the advantages of the Simple Index with those of a worm-geared index. When mounted on a milling, boring or other machine tool it can carry out single-purpose indexing and indirect indexing using the worm-drive mechanism. Disengaging the worm drive the 24-notch master plate permits 2, 3, 4, 6, 8, 12 and 24 dividing. When the chuck is removed the unit can be used as a horizontal and vertical type rotary table. The operating handle to rotary table worm gear reduction ratio is 1:90. The operating handle collar is graduated in minutes, and readings down to ten seconds can be set on the vernier.

Ordering Specs. and Dimensions

(Dividing Plates not included)

Model No.	Chuck Outer Diameter	Code No.	Price $
SX-6	6"	326140	**1,920.25**
SX-8	8"	326142	**2,527.27**

Options

Description	Code No.	Price $
Optional Tailstock for SX-6	326553	**282.63**
Optional Tailstock for SX-8	326554	**286.75**
Optional Dividing Plates	326152	**296.72**

Number of holes	Plate A	26, 30, 34, 38, 41, 44, 47, 51, 57, 28, 32, 37, 39, 43, 46, 49, 53, 59
	Plate B	61, 67, 71, 77, 81, 87, 91, 97, 63, 69, 73, 79, 83, 89, 92, 99

Tailstocks for Indexes

Cast iron offers good vibration, resistance, good wear resistance and machinability. It is heavier and more economical than steel.

Model No.	Adjustable Highest (mm)	Adjustable Lowest (mm)	For Models	Net Weight (kg)	Code No.	Price $
TS-1	108	80	HV-4, HV-6, BS-0	3.9	326552	**282.63**
TS-2	145	115	HV-8, CC-6, SX-6, BS-1, BS-2	5.5	326553	**282.63**
TS-3	200	130	HV-10, HV-12, CC-8, SX-8, BS-2	8.1	326554	**286.75**
TS-4	260	190	HV-14, HV-16	11.9	326555	**389.16**

Rapidex

Complete with chuck

- Simple and rapid operation
- Dividual number 24 notch (15° each)
- Table scale 1°, for angular indexing
- Table bore 30mm
- Horizontal / Vertical and 2 direction
- Suitable for milling and drilling machine using

Model No.	Chuck Outer Diameter	Code No.	Price $
VSI-4	4"	326564	**890.30**
VSI-5	5"	326566	**977.82**

Accessories

Accessories

5C Spin Index . . . . . I 2
5C Collet Index . . . . . I 2
Radius And Angle Dressers . . . . . I 2
Screw Jack Sets . . . . . I 2
Permanent Magnetic Lifters . . . . . I 3
Punch Formers . . . . . I 3
Chip Collectors, Chip Hooks . . . . . I 3
Drill Sharpeners . . . . . I 4
Halogen Lamps . . . . . I 5
Eye Shield . . . . . I 5
Deluxe Shock Absorbers . . . . . I 5

5C Spin Index

Accepts 5C Collets to 1-1/8" Capacity

A multi-purpose accessory

- Vernier setting to 1 degree
- 2-1/16" spindle travel for flute grinding
- Index plate has precise (10°) 36 hole circle

Model No.	Code No.	Price $
C1-310	326110	**108.83**
Specifications	**Max. Variation Inches**	
True running of dividing spindle flange surface	0.0004"	
True running of cylindrical centre bore per 1"	0.0012"	
Parallelism of spindle centre line to base	0.0008"	

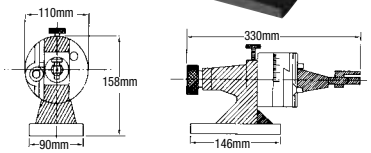
Horizontal/Vertical 5C Collet Index

The Spindle has a taper seat in the body frame. Rapid opening and closing of the collet on a production basis is done with the lever collet closer having a leverage ratio of 100 to 1. A ratchet device on the front of the spindle permits rapid rotation of the spindle nose. The index plate has a screw in each of the 24 index holes so that holes not required for a particular job can be masked. Threaded spindle 2-1/4" - 8TPI.

Model No.	Code No.	Price $
C1-108	326108	**581.88**
Specifications	**Max. Variation Inches**	
True running of axis for dividing spindle	0.0004"	
True running of cylindrical centre bore per 1"	0.0012"	
Parallelism of spindle centre line to base	0.0008"	
Squareness of base angle face	0.0008"	
Parallelism of centre slot to dividing spindle	0.0008"	
Lateral offset of centre slot to dividing spindle	0.0008"	

V-TDB Radius & Angle Dresser

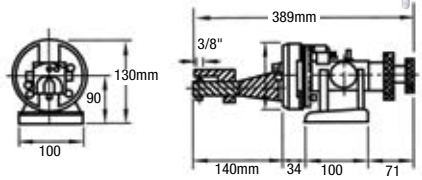
- Positive setting of the diamond to absolute centre with the special gauge included with the dresser
- One push-pull type knob for radius and angle control and for safer and faster operations
- 4 x 90° graduation in full 360° circle. 6 minute vernier reading
- Net weight: 10.5 kg
- Chrome plated



Model No.	Code No.	Price $
V-TDB	326570	**1,388.25**
Specifications		
Convex dressing range	0.8R-40R	
Concave dressing range	0-40R	
Max. wheel dressing diameter	250mm	
Max. wheel extending diameter	375mm	

V-TDG Radius & Angle Dresser

- 6 minute vernier reading
- Dual purpose knob for drum and angle movement
- Stop for concave and convex radii
- Comes with setting gauge for diamond tool



Model No.	Code No.	Price $
V-TDG	326572	**1,612.12**
Specifications		
Max. wheel diameter, standard	11"	
Concave radius with standard diamonds	0-2 1/4"	
Concave radius with rat-tail diamonds	0-2 1/4"	
Convex radius	0-4"	
Tangent travel in either direction	1.950"	
Centre line	3.4"	

Screw Jack Sets

Features:

- Material: S45C
- Max Capacity: 700kg
- Suitable for irregular workpieces
- Rapid setting and fixed

Sets

Model No.	Set Includes	Code No.	Price $
VSJ-A	VSJ-70 70-85mm Adj. Capacity Screw Jack - 2pcs VSJ-150 100-150mm Adj. Capacity Screw Jack - 2pcs Pads included: 1A, 2A, 3A, 4A, 5A, 6A - 1 each	333400	**272.38**
VSJ-B	VSJ-150 100-150mm Adj. Capacity Screw Jack - 2pcs VSJ-250 140-230mm Adj. Capacity Screw Jack - 2pcs Pads included: 1A, 2A, 3A, 4A, 5A, 6A - 1 each	333410	**450.87**

Pads

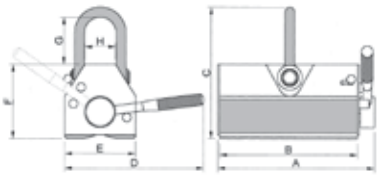
Model No.	Code No.	Price $
1A	333415	**41.50**
2A	333420	**34.71**
3A	333425	**29.93**
4A	333430	**39.24**
5A	333435	**29.93**
6A	333440	**27.80**

5C Collets

Made of tool steel, hardened and ground to maintain original accuracy.

See Pages H2-8

Permanent Magnetic Lifters



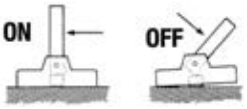
Features:

- Faster and safer than using straps and slings
- Beveled surface for lift round objects
- Magnets are maintenance free and never wear out
- Magnets have built-in safety factor of 3.5 times the rated load. Do not lift more than the maximum rated load

Model No.	Capacity (lbs)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	Weight (lbs)	Code No.	Price $
VML-100	220	4.2	3.3	4.7	4.9	2.4	2.8	1.6	1.2	5.5	230600	**692.80**
VML-300	660	7.1	6.1	6.1	7.3	3.6	3.7	2.0	1.6	18.9	230605	**1,639.36**
VML-600	1320	10	8.8	8.3	10.2	4.5	4.7	3.0	2.0	46	230610	**2,632.47**
VML-1000	2200	11	9.6	11.3	14.6	6.5	6.7	3.8	3.4	101	230615	**4,387.40**
VML-2000	4400	16.6	15	13.7	20.2	8.5	8.5	4.1	4.8	259	230620	**8,613.21**

Magnetic Lifter

- Work is held and released very smoothly
- Most suitable to move materials or semi-finished products such as black steel plate, flat iron and other materials



VML-140

VML-150

Model	Capacity (kgf)	Length (mm)	Width (mm)	Height (mm)	Code No.	Price $
VML-140	140	120	50	55	230602	**106.14**
VML-150	150	140	100	140	230604	**271.49**

Punch Former — YCT-PS

Features:

- YCT-PS can pass through from itself to the centre of grip, in case of facing a longer punch ejector pin, it can go deep into the grip position
- To assemble an arm with the main body, any combination of radii of the grinding wheel may be dressed accurately by easy operation
- The longer punch can also be ground

Style	Code No.	Price $
Through hole	230735	**1,875.40**

Punch Former — YCT-PB

Punch former is the great dressing instrument. Precision forming of grinding wheels can be done by assembling an arm with the main body. Any combination of tangents or radii form of the grinding wheel may be dressed accurately by easy operation. Maximum grinding wheel diameter of 200mm can be dressed accurately and safely. The height from the base to roller's centre is 80mm. Movement of each side can reach 12.5mm while aiming at the centre of V-block. The main body is one-piece steel construction.

Features:

- Punch former is the fixture to grind the point of standard punches and E.D.M. electrodes for precise and fast operation
- By using this attachment, it can be ground either concave or convex radius shape
- Besides the round, radius and multi-angle punches, any special forms can be ground precisely
- Capacity from 4mm to 30mm

Style	Code No.	Price $
Off set	230730	**2,187.90**

Chip Collector with Flexible Arm

Flexible Magnetic Pick-Up Tool

- 21" in length
- 12 lb capacity

Model No.	Code No.	Price $
VCC-20	230640	**39.50**

Magnetic Chip Collector

- Wide variety of applications
- Most suitable for collecting iron pieces scattered on the floor or mixed in a medium
- Magnetic force is turned ON/OFF by operating the hand lever
- Powerful magnet with a wide attractive surface
- Material of outer cover: Aluminum

Model	Dimensions	Magnetic Force	Weight (kg)	Code No.	Price $
VCP-15	Ø112mmx178mm	0.9kg	1.9	230650	**338.47**

Mini Handy Magnetic Chip Collector

- Permanent magnet
- Pull handle for easy release
- Made of impact-proof plastic
- Easy to pick up hand tools, small iron or steel parts in the office, house or factory
- Material of outer cover: Plastic

Model	Dimensions	Magnetic Force	Weight (kg)	Code No.	Price $
VCC-16	Ø110mmx190mm	4.9kg	0.7	230655	**68.88**

Chip Collector with LED Light & Flexible Arm

Flexible Magnetic Pick-Up Tool

- LED light
- 21" in length
- 0.7 lb capacity
- 2pcs 1.5V batteries

Model No.	Code No.	Price $
VCC-21	230645	**40.96**

DM213 Fast Drill Sharpener 13mm Capacity

Patented Features

- Double-bearing grinding unit (reduces wear)
- Drill tightening design with bearing device
- Adjustable trimming angle

Standard Accessories

- ER20 Collets, ranged from 2.0mm-13mm (12pcs)
- CBN wheel #200x1pc (for High Speed drill)
- 4mm and 5mm Hexagon (Hex.) wrench x 1pc each

Drill Diameter:	Ø2mm - Ø13mm
Point Angle:	85° ~ 140°
Power Supply:	AC110/AC220 50/60HZ
Motor:	90W
RPM:	6000rpm
Weight:	10 kg

Model DM213

Code No.	Price $
326130	**1,181.09**

Replacement Wheels for Model DM213

Description	Code No.	Price $
CBN Wheel for HSS	326141	**99.56**
Diamond Wheel for Carbide	326143	**99.56**
CBN Wheel for Drills under 4mm	326145	**99.56**

ER20 Collets for Model DM213

Size (mm)	ER20 Code No.	Price $	Size (mm)	ER20 Code No.	Price $
2.0-2.5*	326151	**29.94**	7-8	337479	**27.72**
2.5-3*	326153	**29.94**	8-9	337480	**27.72**
3-4*	326155	**29.26**	9-10	337481	**27.72**
4-5*	326157	**29.94**	10-11	337482	**27.72**
5-6	337477	**27.72**	11-12	337483	**27.72**
6-7	337478	**27.72**	12-13	337484	**27.72**

* 2.5-5mm sizes are specially designed pull-back collets, standard ER20 collets cannot be substituted. 6-13mm sizes are standard ER20.

DM1226 Fast Drill Sharpener 30mm Capacity

Patented Features

- Double-bearing grinding unit (reduces wear)
- Drill tightening design with bearing device
- Adjustable trimming angle

Standard Accessories

- ER40 Collets, ranged from 12mm-26mm (15pcs) Optional Collets 8~11mm, 27~30mm
- CBN wheel #200x1pcs (for High Speed drill)
- 4mm and 6mm Hexagon (Hex.) wrench x 1pc each

Drill Diameter:	Ø8mm - Ø30mm
Point Angle:	85° ~ 140°
Power Supply:	AC110 / AC220 50/60HZ
Motor:	450W
RPM:	4000rpm
Weight:	25 kg

Model DM1226

Code No.	Price $
326134	**2,703.88**

Replacement Wheels for Model DM1226

Description	Code No.	Price $
CBN Wheel for HSS	326154	**248.68**
Diamond Wheel for Carbide	326156	**248.68**

ER40 Collets for Model DM1226

Size (mm)	ER40 Code No.	Price $	Size (mm)	ER40 Code No.	Price $
7-8*	326165	**33.81**	19-20	337522	**32.62**
8-9*	326166	**33.81**	20-21	337523	**32.62**
9-10*	326167	**33.81**	21-22	337524	**32.62**
10-11*	326168	**33.81**	22-23	337525	**32.62**
11-12	337511	**32.62**	23-24	337526	**32.62**
12-13	337513	**32.62**	24-25	337527	**32.62**
13-14	337514	**32.62**	25-26	337528	**32.62**
14-15	337515	**32.62**	26-27*	326158	**33.81**
15-16	337517	**32.62**	27-28*	326159	**33.81**
16-17	337518	**32.62**	28-29*	326160	**33.81**
17-18	337519	**32.62**	29-30*	326161	**33.81**
18-19	337521	**32.62**			

* Optional 8-11mm & 27-30mm sizes are specially designed for the DM1226, standard ER40 collets cannot be substituted. 12-26mm sizes are standard ER40.

Dust-Proof Halogen Lamps c/w Magnetic Base

Features:

- Dust Proof with Magnetic Base
- 110 voltage

600FT Series - Segment Adjustable Arm
700FT Series - Flexible Arm

VHL-600FT

VHL-700FT

Model No.	Arm Length (mm)	Base Width (mm)	Weight (kgs.)	Code No.	Price $
VHL-600FT	380	88	1.7	326365	**133.40**
VHL-700FT	400	88	1.7	326370	**133.40**

Replacement Parts For VHL-600/700-FT Lamps

Description	Code No.	Price $
12V/20W Halogen Bulb	326371	**53.37**
Replacement Glass	326372	**5.91**

Magnetic Base With Working Beam

- 110 voltage

Model	Base Size LxWxH (mm)	Holding Power (kg)	Arm OD x L (mm)	Weight (kg)	Code No.	Price $
VML-A-110	62x50x55.5	75	20x200	1.5	326884	**87.38**

Eye Shield

- The clamping height is adjustable
- Brass plate under the clamp arm to protect the working material from damage

Model	Shield Size (mm)	Weight (kg)	Code No.	Price $
VH-56	300x180x2	1.0	230660	**69.75**

Water-Proof Halogen Lamps

Features:

- Water-proof lighting head with reinforced glass resists large temperature fluctuations of cutting oil
- 110 voltage

400 Series

VHL-400L

500 Series

VHL-500S

500 Series

VHL-500L

Model No.	Arm Length (mm)	Base Width (mm)	Weight (kgs.)	Code No.	Price $
VHL-400L	400 x 400	79	3.8	326335	**218.25**
VHL-400M	220 x 220	79	3.5	326340	**218.25**
VHL-400S	-	60	2.8	326345	**158.93**
VHL-500L	400 x 400	79	4	326350	**218.25**
VHL-500M	220 x 220	79	3.8	326355	**218.25**
VHL-500S	-	79	2.7	326360	**170.24**

Replacement Parts For VHL-400/500 Lamps

Description	Code No.	Price $
12V/50W Halogen Bulb	326361	**34.52**
Replacement Glass	326362	**8.66**

Magnetic Base With Magnifying Glass

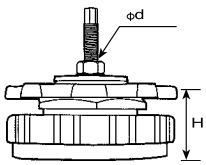
- 2X magnification
- M8x1.25 threaded mount

Model	Base Size LxWxH (mm)	Holding Power (kg)	Arm OD x L (mm)	Weight (kg)	Code No.	Price $
VML-M	60x50x55	80	15x325	1.7	326880	**105.60**

Deluxe Shock Absorbers

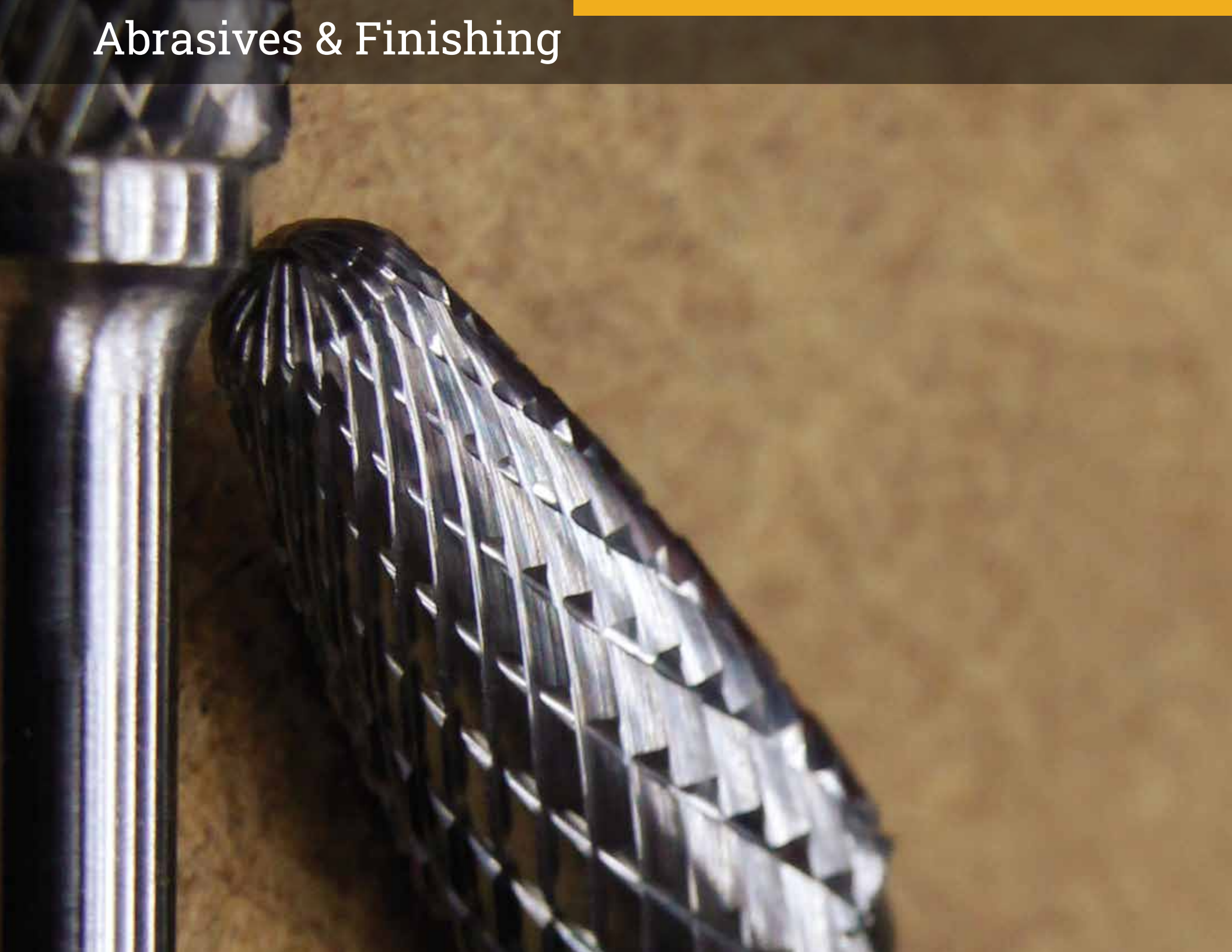
Suitable for machine tools, CNC lathe, molding, printing, grinding, drilling, and milling machines.

- Prevents shock and reduces noise



Model	Height (H)(mm)	Bolt Size (Ød)(mm)	Load (kg)	Adjustment Height	Code No.	Price $
SB-4	60	12x50L	500	25mm	231450	**128.02**
SB-6	95	16x110L	1000	40mm	231452	**192.13**
SB-8	100	20x120L	2500	40mm	231454	**225.82**
SB-10	125	24x180L	4000	40mm	231456	**435.43**

Abrasives & Finishing



Abrasives & Finishing

Coated Abrasives - Shop Rolls & Discs J2
Cloth & Paper Sheets & Belts J2
Die Grinders J2-5
Die Grinder Kits J5
Air Belt Sanders & Belts J5
Needle Files J5
Diamond Files. J5
Air Blow Gun J5
Carbide Burrs & Sets J6-8
Carbide Burr Sets J8

Shop Rolls

Size	Grit	Code No.	Price $
1 x 50	40	520002	**51.20**
1 x 50	50	520004	**49.20**
1 x 50	60	520006	**44.20**
1 x 50	80	520008	**41.00**
1 x 50	100	520010	**38.50**
1 x 50	120	520012	**37.20**
1 x 50	180	520014	**37.20**
1 x 50	220	520016	**38.50**
1 x 50	320	520018	**38.50**
1-1/2 x 50	40	520020	**71.40**
1-1/2 x 50	50	520022	**68.60**
1-1/2 x 50	60	520024	**61.90**
1-1/2 x 50	80	520026	**59.50**
1-1/2 x 50	100	520028	**53.90**
1-1/2 x 50	120	520030	**53.90**
1-1/2 x 50	180	520040	**53.90**
1-1/2 x 50	220	520042	**53.90**
1-1/2 x 50	320	520044	**53.90**
2 x 50	40	520046	**92.20**
2 x 50	50	520048	**88.60**
2 x 50	60	520050	**80.30**
2 x 50	80	520052	**77.20**
2 x 50	100	520054	**69.30**
2 x 50	120	520056	**67.00**
2 x 50	180	520058	**69.30**
2 x 50	220	520060	**69.30**
2 x 50	320	520062	**69.30**

Pressure Sensitive Adhesive Discs

- No holes
- Fast, convenient mounting
- Used for grinding, dry sanding and finishing

Size	Grit	Code No.	Price $
6	120	520362	**1.30**
9	180	520402	**2.80**
12	60	520428	**5.50**
12	80	520430	**5.40**

9 X 11 Paper & Cloth Sheets

For surface preparation or finishing on wet or dry surfaces.

	Grit	Code No.	Price $
Emery Cloth			
	J050	520604	**1.70**
	J120	520608	**1.50**
SIC Latex Wet/Dry Paper			
	A600	520568	**0.90**
	B1200	520570	**1.40**

Aluminum Oxide Resin Cloth Belts

- Grind and finish surfaces
- Applications: Wood and Metal

Size	Grit	Code No.	Price $
4 x 36	36	520298	**6.40**

STANDARD DUTY PRECISION AIR TOOLS

1/4" Mini Die Grinder — TP-1006

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Front
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	4-3/4	0.68	174012	**44.81**

1/4" Mini Die Grinder — TP-1008

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	6-5/16	0.79	174010	**44.65**

1/4" Medium Die Grinder — TP-1001

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 14 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	22,000	1/4"(6mm)	90	6-7/8	1.36	174008	**45.18**

1" Extended Die Grinder — TP-1010

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	7-1/2	1.25	174018	**108.25**

STANDARD DUTY PRECISION AIR TOOLS

3" Extended Die Grinder — TP-1011

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	9-1/4	1.45	174020	**125.45**

5" Extended Die Grinder — TP-1012

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	11-1/4	1.45	174022	**142.44**

1/4" Mini Angle Die Grinder — TP-1007

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Front
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"(6mm)	90	4-7/8	0.99	174016	**90.15**

1/4" Right Angle Die Grinder — TP-1014

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"(6mm)	90	6-5/16	1.10	174014	**90.15**

HEAVY DUTY PRECISION AIR TOOLS

1/4" H.D. Die Grinder — TP-1101

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: TP1101 - Rear
- Exhaust System: TP1101F - Front
- Aluminum Alloy Housing

Model	Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
TP-1101	0.3	25,000	1/4"(6mm)	90	6-5/16	0.81	174024	**76.90**

1" Extended H.D. Die Grinder — TP-1102

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	7-1/2	1.07	174028	**135.07**

3" Extended H.D. Die Grinder — TP-1103

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	9-1/4	1.21	174030	**152.22**

5" Extended H.D. Die Grinder — TP-1104

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	11-1/4	1.45	174032	**169.26**

1/4" Right Angle H.D. Die Grinder — TP-1106 / TP-1106F

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: TP1106 - Rear
- Exhaust System: TP1106F - Front
- Aluminum Alloy Housing

Model	Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
TP-1106	0.3	20,000	1/4"(6mm)	90	6-5/16	1.07	174034	**126.76**

PROFESSIONAL DUTY PRECISION AIR TOOLS

1/4" Die Grinder — TP-1101H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	6-5/16	0.81	174038	**90.86**

1" Extended Die Grinder — TP-1102H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	7-1/2	1.07	174040	**150.56**

3" Extended Die Grinder — TP-1103H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	9-1/4	1.21	174042	**167.60**

5" Extended Die Grinder — TP-1104H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	11-1/4	1.45	174044	**188.14**

1/4" Right Angle Die Grinder — TP-1106H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	15,000	1/4"(6mm)	90	6-5/16	1.07	174046	**143.64**

1/4" Die Grinder — TP-1109H

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Front
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"6mm)	90	7-1/2	1.32	174048	**123.96**

1/4" Die Grinder — TP-6001

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 15 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.6	20,000	1/4"(6mm)	90	6-11/16	1.43	174050	**121.49**

1/4" Die Grinder — TP-9001

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.9	18,000	1/4"(6mm)	90	7-5/16	1.56	174052	**145.45**

Angle Die Grinder — TP-6059

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 15 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.6	10,000	1/4"(6mm)	90	7-1/2	2.20	174054	**214.88**

105° Die Grinder — TP-9059

- Air Inlet (N.P.T.): 1/4"
- Air Consumption (Loading): 13 cfm
- Exhaust System: Rear
- Aluminum Alloy Housing

Horse Power	RPM	Collet Size	Air Pressure (psi)	Overall Length (in.)	Net Weight (lb)	Code No.	Price $
0.9	9,000	1/4"(6mm)	90	9-1/4	2.28	174056	**205.27**

1/4" Die Grinder Kit (with Throttle Lever)

Contains:
- 1pc TP-1008 Grinder
- 1pc 1/8" (3 mm) collet
- 1pc 1/4" (6 mm) collet
- 2pcs spanners
- 5pcs 1/4" (6 mm) shank grinding
- 5pcs 1/8" (3 mm) shank grinding

Description	Code No.	Price $
1/4" straight die grinder kit	174004	**65.89**

1/4" 90° Die Grinder Kit (with Throttle Lever)

Contains:
- 1pc TP-1014 Grinder
- 1pc 1/8" (3 mm) collet
- 1pc 1/4" (6 mm) collet
- 2pcs spanners
- 5pcs 1/4" (6 mm) shank grinding
- 5pcs 1/8" (3 mm) shank grinding

Description	Code No.	Price $
1/4" 90° die grinder kit	174006	**110.94**

Air Micro Die Grinder

Contains:
- 1pc TP-501-1 Grinder
- 1pc 3 mm collet
- 10pcs 1/8" (3 mm) grinding stones
- 2pcs spanners
- 1pc blow case

Description	Code No.	Price $
1/8" die grinder kit	174002	**157.30**

Air Belt Sanders

- For sanding both curved and flat surfaces
- For removing spot welding, semi-automatic welds, adhesive, paint, and other coatings

Model	Belt Size (mm)	Speed (RPM)	Length (mm)	Weight (kg)	Code No.	Price $
VAG-310	10x330	16,000	290	0.80	174160	**376.31**
VAG-320	20x520	16,000	360	1.10	174162	**537.86**

10 Piece Needle File Set

- Used for deburring, shaping and finishing
- Used for fine detailing or finishing

Description	Code No.	Price $
10 Piece Needle File Set	200761	**8.10**

10 Piece Diamond File Set

- Used for precision filing and shaping
- Electroplated with a diamond abrasive
- Highly durable when used on harder materials
- Excellent for material removal

Description	Code No.	Price $
10 Piece Diamond File Set	200763	**26.90**

Safety Air Blow Gun

- 4-1/2" stainless steel nozzle
- Conforms to OSHA STD 1-13.1 for safety
- Operating pressure: 50-235 psi
- Vent in tip prevents pressure from exceeding 30 psi if tip becomes blocked
- Impact and weather resistant nylon body
- Operating temperature: -10° to 70° C

Model	Noise Level (100psi)	Blowing Force (100psi)	Air Consumption (100psi)	Code No.	Price $
ABG/3/1-4F/N	80db	0.76lb	15.18cfm	231474	**52.81**

Prices in this catalogue are subject to change without notice. If there is a discrepancy between a product price listed in this catalogue and that listed on www.sowatool.com, the price on our website will take precedence.

Images are representational only and may not reflect actual product.

Cylindrical — Square End — End Not Cut

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SA-41	1/16	1/4	1/8	1-1/2	170002	**7.33**	170001	**8.25**
SA-42	3/32	7/16	1/8	1-1/2	170004	**8.77**	170003	**8.25**
SA-43	1/8	9/16	1/8	1-1/2	170006	**7.33**	170005	**6.85**
SA-12	1/8	1/2	1/4	2	170008	**16.68**	170007	**15.84**
SA-14	3/16	5/8	1/4	2	170010	**13.95**	170009	**15.84**
SA-1	1/4	5/8	1/4	2	170014	**13.72**	170013	**13.01**
SA-51	1/4	1/2	1/8	2-1/4	170016	**14.99**	170015	**14.32**
SA-2	5/16	3/4	1/4	2-1/2	170020	**20.58**	170019	**19.57**
SA-3	3/8	3/4	1/4	2-1/2	170022	**18.67**	170021	**21.23**
SA-4	7/16	1	1/4	2-3/4	170024	**33.41**	170023	**31.70**
SA-5	1/2	1	1/4	2-3/4	170026	**29.32**	170025	**27.89**
SA-6	5/8	1	1/4	2-3/4	170028	**37.12**	170027	**41.83**
SA-16	3/4	3/4	1/4	2-1/2	170030	**44.09**	170029	**52.22**
SA-7	3/4	1	1/4	2-3/4	170032	**55.43**	170031	**63.04**
SA-9	1	1	1/4	2-3/4	170034	**95.59**	170033	**91.04**

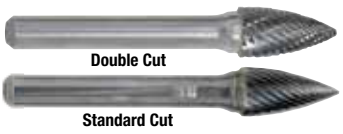
Cylindrical — Radius End

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SC-41	3/32	7/16	1/8	1-1/2	170050	**7.33**	170049	**8.25**
SC-42	1/8	9/16	1/8	1-1/2	170052	**7.33**	170051	**6.85**
SC-12	1/8	1/2	1/4	2	170054	**15.95**	170053	**18.22**
SC-14	3/16	5/8	1/4	2	170056	**19.89**	170055	**18.22**
SC-1	1/4	5/8	1/4	2	170060	**15.72**	170059	**17.87**
SC-51	1/4	1/2	1/8	2-15/16	170062	**12.53**	170061	**11.93**
SC-2	5/16	3/4	1/4	2-1/2	170064	**21.39**	170063	**23.29**
SC-3	3/8	3/4	1/4	2-1/2	170066	**20.68**	170065	**23.59**
SC-4	7/16	1	1/4	2-3/4	170068	**30.14**	170067	**34.38**
SC-5	1/2	1	1/4	2-3/4	170070	**32.62**	170069	**37.08**
SC-6	5/8	1	1/4	2-3/4	170072	**41.49**	170071	**47.21**
SC-7	3/4	1	1/4	2-3/4	170074	**70.81**	170073	**67.44**

Tree — Radius End

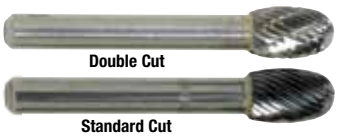
E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SF-42	1/8	1/2	1/8	1-1/2	170100	**7.33**	170099	**6.85**
SF-41	1/8	1/4	1/8	1-1/2	170102	**8.89**	-	**-**
SF-12	1/8	1/2	1/4	2	170104	**20.24**	170103	**19.19**
SF-1	1/4	5/8	1/4	2	170108	**16.90**	170107	**19.19**
SF-51	1/4	1/2	1/8	2	170110	**12.53**	170109	**14.32**
SF-3	3/8	3/4	1/4	2-1/2	170112	**21.28**	170111	**20.32**
SF-4	7/16	1	1/4	2-3/4	170114	**33.21**	170113	**32.97**
SF-5	1/2	1	1/4	2-3/4	170116	**30.14**	170115	**34.38**
SF-6	5/8	1	1/4	2-3/4	170118	**51.78**	170117	**49.22**
SF-7	3/4	1	1/4	2-3/4	170120	**57.09**	170119	**65.08**
SF-14	3/4	1-1/4	1/4	3	170122	**71.15**	170121	**67.76**
SF-15	3/4	1-1/2	1/4	3-1/4	170124	**99.14**	170123	**94.40**

Tree — Pointed End



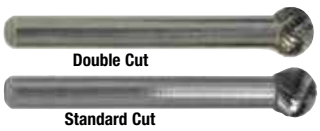
E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SG-41	1/8	1/4	1/8	1-1/2	170130	**7.33**	170129	**8.25**
SG-53	3/16	1/2	1/8	1-1/2	170132	**72.05**	170131	**21.34**
SG-44	1/8	1/2	1/8	1-1/2	170134	**7.33**	170133	**8.25**
SG-1	1/4	5/8	1/4	2	170138	**16.90**	170137	**19.19**
SG-51	1/4	1/2	1/8	2	170140	**14.99**	170139	**14.32**
SG-2	5/16	3/4	1/4	2-1/2	170142	**27.32**	170141	**25.96**
SG-3	3/8	3/4	1/4	2-1/2	170144	**21.28**	170143	**24.26**
SG-13	1/2	3/4	1/4	2-1/2	170146	**29.91**	170145	**34.05**
SG-5	1/2	1	1/4	2-3/4	170148	**30.14**	170147	**34.38**
SG-6	5/8	1	1/4	2-3/4	170150	**51.78**	170149	**49.22**
SG-7	3/4	1	1/4	2-3/4	170152	**68.28**	170151	**65.08**
SG-15DC	3/4	1-1/2	1/4	3-1/4	170154	**97.77**	-	**-**

Oval Shape



E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SE-41	1/8	7/32	1/8	1-1/2	170160	**7.33**	170159	**8.25**
SE-1	1/4	3/8	1/4	2	170164	**19.86**	170163	**21.23**
SE-51	1/4	3/8	1/8	1-3/4	170166	**14.99**	170165	**11.93**
SE-3	3/8	5/8	1/4	2-3/8	170168	**23.05**	170167	**26.13**
SE-5	1/2	7/8	1/4	2-5/8	170170	**32.62**	170169	**37.08**
SE-6	5/8	1	1/4	2-3/4	170172	**46.10**	170171	**52.59**
SE-7	3/4	1	1/4	2-3/4	170174	**70.81**	170173	**67.44**

Ball Shape



E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SD-41	3/32	–	1/8	1-1/2	170200	**7.33**	170199	**8.58**
SD-42	1/8	–	1/8	1-1/2	170202	**7.33**	170201	**6.85**
SD-12	1/8	–	1/4	2	170204	**15.72**	170203	**17.87**
SD-14	3/16	–	1/4	2	170206	**15.72**	170205	**17.87**
SD-53	3/16	–	1/8	2	170208	**12.53**	170207	**23.52**
SD-1	1/4	–	1/4	2	170210	**15.13**	170209	**17.20**
SD-51	1/4	–	1/8	2	170212	**12.53**	170211	**11.93**
SD-2	5/16	–	1/4	2-1/16	170214	**19.57**	170213	**18.55**
SD-3	3/8	–	1/4	2-1/8	170216	**18.44**	170215	**17.25**
SD-5	1/2	–	1/4	2-1/4	170218	**23.75**	170217	**26.99**
SD-6	5/8	–	1/4	2-3/8	170220	**29.67**	170219	**33.73**
SD-7	3/4	–	1/4	2-1/2	170222	**40.30**	170221	**45.86**
SD-9	1	–	1/4	2-3/4	170224	**79.23**	170223	**75.53**

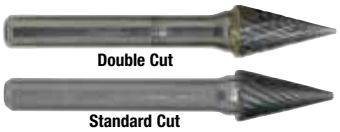
Taper 14° Included Taper with Radius End

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SL-41	1/8	3/8	1/8	1-1/2	170230	**7.33**	170229	**10.73**
SL-42	1/8	1/2	1/8	1-1/2	170232	**7.33**	170231	**6.85**
SL-1	1/4	5/8	1/4	2	170236	**20.38**	170235	**19.40**
SL-2	5/16	7/8	1/4	2-5/8	170238	**21.63**	170237	**24.62**
SL-3	3/8	1-1/16	1/4	2-13/16	170240	**25.76**	170239	**24.46**
SL-4	1/2	1-1/8	1/4	2-7/8	170242	**32.85**	170241	**37.43**
SL-6	5/8	1-5/16	1/4	3-1/16	170244	**68.93**	170243	**65.75**
SL-7	3/4	1-1/2	1/4	3-1/4	170246	**99.14**	170245	**94.40**

Flame

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SH-41	1/8	1/4	1/8	1-1/2	170250	**7.33**	170247	**6.85**
SH-1	1/4	5/8	1/4	2	170251	**18.67**	-	**-**
SH-2	5/16	3/4	1/4	2-3/4	170254	**20.68**	170255	**23.59**
SH-5	1/2	1-1/4	1/4	3-1/4	170256	**42.55**	170257	**48.56**
SH-6	5/8	1-7/16	1/4	3-7/16	170258	**61.34**	170259	**69.77**
SH-7	3/4	1-5/8	1/4	3-5/8	170260	**106.20**	170261	**158.19**

Cone



E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Included Angle	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SM-41	1/8	11/32	1/8	1-1/2	12°	170270	**7.33**	170269	**8.25**
SM-42	1/8	7/16	1/8	1-1/2	14°	170272	**7.33**	170271	**6.85**
SM-43	1/8	5/8	1/8	1-1/2	7°	170274	**7.33**	170273	**6.85**
SM-1	1/4	1/2	1/4	2	22°	170278	**16.55**	170277	**18.88**
SM-2	1/4	3/4	1/4	2	14°	170280	**21.23**	170279	**20.24**
SM-3	1/4	1	1/4	2	10°	170282	**18.91**	170281	**21.57**
SM-51	1/4	1/2	1/8	2-1/8	22°	170284	**14.99**	170283	**11.93**
SM-4	3/8	5/8	1/4	2-3/8	28°	170286	**15.72**	170285	**29.00**
SM-5	1/2	7/8	1/4	2-5/8	28°	170288	**32.62**	170287	**37.08**
SM-6	5/8	1	1/4	2-3/4	31°	170290	**60.50**	170289	**57.65**

Inverted Cone — End Not Cut

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Included Angle	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SN-41	3/32	1/8	1/8	1-1/2	10°	170300	**8.77**	170299	**8.25**
SN-42	1/8	3/16	1/8	1-1/2	10°	170302	**7.33**	170301	**8.25**
SN-1	1/4	5/16	1/4	2	10°	170306	**18.22**	170305	**17.37**
SN-51	1/4	1/4	1/8	1-3/4	10°	170308	**14.99**	170307	**14.90**
SN-4	1/2	1/2	1/4	2-1/4	16°	170310	**36.07**	170309	**34.38**
SN-6	5/8	3/4	1/4	2-1/2	18°	170312	**51.78**	170311	**49.22**
SN-7	3/4	5/8	1/4	2-3/4	30°	170314	**60.85**	170313	**57.97**

Cylindrical — End Cut

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SB-41	1/16	1/4	1/8	1-1/2	170038	**8.77**	170078	**8.25**
SB-42	3/32	7/16	1/8	1-1/2	170040	**8.77**	170080	**8.25**
SB-43	1/8	9/16	1/8	1-1/2	170042	**8.77**	170082	**8.25**
SB-12	1/8	5/8	1/4	2	170035	**14.30**	170075	**16.21**
SB-14	3/16	5/8	1/4	2	170036	**19.05**	170076	**18.22**
SB-1	1/4	5/8	1/4	2	170037	**14.78**	170077	**16.83**
SB-2	5/16	3/4	1/4	2-1/2	170043	**22.75**	170083	**21.57**
SB-3	3/8	3/4	1/4	2-1/2	170039	**20.46**	170079	**23.29**
SB-4	7/16	1	1/4	2-3/4	170044	**36.07**	170084	**34.38**
SB-5	1/2	1	1/4	2-3/4	170041	**32.62**	170081	**37.08**
SB-6	5/8	1	1/4	2-3/4	170045	**40.65**	170085	**46.18**
SB-16	3/4	3/4	1/4	2-1/2	170047	**58.17**	170087	**55.27**
SB-7	3/4	1	1/4	2-3/4	170046	**70.81**	170086	**67.44**
SB-9	1	1	1/4	2-3/4	170048	**106.20**	170088	**101.14**

60° Taper

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $
SJ-42	1/8	3/32	1/8	1-1/2	170176	**8.77**
SJ-1	1/4	3/16	1/4	2	170177	**18.55**
SJ-2	5/16	5/16	1/4	2-1/16	170178	**20.24**
SJ-3	3/8	5/16	1/4	2-1/16	170179	**22.59**
SJ-5	1/2	7/16	1/4	2-3/16	170180	**23.40**
SJ-6	5/8	9/16	1/4	2-5/16	170181	**36.74**
SJ-7	3/4	11/16	1/4	2-7/16	170182	**49.39**
SJ-9	1	15/16	1/4	2-9/16	170184	**77.88**

90° Taper

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $
SK-42	1/8	1/16	1/8	1-1/2	170185	**8.77**
SK-1	1/4	1/8	1/4	2	170186	**18.55**
SK-2	5/16	3/16	1/4	1-15/16	170187	**20.24**
SK-3	3/8	3/16	1/4	1-15/16	170188	**22.59**
SK-5	1/2	1/4	1/4	2	170189	**27.98**
SK-6	5/8	5/16	1/4	2-1/16	170190	**30.73**
SK-7	3/4	3/8	1/4	2-1/8	170191	**41.25**
SK-9	1	1/2	1/4	2-1/4	170193	**80.99**

Alumacut Burrs — Cylindrical

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SA-1FM	1/4	5/8	1/4	2	170320	**17.61**
SA-3FM	3/8	3/4	1/4	2-1/2	170321	**23.99**
SA-5FM	1/2	1	1/4	2-3/4	170322	**37.71**
SA-6FM	5/8	1	1/4	2-3/4	170323	**56.48**
SA-7FM	3/4	1	1/4	2-3/4	170324	**85.12**

Alumacut Burrs — Radius End

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SC-1FM	1/4	5/8	1/4	2	170325	**25.42**
SC-3FM	3/8	3/4	1/4	2-1/2	170326	**26.59**
SC-5FM	1/2	1	1/4	2-3/4	170327	**41.84**
SC-6FM	5/8	1	1/4	2-3/4	170328	**63.71**
SC-7FM	3/4	1	1/4	2-3/4	170329	**91.04**

Alumacut Burrs — Ball

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SD-1FM	1/4	7/32	1/4	2	170330	**19.97**
SD-3FM	3/8	5/16	1/4	2-1/8	170331	**23.29**
SD-5FM	1/2	7/16	1/4	2-1/4	170332	**36.41**
SD-6FM	5/8	9/16	1/4	2-3/8	170333	**45.51**
SD-7FM	3/4	11/16	1/4	2-1/2	170334	**61.89**

Alumacut Burrs - Egg

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SE-1FM	1/4	3/8	1/4	2	170335	**28.67**
SE-3FM	3/8	5/8	1/4	2-3/8	170336	**35.23**
SE-5FM	1/2	7/8	1/4	2-5/8	170337	**52.09**
SE-6FM	5/8	1	1/4	2-3/4	170338	**70.99**
SE-7FM	3/4	1	1/4	2-3/4	170339	**91.04**

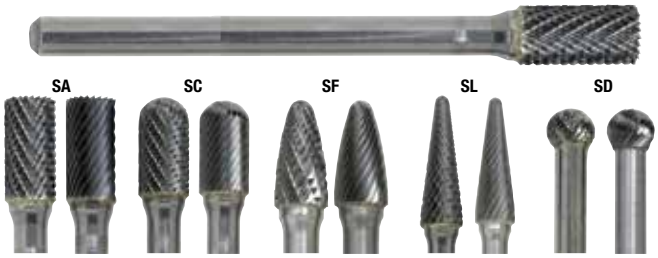
Alumacut Burrs - 14° Included Angle

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SL-3FM	3/8	1-1/16	1/4	2-13/16	170345	**33.09**
SL-4FM	1/2	1-1/8	1/4	2-7/8	170346	**42.31**
SL-6FM	5/8	1-5/16	1/4	3-1/16	170347	**92.41**
SL-7FM	3/4	1-1/2	1/4	3-1/4	170348	**132.56**

Alumacut Burrs - Tree Radius

E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Alumacut Burrs Code No.	Price $
SF-1FM	1/4	5/8	1/4	2	170340	**21.75**
SF-3FM	3/8	3/4	1/4	2-1/2	170341	**27.54**
SF-5FM	1/2	1	1/4	2-3/4	170342	**38.89**
SF-6FM	5/8	1	1/4	2-3/4	170343	**103.89**
SF-7FM	3/4	1-1/4	1/4	3	170344	**87.83**

6" O.A.L. Carbide Burrs



E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SA-3L6	3/8	3/4	1/4	6	170370	**35.74**	170372	**36.14**
SA-5L6	1/2	1	1/4	6	170371	**40.65**	170373	**48.77**
SC-3L6	3/8	3/4	1/4	6	170374	**32.03**	170376	**38.56**
SC-5L6	1/2	1	1/4	6	170375	**43.85**	170377	**52.59**
SF-3L6	3/8	3/4	1/4	6	170378	**32.62**	170380	**39.26**
SF-5L6	1/2	1	1/4	6	170379	**41.49**	170381	**49.78**
SL-3L6	3/8	1-1/16	1/4	6	170382	**37.12**	170384	**44.52**
SL-4L6	1/2	1-1/8	1/4	6	170383	**44.09**	-	**-**
SD-3L6	3/8	-	1/4	6	170386	**29.79**	170388	**35.42**
SD-5L6	1/2	-	1/4	6	170387	**34.99**	170389	**63.30**

8pc Solid Carbide Double Cut Burr Sets

- Solid carbide
- Double cut
- Comes in fitted case

Contents	Shank Diameter	Code No.	Price $
SA-51, SB-51, SC-51, SD-1, SD-52, SF-53, SG-51, SL-51	1/8"	172984	**132.96**
SA-3, SA-5, SC-1, SC-3, SD-3, SD-5, SF-3, SF-5	1/4"	172986	**244.66**

Hand Tools

Punches K3
Stamps K3
Chisels K3
Hammers K3
Hacksaw K3
Pin Chucks & Pin Vises K3
Pot Magnets K4
Grease Guns & Oil Cans K4
Barrel Pumps & Wrenches K4

Centre Punches

- Made of tool steel
- Black oxide finish for rust prevention
- Knurled body for better grip
- Hardened both ends, 45 to 52 HRC
- Points precision ground
- 4" length, 1/16" diameter, punch 3" long
- Set supplied in fitted case with clear size markings

BLACK OXIDE

Model No.	Style	Description	Code No.	Price $
6200-005	5pc set	1/16, 5/64, 3/32, 9/64, 5/32	606286	**23.13**
6200-1/16	Individual	1/16	606288	**4.23**
6200-5/64	Individual	5/64	606290	**4.23**
6200-3/32	Individual	3/32	606292	**4.23**
6200-9/64	Individual	9/64	606294	**4.23**
6200-5/32	Individual	5/32	606296	**4.23**

Heavy Duty Centre Punch Set

Single piece construction with hexagonal shank, these are one of the strongest and most durable of centre punches. The punches have ground working ends, with the body in premium powder coated finish.

Description	Code No.	Price $
5pc set 5/64-3/8	606640	**42.96**

8pc Centre Punch Set

One piece construction with round striking head. The knurling is clean and well cut to provide a positive finger grip. This range of punches has a black oxide finish.

BLACK OXIDE

Description	Code No.	Price $
8pc 1/16 - 7/32	606635	**53.35**

Combination Punch Set

- Made of tool steel with black oxide finish for rust prevention
- Knurled body for better grip
- Hardened both ends, 45 to 52 HRC
- 4" length
- Supplied in fitted case
- Set contains: 5/32" drive pin punch, 5/32" centre punch and scriber

BLACK OXIDE

Model No.	Description	Code No.	Price $
6304-003	3pc set	606298	**15.30**

Drive Pin Punches & Set

- Made of tool steel
- Punch section centreless ground
- Handles black oxide for rust prevention
- Knurled body for better grip
- Hardened both ends, 45 to 52 HRC
- 4" length
- Set supplied in fitted pouch with clear size markings

BLACK OXIDE

Model No.	Description	Code No.	Price $
6300-008	8pc Drive Pin Punch Set	606250	**34.75**
6300-1/16	1/16" Drive Pin Punch	606252	**4.20**
6300-3/32	3/32" Drive Pin Punch	606254	**4.20**
6300-1/8	1/8" Drive Pin Punch	606256	**4.20**
6300-5/32	5/32" Drive Pin Punch	606258	**4.20**
6300-3/16	3/16" Drive Pin Punch	606260	**4.20**
6300-7/32	7/32" Drive Pin Punch	606262	**4.20**
6300-1/4	1/4" Drive Pin Punch	606264	**4.20**
6300-5/16	5/16" Drive Pin Punch	606266	**5.03**

Extra Long Drive Pin Punches & Set

- Made of tool steel
- Punch section centreless ground
- Handles black oxide for rust prevention
- Knurled body for better grip
- Hardened both ends, 45 to 52 HRC
- 8" length, drive pin section 3-1/2" long
- Set supplied in fitted pouch with clear size markings

BLACK OXIDE

Model No.	Description	Code No.	Price $
6301-058	5pc X-Long Drive Pin Punch Set	606238	**41.23**
6301-1/8	1/8" X-Long Drive Pin Punch	606240	**6.64**
6301-3/16	3/16" X-Long Drive Pin Punch	606242	**7.25**
6301-1/4	1/4" X-Long Drive Pin Punch	606244	**7.74**
6301-5/16	5/16" X-Long Drive Pin Punch	606246	**8.14**
6301-3/8	3/8" X-Long Drive Pin Punch	606248	**8.36**

5pc X-Long Pin Punch Set — Vinyl Pouch

Single piece construction with hexagonal shank. Single piece construction imparts additional durability to the punch. The pin end is ground with the body in premium powder coated finish.

Description	Code No.	Price $
1/8, 3/16, 1/4, 5/16, 3/8	606650	**58.50**

Heavy Duty Pin Punch Set

Single piece construction with hexagonal shank, these are one of the strongest and most durable of pin punches. The pin end is ground with the body in a premium powder coated finish.

Description	Code No.	Price $
7pc set 1/16-1/4	606645	**58.00**

Brass Drive Pin Punches & Set

- Made of brass
- Punch section centreless ground
- Hexagonal body style
- Used in spark-free environments
- 4" length
- Set supplied in fitted pouch with clear size markings

Model No.	Description	Code No.	Price $
6300-008B	8pc Brass Drive Pin Punch Set	606268	**49.36**
6300-1/16B	1/16" Brass Drive Pin Punch	606270	**6.32**
6300-3/32B	3/32" Brass Drive Pin Punch	606272	**6.32**
6300-1/88	1/8" Brass Drive Pin Punch	606274	**6.88**
6300-5/32B	5/32" Brass Drive Pin Punch	606276	**6.32**
6300-3/16B	3/16" Brass Drive Pin Punch	606278	**6.32**
6300-7/32B	7/32" Brass Drive Pin Punch	606280	**6.32**
6300-1/4B	1/4" Brass Drive Pin Punch	606282	**6.88**
6300-5/16B	5/16" Brass Drive Pin Punch	606284	**6.32**

8pc Pin Punch Set — Wooden Case

These round shank pin punches have clean and well cut knurling which provides positive, non-slip grip. This range of punches has a black oxide finish.

BLACK OXIDE

Description	Code No.	Price $
1/16, 3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8	606630	**58.15**

Automatic Centre Punches

- Automatic, spring operated action
- Adjustable for very light to heavy strokes
- Replaceable point ground and hardened
- Used for marking, punching, stalking and riveting

Model No.	Description	Code No.	Price $
P170	Standard duty	606300	**15.83**
P171	Heavy duty	606302	**39.07**
P171-P	Replacement point	606304	**7.39**

Automatic Centre Punch

- Automatic, spring operated action
- Used for marking, punching, stalking, and riveting
- 120mm length

Model	Code No.	Price $
VACP-1	326290	**22.15**

Letter & Number Stamp Sets

High quality steel punches are through induction hardened, which gives durability and extended life even after repeated use. The hardness at the stamping end is maintained at 58-62 HRC, the striking end is tempered to 38-43 HRC.

Stamp Size	27pc A - Z plus "&" stamp		9pc #0-9	
	Code No.	Price $	Code No.	Price $
1/8	606615	**43.97**	606600	**14.73**
3/16	606620	**62.70**	606605	**20.93**
1/4	606625	**78.86**	606610	**26.30**

14pc Punch & Chisel Set

Contents:

- 5 Octagonal Cold Chisels, 3/8, 1/2, 5/8, 3/4, 7/8
- 2 H D Centre Punches 5/32, 1/4
- 3 H D Pin Punches 1/16,1/8, 3/16
- 2 H D Drift Punches 1/8, 5/32
- 2 H D Starting Punches 5/16, 1/8

Model No.	Code No.	Price $
KIT/14	606655	**121.79**

Transfer Punch Set

28 Punches

- Heat treated tempered steel
- Consists of one each of punch sizes 3/32 through 1/2 x 64th plus 17/32

Description	Code No.	Price $
3/32 through 1/2 x 64th plus 17/32	200750	**24.05**

Polyurethane Hammers

- Steel structure containing steel shot
- Main body made from polyurethane resin, the handle from soft quality TPR

Model	Head Diameter (mm)	Head Width (mm)	Overall Length (mm)	Weight (kg)	Code No.	Price $
VHM-38	38	100	287	0.49	231460	**28.86**
VHM-46	46	100	306	0.69	231462	**32.15**
VHM-50	50	110	340	0.93	231464	**40.43**
VHM-56	56	120	353	1.16	231466	**46.28**

Indesctructible Handle Hammers

Made with spring steel bars that run all the way through the handle. Bars are locked with the hammer head using steel locking plates ensuring that the head never gets dislodged

- Ergonomic rubber grip handle
- Hammer head is forged from special steel and is induction case hardened to 52-56 HRC for extended life

Style	Head Weight	Handle Length	Model	Code No.	Price $
Club	4 lb	12"	CHID/4/12	231468	**119.06**
Sledge	8 lb	30"	SHID/8/30	231470	**239.05**
Ball Pein	32 oz	14"	BPID/32/14	231472	**103.92**

12" Hacksaw

A rugged heavy-duty industrial quality hacksaw designed for the professional.

- Strong aluminum die cast handle
- Guarded grip design
- Comes complete with a 12" chrome steel hacksaw blade

Model	Overall Length	Bow Depth	Code No.	Price $
HF/12/BC	17-5/16"	4"	231370	**24.94**

Pin Chuck Sets

- Designed for holding small drills in drilling machine
- Set includes three interchangeable collets and knurled chuck with 1/4" shank
- Range: 0-1/32, 1/32-1/16, 1/16-3/32
- Overall length 2-1/2"

Model No.	Description	Code No.	Price $
6000-003	4pc Pin Chuck Set	606226	**27.92**

Pin Vises & Set

- Made of alloy steel, black oxide finish
- Collets grip firmly when chuck is tightened
- Knurled finger grip
- Range of set 0 - 0.188"
- Supplied in plastic pouch
- Ideal for holding small tools, rods, wires, taps, etc.

Model No.	Description	Code No.	Price $
6000-004	4pc Pin Vise Set	606228	**47.71**
6000-004A	0.000-0.040 Pin Vise	606230	**12.41**
6000-004B	0.032-0.059 Pin Vise	606232	**13.71**
6000-004C	0.052-0.122 Pin Vise	606234	**14.97**
6000-004D	0.118-0.188 Pin Vise	606236	**15.50**

Pot Magnets

Unique combination of a strong magnet with nickel chrome plated insulating ring gives these magnets the superior holding power of larger ones.

- 1/4"-20 threaded

Model	Diameter (in.)	Height (in.)	Magnetic Pull (kg)	Code No.	Price $
PMG/11-16	11/16	5/8	2.7	231420	**8.11**
PMG/13-16	13/16	3/4	4.5	231422	**10.20**
PMG/1-1-16	1-1/16	1	6.0	231424	**16.19**
PMG/1-3-8	1-3/8	1-3/16	13	231426	**23.40**

3pc Aviation Tin Snips Set

- Chrome Vanadium Blade with polish
- Self opening action
- Left Cut, Straight Cut, Right Cut

Size	Code No.	Price $
245mm	505003	**38.00**

Mini Pistol Grease Gun

One hand pistol grip grease gun with convenient pull type operating mechanism

- Capacity: 3oz cartridge
- 3,500 psi
- Zinc plated finish
- Complete with 4" steel extension

Model	Code No.	Price $
G-16/ZN/N	231382	**34.67**

Pistol Grease Gun

One hand operated grease gun designed for use in confined spaces.

- Capacity: 14oz cartridge
- 5,000 psi
- Heavy duty aluminum die cast head
- 12" flexible hose

Model	Code No.	Price $
G5F/N	231384	**53.64**

Heavy Duty Lever Grease Gun

Top of the line grease gun designed for heavy industrial applications.

- Capacity: 14oz cartridge
- 10,000 psi
- Variable stroke feature
- High tolerance aluminum die cast head
- Complete with 6" steel extension

Model	Code No.	Price $
G1R/HD/N	231380	**53.64**

80pc SAE Grease Fitting Assortment

Contents:

- 1/8"-27 PTF - 25pcs straight, 10pcs 45°, 10pcs 90°
- 1/4"-28 SAE-LT - 15pcs straight, 10pcs 45°, 10pcs 90°

Model	Code No.	Price $
GFT/KIT/SAE-80	231386	**77.05**

Lever Action Barrel Pump

Premium powder coated steel pump body with ribbed section aluminum die cast pump head for maximum strength.

- Built-in 1-1/2" and 2" bung for use on drums
- Plated steel lever handle with rubber grip
- Complete with curved metal spout and telescopic suction tube for use on 15-55 gallon barrels

Model	Code No.	Price $
LBP/04	231388	**75.62**

Hand Rotary Barrel Pump

- Dual Directional Operation allows the pump to both empty, as well as refill containers
- Extremely heavy duty and rugged
- Pump body is sturdy cast iron with precisely machined cast iron vanes for better draw and smoother delivery
- Fits 15-55 gallon barrels
- Complete with suction tube, 2" cast iron bung nut, and discharge spout

Model	Code No.	Price $
GNB-25/3R/SPL	231390	**151.07**

Aluminum Drum Wrench

An easy and convenient tool to open all types of drums. Ends of the wrench are designed to fit perfectly onto most 2" and 3/4" drum plugs.

- Hardened and tempered cast aluminum for increased strength
- Compact design for easy storage

Model	Code No.	Price $
DRW/AL-01	231398	**31.60**

Lever Type Oil Cans

This series of oil cans have a modern and contemporary design with a dome shaped body. Most popularly used oil can style all over the world. Manufactured with a steel pump, powder coated red body, and a flexible wire braided extension.

Model	Capacity	Spout Length	Code No.	Price $
MP21F	200 ml	6"	231392	**12.66**
MP22F	300 ml	6"	231394	**13.31**
MP23F	500 ml	7"	231396	**14.55**

Cabinets & Chests

Roller Cabinet L2
Tool Boxes L2
Parts Cabinets L2
End Mill Dispenser Cabinets L2
Drill Dispenser Cabinets L2

5 Drawer Roller Cabinet

- Ball bearing slides with Quick Disconnect
- Heavy duty 4" x 1" casters
- Double wall construction
- Electro-powder coating to resist scratches and solvents
- 10mm top mat

Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VTC-23	570W x 345D x 650H	34	326530	**1,073.52**

Tool Boxes

- ABS plastic
- VTB-102 has two levered trays
- VTB-901 has one removable tray

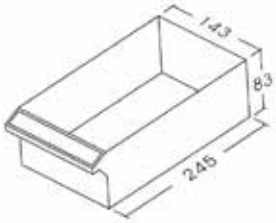
VTB-102

VTB-901

Model	Dimensions (mm)	Code No.	Price $
VTB-102	420W x 235D x 180H	326546	**81.75**
VTB-901	378W x 182D x 144H	326547	**32.00**

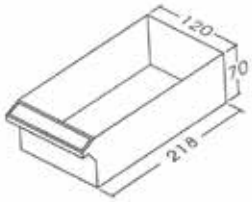
Parts Cabinets

- Steel plate cover with Zinc
- Drawer material: GPS



VA6-212H

VA6-330H



VA7-324P

VA7-448P

Model No.	Width (mm)	Depth (mm)	Height (mm)	No. of Drawers	Weight (kgs.)	Code No.	Price $
VA6-212H	362	265	571	12	10.8	326534	**331.19**
VA6-330H	533	264	937	30	25.3	326536	**603.19**
VA7-324P	440	222	642	24	15.5	326538	**378.36**
VA7-448P	586	222	937	48	27.5	326540	**579.48**
VA1-525	586	222	350	25	10.0	326542	**417.07**
VA1-575	586	222	937	75	32.3	326544	**809.94**

End Mill Dispenser Cabinets

- Three drawer
- All steel

Description	0 No.	Code No.	Price $
Two flute single and double end for 1/16 to 1	CZD10	113905	**1,071.56**
Four flute single and double end for 1/16 to 1	CZD11	113906	**1,071.56**
Two and four flute single and double end for 1/8 to 1 x 8ths	CZD12	113907	**261.31**

Drill Dispenser Cabinets

- 14.625" x 7.375" x 7.75"
- 10.25lbs
- Stackable for larger inventories
- One piece drawer slide for long useful life

Description	Case No.	Code No.	Price $
Steel Cabinet holds 1/16-1/2 x 64ths Jobber Drills	13000	113826	**95.91**
Steel Cabinet holds #1-60 Jobber Drills	13025	113827	**121.26**

TOOLING YOUR WORLD.

Tooling Package Quote Request Forms

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sales@sowatool.com F: 519-748-9304 TF: 1-866-511-7692

CAT40 Tooling Package Quote Request Form

CAT40 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- Certified Steel
- AT2 Taper Accuracy
- RFID chip hole

PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia.	Gauge Length	Code No.	Quantity
CT40	1/8	1.35*	531069	
CT40	1/8	2.50	531070	
CT40	1/8	4.00	531071	
CT40	3/16	1.38*	531072	
CT40	3/16	2.50	531073	
CT40	3/16	4.00	531074	
CT40	1/4	1.38*	531000	
CT40	1/4	2.50	531002	
CT40	1/4	4.00	531004	
CT40	1/4	9.00	531005	
CT40	5/16	1.38*	531006	
CT40	5/16	2.50	531008	
CT40	5/16	4.00	531010	
CT40	5/16	9.00	531011	
CT40	3/8	1.38*	531012	
CT40	3/8	2.50	531014	
CT40	3/8	4.00	531016	
CT40	3/8	5.00	531018	
CT40	3/8	9.00	531031	
CT40	7/16	2.50	531020	
CT40	7/16	4.00	531022	
CT40	7/16	9.00	531033	
CT40	1/2	1.75*	531024	
CT40	1/2	2.50	531026	
CT40	1/2	4.00	531028	
CT40	1/2	5.00	531030	
CT40	1/2	9.00	531035	
CT40	5/8	1.75*	531032	
CT40	5/8	3.00	531034	
CT40	5/8	4.00	531036	
CT40	5/8	5.50	531038	
CT40	5/8	9.00	531037	
CT40	3/4	1.75*	531040	
CT40	3/4	3.00	531042	
CT40	3/4	4.00	531044	
CT40	3/4	5.50	531046	
CT40	3/4	9.00	531039	
CT40	7/8	1.75*	531048	
CT40	7/8	3.50	531050	
CT40	7/8	6.00	531052	
CT40	7/8	9.00	531041	
CT40	1	2.00*	531054	
CT40	1	4.00	531056	
CT40	1	6.00	531058	
CT40	1	9.00	531043	
CT40	1-1/4	2.00*	531060‡	
CT40	1-1/4	4.00	531062	
CT40	1-1/4	6.00	531064	
CT40	1-1/2	4.50	531066	
CT40	1-1/2	6.00	531068	

* Stubby Length ‡ Not DIN Coolant

CAT40 Shell Mill Holders

- DIN coolant option - standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

Taper	Hole Dia.	Gauge Length	Code No.	Quantity
CT40	1/2	1.75	531190	
CT40	3/4	1.75	531192	
CT40	3/4	4.00	531194	
CT40	3/4	6.00	531195	
CT40	1	1.75	531196	
CT40	1	4.00	531198	
CT40	1	6.00	531199	
CT40	1-1/4	2.00	531200	
CT40	1-1/4	4.00	531202	
CT40	1-1/4	6.00	531203	
CT40	1-1/2	2.00	531204	
CT40	1-1/2	4.00	531206	

CAT40 ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- RFID Chip Hole
- Wrench not included
- AT2 Taper Accuracy

PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Quantity
CT40	ER11**	0.019-0.275	2.50	531400	
CT40	ER11**	0.019-0.275	4.00	531402	
CT40	ER11**	0.019-0.275	6.00	531404	
CT40	ER16**	0.019-0.406	2.50	531406	
CT40	ER16**	0.019-0.406	3.50	531408	
CT40	ER16**	0.019-0.406	4.00	531405	
CT40	ER16**	0.019-0.406	6.00	531410	
CT40	ER16**	0.019-0.406	9.00	531411	
CT40	ER20**	0.039-0.511	2.50	531412	
CT40	ER20**	0.039-0.511	4.00	531414	
CT40	ER20**	0.039-0.511	6.00	531416	
CT40	ER20**	0.039-0.511	9.00	531417	
CT40	ER25	0.039-0.629	2.50	531418	
CT40	ER25	0.039-0.629	4.00	531420	
CT40	ER25	0.039-0.629	6.00	531422	
CT40	**ER32**	**0.078-0.787**	**0.750**	**531401***	
CT40	ER32	0.078-0.787	2.50	531421	
CT40	ER32	0.078-0.787	3.13	531424	
CT40	ER32	0.078-0.787	4.00	531423	
CT40	ER32	0.078-0.787	5.00	531426	
CT40	ER32	0.078-0.787	6.00	531425	
CT40	ER32	0.078-0.787	9.00	531419	
CT40	ER40	0.118-1.023	2.50	531427	
CT40	ER40	0.118-1.023	3.13	531428	
CT40	ER40	0.118-1.023	4.00	531429	
CT40	ER40	0.118-1.023	5.00	531430	
CT40	ER40	0.118-1.023	6.00	531431	

* ER Shorty collet chuck, Not DIN coolant ** Hex Nut

Company:

Contact:

Phone:

Fax:

Email:

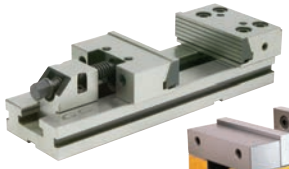
Notes:

ER Collet Sets

* Case may not be as shown

Collet	Description	Range	Code No.	Quantity
ER11	Inch Size 7pc	1/16-1/4 x 32nds	337401	
ER11	Metric 13pc	1-7mm	337379	
ER16	Inch Size 11pc	1/16-3/8 x 32nds	337403	
ER16	Metric 10pc	1-10mm	337380	
ER20	Inch Size 15pc	1/16-1/2 x 32nds	337404	
ER20	Metric 12pc	2-13mm	337382	
ER25	Inch Size 17pc	1/8-5/8 x 32nds	337405	
ER25	Metric 15pc	2-16mm	337383	
ER32	Inch Size 21pc	1/8-3/4 x 32nds	337407	
ER32	Metric 18pc	2-20mm	337384	
ER40	Inch Size 29pc	1/8-1" x 32nds	337409	
ER40	Metric 23pc	3.5-26mm	337386	

Modular & Milling Machine Vises



Modular Vise

Milling Machine Vise

Model	Jaw Width	Jaw Opening	Code No.	Quantity
GS675	6	7.5	327275M	
GS160G	6	9.13	327320	
GS810	8	10.0	327300	
#3 Modular	6	12	382017	

NC/CNC Trolley

Complete Tool Trolley with 4 Tool Trays and Inserts.

- Trays bolt in
- (W)1002mm x (D)650mm x (H)830mm
- Weight: 51kgs

Desc.	Taper Type	Inserts Per Tray	Code No.	Quantity
Trolley	40	4 x 7	326985	
Trolley	50	4 x 5	326995	

CAT50 Tooling Package Quote Request Form

CAT50 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

PREMIUM BALANCE
G6.3 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia.	Gauge Length	Code No.	Quantity
CT50	1/4	1.38*	531082	
CT50	1/4	2.50	531084	
CT50	1/4	4.00	531086	
CT50	1/4	6.00	531088	
CT50	1/4	8.00	531090	
CT50	5/16	2.50	531092	
CT50	5/16	4.00	531094	
CT50	5/16	6.00	531096	
CT50	3/8	1.38*	531098	
CT50	3/8	2.50	531100	
CT50	3/8	4.00	531102	
CT50	3/8	6.00	531104	
CT50	3/8	8.00	531106	
CT50	3/8	14.00	531107	
CT50	7/16	2.50	531108	
CT50	7/16	4.00	531110	
CT50	7/16	6.00	531112	
CT50	7/16	14.00	531113	
CT50	1/2	1.75*	531116	
CT50	1/2	2.63	531118	
CT50	1/2	4.00	531120	
CT50	1/2	6.00	531122	
CT50	1/2	8.00	531124	
CT50	1/2	14.00	531125	
CT50	9/16	6.00	531133	
CT50	5/8	1.75*	531126	
CT50	5/8	3.00	531128	
CT50	5/8	4.00	531130	
CT50	5/8	6.00	531132	
CT50	5/8	8.00	531134	
CT50	5/8	14.00	531131	
CT50	3/4	1.75*	531136	
CT50	3/4	3.00	531138	
CT50	3/4	4.00	531140	
CT50	3/4	6.00	531142	
CT50	3/4	8.00	531144	
CT50	3/4	14.00	531145	
CT50	7/8	1.75*	531146	
CT50	7/8	3.75	531148	
CT50	1	2.00*	531152	
CT50	1	4.00	531154	
CT50	1	6.00	531156	
CT50	1	8.00	531158	
CT50	1-1/4	2.00*	531160	
CT50	1-1/4	4.00	531162	
CT50	1-1/4	6.00	531164	
CT50	1-1/4	8.00	531166	
CT50	1-1/2	2.25*	531168	
CT50	1-1/2	4.50	531170	
CT50	1-1/2	7.00	531172	
CT50	1-1/2	9.00	531174	
CT50	2	3.63*	531176	
CT50	2	5.37	531178	
CT50	2	8.00	531180	
CT50	2	10.00	531182	
CT50	2-1/2	6.00	531184	

* Stubby Length

CAT50 Shell Mill Holders

- DIN coolant option - Standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

Taper	Dia.	Gauge Lengh	Code No.	Quantity
CT50	3/4	1.75	531208	
CT50	3/4	4.00	531210	
CT50	3/4	6.00	531212	
CT50	3/4	8.00	531214	
CT50	1	1.75	531216	
CT50	1	4.00	531218	
CT50	1	6.00	531220	
CT50	1	8.00	531222	
CT50	1-1/4	1.75	531224	
CT50	1-1/4	4.00	531226	
CT50	1-1/4	6.00	531228	
CT50	1-1/4	8.00	531230	
CT50	1-1/2	2.00	531232	
CT50	1-1/2	4.00	531234	
CT50	1-1/2	6.00	531236	
CT50	1-1/2	8.00	531238	
CT50	2	2.00	531240	
CT50	2	4.00	531242	
CT50	2	6.00	531244	

CAT50 ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- RFID Chip Hole
- Wrench not included
- AT2 Taper Accuracy

PREMIUM BALANCE
G2.5 at 25,000rpm
CERTIFICATE INCLUDED

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Quantity
CT50	ER16**	0.019-0.406	4.12	531432	
CT50	ER16**	0.019-0.406	6.00	531434	
CT50	ER16**	0.019-0.406	8.00	531436	
CT50	ER16**	0.019-0.406	12.00	531437	
CT50	ER20**	0.039-0.511	2.50	531438	
CT50	ER20**	0.039-0.511	4.00	531440	
CT50	ER20**	0.039-0.511	6.00	531442	
CT50	ER20**	0.039-0.511	8.00	531444	
CT50	ER20**	0.039-0.511	12.00	531445	
CT50	ER25	0.039-0.629	2.50	531446	
CT50	ER25	0.039-0.629	4.00	531448	
CT50	ER25	0.039-0.629	6.00	531450	
CT50	ER25	0.039-0.629	8.00	531452	
CT50	**ER32**	**0.078-0.787**	**0.750**	**531403***	
CT50	ER32	0.078-0.787	4.00	531454	
CT50	ER32	0.078-0.787	6.00	531456	
CT50	ER32	0.078-0.787	8.00	531458	
CT50	ER32	0.078-0.787	12.00	531459	
CT50	ER40	0.118-1.023	4.00	531460	
CT50	ER40	0.118-1.023	6.00	531462	
CT50	ER40	0.118-1.023	8.00	531464	

* ER Shorty collet chuck, Not DIN coolant ** Hex Nut

Company:

Contact:

Phone:

Fax:

Email:

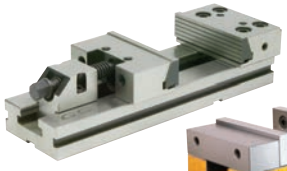
Notes:

ER Collet Sets

* Case may not be as shown

Collet	Description	Range	Code No.	Quantity
ER11	Inch Size 7pc	1/16-1/4 x 32nds	337401	
ER11	Metric 13pc	1-7mm	337379	
ER16	Inch Size 11pc	1/16-3/8 x 32nds	337403	
ER16	Metric 10pc	1-10mm	337380	
ER20	Inch Size 15pc	1/16-1/2 x 32nds	337404	
ER20	Metric 12pc	2-13mm	337382	
ER25	Inch Size 17pc	1/8-5/8 x 32nds	337405	
ER25	Metric 15pc	2-16mm	337383	
ER32	Inch Size 21pc	1/8-3/4 x 32nds	337407	
ER32	Metric 18pc	2-20mm	337384	
ER40	Inch Size 29pc	1/8-1" x 32nds	337409	
ER40	Metric 23pc	3.5-26mm	337386	

Modular & Milling Machine Vises



Modular Vise

Milling Machine Vise

Model	Jaw Width	Jaw Opening	Code No.	Quantity
GS675	6	7.5	327275M	
GS160G	6	9.13	327320	
GS810	8	10.0	327300	
#3 Modular	6	12	382017	

NC/CNC Trolley

Complete Tool Trolley with 4 Tool Trays and Inserts.

- Trays bolt in
- (W)1002mm x (D)650mm x (H)830mm
- Weight: 51kgs

Desc.	Taper Type	Inserts Per Tray	Code No.	Quantity
Trolley	40	4 x 7	326985	
Trolley	50	4 x 5	326995	

BT40 Tooling Package Quote Request Form

BT40 End Mill Holders

- DIN coolant option - standard
- All ground body, bore, nose, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

PREMIUM BALANCE
G6.3 at 30,000rpm
CERTIFICATE INCLUDED

Taper	Hole Dia.	Gauge Length	Code No.	Quantity
BT40	1/8	1.38*	531019	
BT40	1/8	2.50	531021	
BT40	1/8	4.00	531023	
BT40	3/16	1.38*	531025	
BT40	3/16	2.50	531027	
BT40	3/16	4.00	531029	
BT40	1/4	1.38*	532018	
BT40	1/4	2.50	532020	
BT40	1/4	4.00	532022	
BT40	5/16	1.38*	532024	
BT40	5/16	2.50	532026	
BT40	5/16	4.00	532028	
BT40	3/8	1.38*	532030	
BT40	3/8	2.50	532032	
BT40	3/8	4.00	532034	
BT40	7/16	2.50	532036	
BT40	1/2	1.75*	532038	
BT40	1/2	2.50	532040	
BT40	1/2	4.00	532042	
BT40	5/8	1.75*	532044	
BT40	5/8	2.50	532046	
BT40	5/8	4.00	532048	
BT40	3/4	1.75*	532050	
BT40	3/4	2.50	532052	
BT40	3/4	4.00	532054	
BT40	7/8	3.38	532056	
BT40	7/8	6.00	532058	
BT40	1	2.00*	532060	
BT40	1	3.56	532062	
BT40	1	6.00	532064	
BT40	1-1/4	2.00*	532066‡	
BT40	1-1/4	3.56	532068	
BT40	1-1/4	6.00	532070	
BT40	1-1/2	4.50	532072	
BT40	1-1/2	6.00	532074	

* Stubby Length

‡ Not DIN Coolant

Build your own tooling package and save!

BT Shell Mill Holders

- DIN coolant option - standard
- All ground body, nose, pilot, flange
- TIR, 0.0001" / 0.003mm OD to ID
- AT2 Taper Accuracy
- Certified Steel
- RFID chip hole

Taper	Dia.	Gauge Length	Code No.	Quantity
BT40	1/2	1.75	532086	
BT40	3/4	1.75	532088	
BT40	3/4	4.00	532111	
BT40	3/4	6.00	532114	
BT40	1	1.75	532090	
BT40	1	4.00	532115	
BT40	1	6.00	532117	
BT40	1-1/4	2.00	532092	
BT40	1-1/4	4.00	532119	
BT40	1-1/4	6.00	532121	
BT40	1-1/2	2.00	532094	

BT Taper ER Collet Chucks

- DIN coolant option - standard
- All ground body
- Factory balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- Wrench not included
- AT2 Taper Accuracy
- RFID Chip Hole

PREMIUM BALANCE
G2.5 at 30,000rpm
CERTIFICATE INCLUDED
BT40

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Quantity
BT40	ER11**	0.019-0.275	4.00	532176	
BT40	ER11**	0.019-0.275	6.00	532178	
BT40	ER16**	0.019-0.406	3.50	532180	
BT40	ER16**	0.019-0.406	5.00	532182	
BT40	ER20**	0.039-0.511	2.50	532184	
BT40	ER20**	0.039-0.511	4.00	532186	
BT40	ER20**	0.039-0.511	6.00	532188	
BT40	ER25	0.039-0.629	2.25	532190	
BT40	ER25	0.039-0.629	4.00	532192	
BT40	ER25	0.039-0.629	6.00	532194	
BT40	**ER32**	**0.078-0.787**	**1.06**	**‡532191***	
BT40	ER32	0.078-0.787	3.13	532196	
BT40	ER32	0.078-0.787	5.00	532198	
BT40	ER40	0.118-1.023	3.13	532200	
BT40	ER40	0.118-1.023	5.00	532202	

* Not DIN Coolant
** Hex Nut
‡ ER Shorty Collet Chuck

Company:

Contact:

Phone:

Fax:

Email:

Notes:

ER Collet Sets

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Collet	Description	Range	Code No.	Quantity
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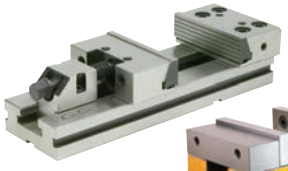
ER32	Inch Size 21pc	1/8-3/4 x 32nds	337407	
ER32	Metric 18pc	2-20mm	337384	
ER40	Inch Size 29pc	1/8-1" x 32nds	337409	
ER40	Metric 23pc	3.5-26mm	337386	

Modular & Milling Machine Vises



Modular Vise

Milling Machine Vise

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- Weight: 51kgs

Desc.	Taper Type	Inserts Per Tray	Code No.	Quantity
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