SOWA®

METALWORKING SOLUTIONS

SERVING THE CANADIAN METALWORKING INDUSTRY SINCE 1960



Canadians Supporting Canadians



WWW.SOWATOOL.COM



To Our Valued Customers:

It is with pride and appreciation that the staff & management of Sowa Tool & Machine Co. Ltd., mark our 55 year milestone with the launch of the 2015/2016 Buyers Guide.

Inside you will find the most comprehensive offering to date, with upgrades and additions to all categories in what we refer to as the complete metalworking package.

With a sales force with over 465 years of combined experience, our team is fully prepared to offer support to both distributors and end users.

We thank you in advance for making this project and our overall progress possible.

SALES POLICIES

Terms:	Our terms are Net 30 days; 1% – 10 days for customers who have submitted acceptable credit information.
Claims:	All claims must be made no later than five days after the receipt of merchandise. Please furnish our shipper number or invoice number to expedite settlement. Damages incurred in commercial shipments must be claimed from the common carrier.
Returns:	Unless we have erred in filling your order, all returns must be shipped prepaid. Non-stock merchandise will not be accepted for return and we reserve the right to determine if the purchaser has abused the goods in question. All returned goods require an approved return goods form and a copy of the original invoice. (Note: RGA forms are available to download from our website) Orders returned due to customer error must be shipped prepaid and are subject to a 15% restocking charge. All returned goods must be new and in original packaging.

Note: 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 listed on our website will take precedence.

END MILLS	New 4 and 5 Flute Variable Helix End Mills as well as the 2, 3, 4 Flute Sowa High Performance End Mills Colour Band System with Carbide, HSCO, HSS, and Tapered End Mills	A
DRILLS & REAMERS	Premium Class Carbide Drills, Sowa High Performance Drills & Spade Drill System, General Purpose Drills including Jobber, Stub, Extra Length, Prentice, Taper Shank, Reamers Include: Chucking, Jobber, Bridge, Taper, Shell, and Expanding and more	B
TAPS & DIES	Sowa High Performance Colour Band Tap System, General Purpose Hand Taps, NPT Taps, Tap and Die Sets, Tap Wrenches, Screw Extractors, Round and Hex Dies	C
CUTTING TOOLS	Carbide Burrs, Boring Bars, Toolbits, Part-off Blades, Milling Cutters, Counterbores, Knurling Tools, Broaching Systems, Deburring Tools.	D
INDEXABLE CUTTING TOOLS	Sowa Indexable Cutting Tools Featuring, Turning, Parting, Grooving, Threading, Milling and Drilling Inserts and Holders complete with all technical information	E
PRECISION TOOLS	Asimeto, STM, Mitutoyo, and Starrett Precision Tools including Calipers, Micrometers, Indicators, Magnetic Bases, Height Gauges, Surface Plates, Hardness Tester, Profile Projectors, Microscopes, Handbooks and much more	F
ROTARY TOOLING	GS Premium Balance Rotary Tooling, including End Mill Holders, ER, TG, Collet Chucks. Also Milling Chucks, Shrink Fit Tooling, Taper Adapters, Drill Chucks, Right Angle Heads, Boring and Facing Heads, Tool Carts and much more.	G
VISES & CLAMPS	GS Milling Vises, Double Clamp, Hydraulic, Bench and Drill Press Vises. Vee-Blocks, Angle Plates, Arbor Presses, Clamping Components, Mitee-Bite	H
ACCESSORIES	Rotary Tables, Cross Slide Tables, , Dividing Heads, Super & Simple Indexes, 5C Collet Chucks, Radius Dressers. Also new products such as Drill Sharpeners, Magnetic Lifters, Jack Screw Sets, Coolants & Pastes, Coolant Hose System.	I
LATHE CHUCKS	2, 3, 4, 6 Jaw Lathe Chucks, Big Bore Oil Country Chucks, F/A Fine Adjustment Precision Chucks, Power Chucks, Power Chuck Jaws & T-Nuts	J
LATHE ACCESSORIES	Live Centres, Dead Centres, Face Drivers, Quick Change Tool Posts	K
ABRASIVES & AIR TOOLS	Ceramic, Surface, General Purpose Grinding Wheels, Depressed Centre Discs and Cut-off Wheels, Flap Discs, Shop Rolls, Cloth Sheets, Belts, Die Grinders and Diamond Files	L
HAND TOOLS	Punches, Stamps, Chisels, Hammers, Hacksaws, Hole Saws, Utility Knives, Grease Guns, Barrel Pumps, L-Wrenches, Torque Limiting Device, Screwdrivers & Bits, Sockets & Attachments, Combination Wrenches, Adjustable & Pipe Wrenches, Torque Wrenches, Pliers, and Wire Strippers	M
CABINETS & CHESTS	Machinists' & Mechanics' Chests, Chest Bases, Top Chests, Heavy Duty Workstation, Roller Cabinets, Utility Carts, Tool Boxes, Parts Cabinets, End Mill Dispenser Cabinets, Drill Dispenser Cabinets	N

“Sowa” - A term synonymous with having the most knowledgeable, friendly and efficient Customer Service team in the industry with over 215 years of metalworking tool experience.

We make it easy for you to deal with us!
Online ordering, stock checks, price inquiries.

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Full product search capability.

See your order history.

Add to your Shopping Cart as you go.

Growing list of CAD files available for download.

Visit our YouTube channel for tool demonstrations.

Visit our Clearance Centre for great deals.

www.sowatool.com

NEW PRODUCTS

END MILLS

Made in South Africa

4 Flute VariCut Variable Helix End Mills - pg A17



DRILLS

HSS TiAIN Tip Jobber Drills - pg B10





Black/Gold Jobber Drills - pg B14





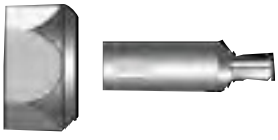
CUTTING TOOLS

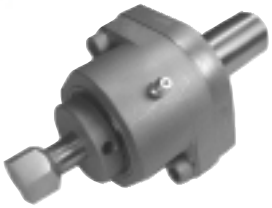
HASSAY SAVAGE

Greatly expanded range of Hassay-Savage Rotary/Punch Broach Systems - pg D32-38













NEW PRODUCTS

INDEXABLE CUTTING TOOLS

Greatly expanded range of Indexable Holders and Inserts - see Section E

Double Clamp Holders - pg E52-54



AP06 & AP18 Mills - pg E132, E136, E138, E142



DS4 Mills - pg E138, E145



Button Mills - pg E143



Jet Mills - pg E148



Alumi-X Mills - pg E157



T-Slot Cutter - pg E155



PRO SP/NP Drills - pg E160



Combo Turning & Drilling Tool - pg E161



NEW PRODUCTS

PRECISION TOOLS

Larger range of Asimeto Precision Tools. Expanded ranges & styles of current items as well as many new products now available - see Section F

Snap Gauges - pg F15



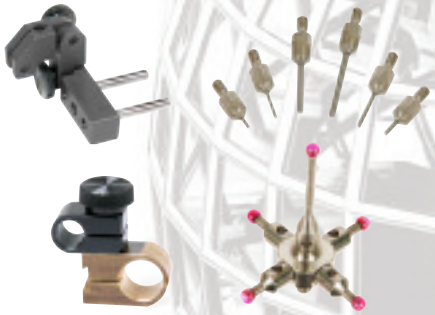
Internal & External Caliper Gauges - pg F30



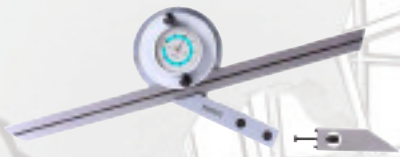
Ultra Precision Dial Gauge - pg F35



Indicator Points & Accessories - pg F41-52



Dial & Digital Protractors - pg F67



Welding Gauges - pg F69



Thread Plug & Ring Gauges - pg F75-78



ViewMeasure - pg F80



Optical Comparator - pg F81



Microscopes - pg F89



NEW PRODUCTS

ROTARY TOOLING

G3 TOOLING

Dual Contact Holders & Chucks - Section G



Direct Coolant Holders - Section G



ATC Series Angle Heads - pg G57-69

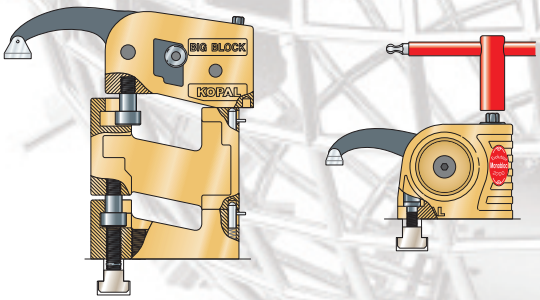


MADE IN ITALY

CLAMPING

MITEE-BITE PRODUCTS LLC **Workholding Specialists**

Kopal® Clamps - pg H34

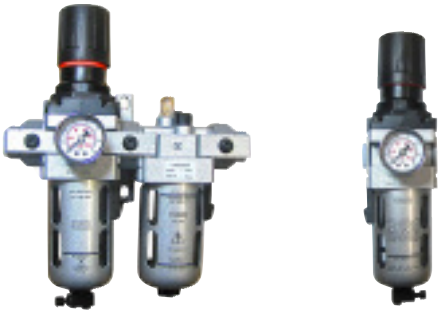


Mono-Bloc Chain Clamps - pg H35



ACCESSORIES

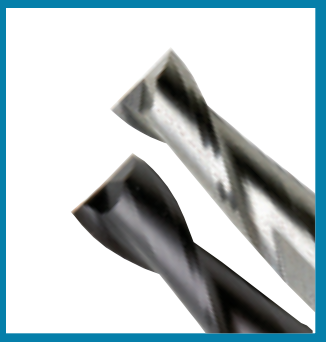
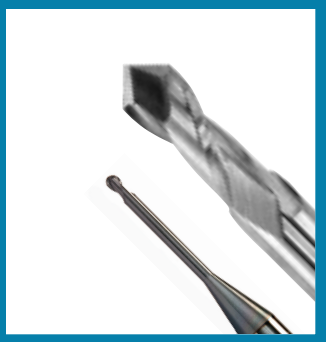
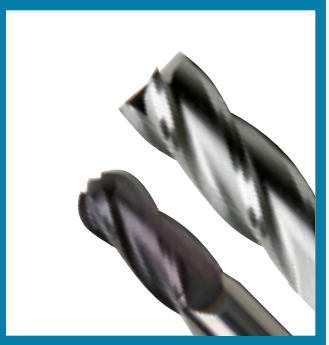
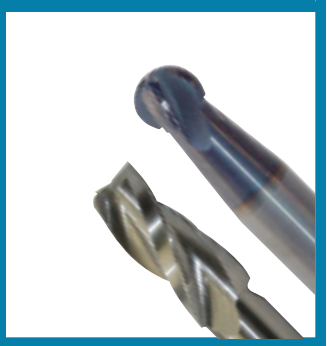
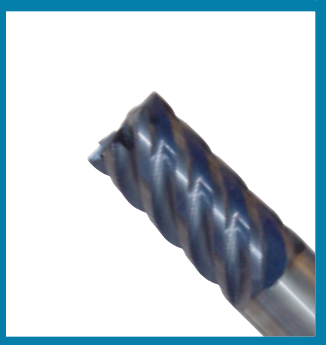
Filter Regulator & Lubricators - pg I16



DOMESTIC BRANDS

Along with all the new & expanded ranges of our standard catalogue products we have also included many familiar and popular “domestic” brands. These domestic brands allow us to offer our customers an even wider range of products to meet their tooling needs.




END MILLS

SOWA HIGH PERFORMANCE END MILL SELECTION A2

CARBIDE END MILLS - BRIGHT FINISH & TiAlN COATED
2 Flute A3-7
End Mill Dispenser Cabinets A4
End Mill Sheath Racks A4
Drill Mills A5
3 Flute A7-8
4 Flute A9-13
Multi-Flute A12
Roughers A12

TYPHOON END MILLS - RED SERIES
2 Flute A14-15
4 Flute A15-17
Multi Flute A17
Roughers A17
4 & 5 Flute Variable Helix A17-18

QTT PREMIUM CLASS CARBIDE END MILLS
2 Flute A19-20
4 Flute A20

CARBIDE END MILLS FOR ALUMINUM - GREEN SERIES
2 Flute A21-22
3 Flute A21-22

HSCO & HSS GENERAL PURPOSE END MILLS
2 Flute A23-26
3 Flute A26
4 Flute Variable Helix Powdered Metal TiAlN A26
4 Flute A27-29
Multi-Flute A27-29
Roughers A29-31
Tapered End Mills A31-33

Speeds & Feeds **A34-48**

SOWA
METALWORKING SOLUTIONS

www.sowatool.com

END MILLS

We have taken the guess work out of your End Mill selection!



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



Micrograin Carbide TiAlN Coated - Cutting Conditions

Materials Main Group	Materials Sub-Group	Condition	Hardness	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 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



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





MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	1/8	1-1/2	103-770	**16.40**	102-677	**24.20**
3/64	1/8	9/64	1-1/2	103-772	**11.60**	102-799	**22.60**
1/16	1/8	3/16	1-1/2	103-848	**10.60**	102-800	**16.90**
5/64	1/8	1/4	1-1/2	103-773	**10.60**	102-801	**20.40**
3/32	1/8	5/16	1-1/2	103-849	**10.60**	102-802	**16.90**
7/64	1/8	3/8	1-1/2	103-775	**10.60**	102-803	**20.40**
1/8	1/8	1/2	1-1/2	103-850	**10.60**	102-804	**16.40**
9/64	3/16	1/2	2	103-776	**13.10**	102-805	**20.40**
5/32	3/16	9/16	2	103-851	**13.10**	102-806	**31.60**
11/64	3/16	9/16	2	103-777	**14.70**	102-807	**31.70**
3/16	3/16	5/8	2	103-852	**14.70**	102-808	**20.00**
13/64	1/4	5/8	2-1/2	103-778	**18.50**	102-809	**41.50**
7/32	1/4	5/8	2-1/2	103-853	**18.50**	102-811	**36.60**
1/4	1/4	3/4	2-1/2	103-854	**18.50**	102-810	**23.10**
9/32	5/16	3/4	2-1/2	103-855	**24.10**	102-813	**47.70**
5/16	5/16	13/16	2-1/2	103-856	**24.10**	102-812	**33.40**
11/32	3/8	7/8	2-1/2	103-779	**30.10**	102-815	**61.90**
3/8	3/8	1	2-1/2	103-857	**30.10**	102-814	**39.60**
13/32	7/16	1	2-3/4	103-780	**46.00**	102-817	**84.00**
7/16	7/16	1	2-3/4	103-858	**46.00**	102-816	**54.30**
1/2	1/2	1	3	103-859	**55.70**	102-818	**66.00**
9/16	9/16	1-1/8	3-1/2	103-886	**80.10**	102-820	**90.60**
5/8	5/8	1-1/4	3-1/2	103-887	**99.80**	102-822	**103.60**
11/16	3/4	1-3/8	4	103-888	**140.70**	102-824	**140.80**
3/4	3/4	1-1/2	4	103-889	**141.00**	102-826	**158.00**
7/8	7/8	1-1/2	4	103-890	**197.50**	102-828	**216.30**
1	1	1-1/2	4	103-891	**226.30**	102-830	**245.70**
6PC Set: 1/4", 5/16", 3/8", 1/2", 5/8", 3/4"				103-846	**443.60**		
5PC Set: 3/16", 1/4", 5/16", 3/8", 1/2"						102-957	**162.60**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
.5	3	1.5	39	101-552	**38.70**	102-819	**48.00**
1	3	3	39	101-553	**28.30**	102-821	**32.30**
1.5	3	5	39	101-432	**18.30**	102-823	**24.60**
2	3	7	39	102-696	**11.30**	102-825	**19.50**
2.5	3	7	39	102-697	**11.30**	102-827	**19.50**
3	3	9	39	102-698	**11.30**	102-829	**17.10**
3.5	4	12	51	102-699	**13.40**	102-853	**27.70**
4	4	14	51	102-700	**13.40**	102-855	**27.70**
4.5	5	14	51	102-701	**16.30**	102-857	**30.80**
5	5	16	51	102-702	**16.30**	102-859	**30.80**
6	6	19	64	102-703	**19.40**	102-861	**36.00**
7	8	19	64	102-704	**25.50**	102-863	**43.80**
8	8	21	64	102-705	**25.50**	102-865	**43.80**
9	10	22	70	102-706	**37.90**	102-867	**71.20**
10	10	22	70	102-707	**37.90**	102-869	**71.20**
11	11	25	70	102-708	**58.60**	102-871	**87.50**
12	12	25	76	102-709	**58.60**	102-873	**87.50**
14	14	30	89	102-711	**84.30**	102-875	**151.00**
16	16	32	89	102-712	**105.20**	102-881	**163.40**
18	18	35	102	102-713	**136.00**	102-883	**243.50**
20	20	38	102	102-714	**163.30**	102-885	**303.00**
22	22	38	102	101-451	**378.10**	102-887	**444.60**
25	25	38	102	102-715	**249.50**	102-889	**399.80**

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-220	**27.70**	102-202	**32.50**
3/64	1/8	3/32	1-1/2	101-221	**19.70**	102-221	**27.40**
1/16	1/8	1/8	1-1/2	101-222	**17.40**	102-222	**25.20**
5/64	1/8	1/8	1-1/2	101-223	**19.70**	102-223	**26.20**
3/32	1/8	3/16	1-1/2	101-224	**17.40**	102-224	**31.60**
7/64	1/8	7/32	1-1/2	101-225	**19.70**	102-225	**26.40**
1/8	1/8	1/4	1-1/2	101-226	**16.90**	102-226	**27.60**
9/64	3/16	9/32	2	101-227	**19.70**	102-227	**26.40**
5/32	3/16	5/16	2	101-228	**24.70**	102-228	**32.80**
3/16	3/16	3/8	2	101-229	**22.80**	102-229	**30.20**
7/32	1/4	7/16	2	101-230	**25.20**	102-203	**39.60**
1/4	1/4	1/2	2	101-231	**25.80**	102-231	**41.60**
5/16	5/16	1/2	2	101-232	**36.80**	102-204	**59.20**
3/8	3/8	5/8	2	101-233	**52.30**	102-233	**72.40**
7/16	7/16	5/8	2-1/2	101-234	**66.90**	102-206	**89.70**
1/2	1/2	5/8	2-1/2	101-235	**83.90**	102-235	**104.20**
5/8	5/8	3/4	3	101-236	**130.10**	102-207	**178.20**
3/4	3/4	1	3	101-237	**201.80**	102-237	**262.00**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1	3	2	39	101-640	**27.70**	102-631	**31.50**
1.5	3	3	39	101-641	**17.40**	102-641	**23.30**
2	3	4	39	101-642	**19.70**	102-633	**25.40**
2.5	3	5	39	101-643	**17.40**	102-643	**23.60**
3	3	6	39	101-644	**16.90**	102-644	**22.80**
3.5	4	7	51	101-645	**23.60**	102-645	**31.50**
4	4	8	51	101-646	**22.80**	102-646	**30.50**
4.5	5	9	51	101-647	**24.70**	102-647	**33.20**
5	5	10	51	101-648	**25.20**	102-648	**33.70**
6	6	12	51	101-649	**25.80**	102-649	**36.00**
7	8	12	51	101-650	**29.60**	102-635	**39.30**
8	8	12	51	101-651	**36.80**	102-651	**48.80**
9	10	14	51	101-652	**52.30**	102-637	**56.20**
10	10	14	51	101-653	**52.30**	102-653	**70.70**
11	11	16	64	101-654	**67.10**	-	-
12	12	16	64	101-655	**73.60**	-	-

2 Flute 1/8" Shank Miniature Carbide End Mills

Designed for milling small precision components in a variety of materials



MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
.015	1/8	.047	1-1/2	101-210	**43.50**	102-208	**51.90**
.020	1/8	.063	1-1/2	101-211	**38.50**	102-211	**47.00**
.025	1/8	.078	1-1/2	101-212	**32.80**	102-212	**44.40**
.030	1/8	.094	1-1/2	101-213	**22.60**	102-213	**30.40**
.035	1/8	.109	1-1/2	101-214	**19.10**	102-214	**28.00**
.040	1/8	.125	1-1/2	101-215	**19.10**	102-209	**27.20**
.045	1/8	.140	1-1/2	101-216	**19.10**	102-216	**27.20**
.050	1/8	.156	1-1/2	101-217	**20.00**	102-217	**27.20**
.055	1/8	.171	1-1/2	101-218	**20.70**	102-218	**27.20**
.060	1/8	.188	1-1/2	101-219	**20.70**	102-219	**26.70**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

END MILLS

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	3/4	2-1/4	102-961	**16.80**	102-902	**20.70**
3/16	3/16	3/4	2-1/4	102-962	**18.90**	102-904	**22.60**
1/4	1/4	1-1/8	3	102-963	**22.90**	102-906	**27.00**
5/16	5/16	1-1/8	3	102-964	**32.90**	102-908	**35.50**
3/8	3/8	1-1/8	3	102-965	**41.30**	102-910	**47.30**
7/16	7/16	2	4	102-966	**77.20**	102-912	**71.50**
1/2	1/2	2	4	102-967	**80.80**	102-914	**82.20**
5/8	5/8	2-1/4	5	102-968	**151.80**	102-916	**148.80**
3/4	3/4	2-1/4	5	102-969	**196.70**	102-918	**195.30**
1	1	2-1/4	5	102-970	**394.10**	102-920	**371.10**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
3	3	19	57	101-560	**32.10**	102-921	**36.60**
4	4	19	57	101-561	**35.70**	102-923	**43.70**
5	5	25	64	101-562	**36.70**	102-925	**45.00**
6	6	28	76	101-563	**47.10**	102-927	**60.00**
8	8	29	76	101-564	**57.80**	102-929	**72.40**
10	10	32	76	101-565	**73.30**	102-931	**96.10**
12	12	51	102	101-566	**133.70**	102-933	**153.10**
14	14	57	127	101-567	**204.90**	-	-
16	16	57	127	101-568	**249.70**	102-937	**325.40**
18	18	57	127	101-569	**286.20**	102-939	**372.60**
20	20	57	127	101-570	**325.10**	-	-
25	25	57	127	101-571	**651.50**	-	-

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overal Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	1	3	102-400	**17.90**	102-500	**21.40**
3/16	3/16	1-1/8	3	102-402	**20.30**	102-502	**23.60**
1/4	1/4	1-1/2	4	102-404	**25.00**	102-504	**29.70**
5/16	5/16	1-5/8	4	102-406	**36.70**	102-506	**42.50**
3/8	3/8	1-3/4	4	102-408	**46.20**	102-508	**50.90**
7/16	7/16	3	6	102-410	**97.70**	102-510	**104.80**
1/2	1/2	3	6	102-412	**100.80**	102-512	**107.50**
5/8	5/8	3	6	102-414	**180.00**	102-514	**174.80**
3/4	3/4	3	6	102-416	**233.00**	102-516	**229.20**
1	1	3	6	102-418	**467.00**	102-518	**417.80**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/32	1/8	5/64	1-1/2	102-260	**14.80**	102-360	**19.00**
1/16	1/8	1/8	1-1/2	102-262	**14.80**	102-362	**19.00**
3/32	1/8	3/16	1-1/2	102-264	**14.80**	102-364	**19.00**
1/8	1/8	1/4	1-1/2	102-266	**14.10**	102-366	**18.40**
5/32	3/16	5/16	2	102-268	**20.10**	102-368	**23.70**
3/16	3/16	3/8	2	102-270	**35.70**	102-370	**23.80**
7/32	1/4	1/2	2-1/2	102-272	**24.70**	102-372	**27.90**
1/4	1/4	1/2	2-1/2	102-274	**24.70**	102-374	**27.90**
5/16	5/16	1/2	2-1/2	102-276	**36.30**	102-376	**42.40**
3/8	3/8	1/2	2-1/2	102-278	**38.10**	102-378	**44.90**
7/16	7/16	9/16	2-3/4	102-280	**54.80**	102-380	**60.70**
1/2	1/2	5/8	3	102-282	**66.00**	102-382	**71.10**

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	3/8	3/8	3-1/16	101-300	**65.60**	102-001	**87.70**
5/32	3/8	7/16	3-1/8	101-301	**61.90**	102-003	**99.40**
3/16	3/8	1/2	3-1/4	101-302	**69.50**	102-005	**90.40**
7/32	3/8	9/16	3-3/8	101-303	**72.80**	102-007	**95.30**
1/4	3/8	5/8	3-3/8	101-304	**77.70**	102-009	**102.50**
9/32	3/8	11/16	3-3/8	101-305	**87.20**	102-011	**113.50**
5/16	3/8	3/4	3-1/2	101-306	**89.80**	102-013	**116.90**
11/32	3/8	3/4	3-1/2	101-307	**100.60**	-	-
3/8	3/8	3/4	3-1/2	101-308	**100.30**	102-017	**127.50**
7/16	1/2	7/8	4	101-309	**148.80**	102-019	**194.20**
1/2	1/2	1	4	101-310	**156.40**	102-021	**200.20**

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	113-905	**837.80**
Four flute single and double end for 1/16 to 1"	CZD11	113-906	**837.80**
Two and four flute single and double end for 1/8 to 1" x 8ths	CZD12	113-907	**211.60**

End Mill Sheath Rack

- ABS plastic
- 62 sheaths



Model	Size Range (mm)	Dimensions	Code No.	Price $
VMS-2	Ø6-Ø42	205x205x80	326-545	**34.60**

2 Flute Corner Radius Regular Length

Two 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.





MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 30°

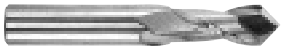
Bright: Speeds & Feeds☞ P. A34
TiAlN: Speeds & Feeds☞ P. A37

Inch

Cutting Dia.	Corner Radius	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	.015"	1/8	1/2	1-1/2	101-140	**21.90**	102-023	**28.10**
3/16	.020"	3/16	5/8	2	101-141	**30.20**	102-025	**38.70**
3/16	.030"	3/16	5/8	2	101-142	**30.20**	102-027	**38.70**
1/4	.020"	1/4	3/4	2-1/2	101-143	**39.10**	102-029	**49.70**
1/4	.030"	1/4	3/4	2-1/2	101-144	**39.10**	102-031	**49.70**
1/4	.045"	1/4	3/4	2-1/2	101-145	**40.50**	102-033	**49.70**
5/16	.020"	5/16	13/16	2-1/2	101-146	**45.50**	102-035	**59.00**
5/16	.030"	5/16	13/16	2-1/2	101-147	**45.50**	102-037	**59.00**
5/16	.045"	5/16	13/16	2-1/2	101-148	**45.50**	102-039	**59.00**
3/8	.020"	3/8	1	2-1/2	101-149	**58.20**	102-041	**75.50**
3/8	.030"	3/8	1	2-1/2	101-150	**61.10**	102-043	**78.90**
3/8	.045"	3/8	1	2-1/2	101-151	**58.20**	102-045	**75.50**
1/2	.020"	1/2	1	3	101-152	**98.80**	102-046	**128.20**
1/2	.030"	1/2	1	3	101-153	**98.80**	102-047	**128.20**
1/2	.045"	1/2	1	3	101-154	**98.80**	102-048	**128.20**
1/2	.060"	1/2	1	3	101-155	**98.80**	102-049	**128.20**
5/8	.020"	5/8	1-1/4	3-1/2	101-156	**165.60**	102-051	**214.90**
5/8	.030"	5/8	1-1/4	3-1/2	101-157	**166.10**	102-053	**215.70**
5/8	.045"	5/8	1-1/4	3-1/2	101-158	**166.10**	102-055	**215.70**
5/8	.060"	5/8	1-1/4	3-1/2	101-159	**171.00**	102-057	**222.00**
5/8	.090"	5/8	1-1/4	3-1/2	101-160	**171.80**	102-059	**222.90**
3/4	.020"	3/4	1-1/2	4	101-162	**236.00**	102-061	**306.40**
3/4	.030"	3/4	1-1/2	4	101-163	**191.00**	102-063	**306.40**
3/4	.045"	3/4	1-1/2	4	101-164	**242.30**	102-065	**314.70**
3/4	.060"	3/4	1-1/2	4	101-165	**242.30**	102-067	**314.70**
3/4	.090"	3/4	1-1/2	4	101-166	**243.30**	102-069	**315.90**
3/4	.125"	3/4	1-1/2	4	101-161	**223.00**	-	-
1	.020"	1	1-1/2	4	101-168	**438.00**	102-073	**568.80**
1	.030"	1	1-1/2	4	101-169	**438.00**	102-075	**568.80**
1	.045"	1	1-1/2	4	101-170	**445.00**	102-077	**578.10**
1	.060"	1	1-1/2	4	101-171	**445.00**	102-079	**578.10**
1	.090"	1	1-1/2	4	101-172	**460.80**	102-081	**587.80**
1	.125"	1	1-1/2	4	101-167	**460.80**	102-083	**587.80**

Carbide Drill Mills

- Drill/Mills can be used for drilling, slotting, profile milling
- 2 Flute - 60º & 90º included point angle
- Made from submicron grain carbide
- Cutting diameter tolerance: +.000/-.002





Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Bright 60º Code No.	Price $
1/16	1/8	3/16	1-1/2	153-187	**20.20**
3/32	1/8	3/8	1-1/2	153-189	**20.20**
1/8	1/8	1/2	1-1/2	153-191	**18.70**
3/16	3/16	5/8	2	153-193	**26.80**
1/4	1/4	3/4	2-1/2	153-195	**34.40**
5/16	5/16	13/16	2-1/2	153-197	**41.40**
3/8	3/8	1	2-1/2	153-199	**54.10**
7/16	7/16	1	2-3/4	153-201	**59.90**
1/2	1/2	1	3	153-203	**89.40**
5/8	5/8	1-1/4	3-1/2	153-205	**172.30**
3/4	3/4	1-1/2	4	153-207	**301.70**

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Bright 90º Code No.	Price $
1/16	1/8	3/16	1-1/2	153-186	**19.40**
3/32	1/8	3/8	1-1/2	153-188	**20.20**
1/8	1/8	1/2	1-1/2	153-190	**18.70**
3/16	3/16	5/8	2	153-192	**26.80**
1/4	1/4	3/4	2-1/2	153-194	**34.40**
5/16	5/16	13/16	2-1/2	153-196	**43.40**
3/8	3/8	1	2-1/2	153-198	**54.10**
7/16	7/16	1	2-3/4	153-200	**70.90**
1/2	1/2	1	3	153-202	**89.40**
5/8	5/8	1-1/4	3-1/2	153-204	**172.30**
3/4	3/4	1-1/2	4	153-206	**301.70**

END MILLS

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



MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	1/8	1/2	1-1/2	103-872	**13.20**	102-862	**18.70**
3/16	3/16	5/8	2	103-873	**19.00**	102-864	**23.80**
1/4	1/4	3/4	2-1/2	103-874	**24.10**	102-866	**27.90**
5/16	5/16	13/16	2-1/2	103-877	**27.90**	102-868	**36.70**
3/8	3/8	1	2-1/2	103-875	**37.40**	102-870	**46.00**
1/2	1/2	1	3	103-876	**61.60**	102-872	**71.40**
9/16	9/16	1-1/8	3-1/2	103-892	**97.00**	102-874	**100.60**
5/8	5/8	1-1/4	3-1/2	103-893	**117.20**	102-876	**118.30**
11/16	3/4	1-3/8	4	103-894	**164.90**	102-877	**196.80**
3/4	3/4	1-1/2	4	103-895	**164.30**	102-878	**170.50**
7/8	7/8	1-1/2	4	103-896	**227.90**	102-879	**317.30**
1	1	1-1/2	4	103-897	**262.20**	102-880	**264.50**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
.5	3	1.5	39	101-460	**44.40**	102-107	**55.10**
1	3	3	39	101-461	**32.60**	102-108	**37.20**
1.5	3	5	39	101-462	**21.10**	102-109	**27.80**
2	3	7	39	102-740	**14.20**	102-111	**23.00**
2.5	3	7	39	102-741	**14.20**	102-113	**23.00**
3	3	9	39	102-742	**14.20**	102-115	**20.10**
3.5	4	12	51	102-743	**19.10**	102-117	**31.60**
4	4	14	51	102-744	**19.10**	102-119	**27.70**
4.5	5	14	51	102-745	**21.20**	102-121	**35.50**
5	5	16	51	102-746	**21.20**	102-123	**35.50**
6	6	19	64	102-747	**25.60**	102-182	**42.40**
7	8	19	64	102-748	**29.60**	102-183	**51.40**
8	8	21	64	102-749	**29.60**	102-184	**51.40**
9	10	22	70	102-750	**46.00**	102-186	**80.40**
10	10	22	70	102-751	**46.00**	102-187	**82.10**
11	11	25	70	102-752	**65.50**	102-188	**102.50**
12	12	25	76	102-753	**65.50**	102-189	**102.50**
14	14	30	89	102-755	**104.10**	102-191	**173.30**
16	16	32	89	102-756	**125.20**	102-192	**187.60**
18	18	35	102	102-757	**160.80**	102-193	**286.00**
20	20	38	102	102-758	**190.70**	102-194	**362.10**
22	22	38	102	101-481	**332.70**	102-195	**534.90**
25	25	38	102	102-759	**291.90**	102-196	**485.30**

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-240	**35.00**	102-197	**40.10**
3/64	1/8	3/32	1-1/2	101-241	**22.60**	102-198	**29.60**
1/16	1/8	1/8	1-1/2	101-242	**20.10**	102-199	**26.80**
5/64	1/8	5/32	1-1/2	101-243	**22.60**	102-201	**29.40**
3/32	1/8	3/16	1-1/2	101-244	**20.10**	102-239	**26.60**
7/64	1/8	7/32	1-1/2	101-245	**22.60**	102-241	**30.30**
1/8	1/8	1/4	1-1/2	101-246	**19.40**	102-243	**27.40**
9/64	3/16	9/32	2	101-247	**22.60**	102-245	**30.30**
5/32	3/16	5/16	2	101-248	**28.40**	102-247	**36.90**
3/16	3/16	3/8	2	101-249	**26.20**	102-249	**35.10**
7/32	1/4	7/16	2	101-250	**29.00**	102-251	**39.10**
1/4	1/4	1/2	2	101-251	**29.60**	102-252	**44.80**
5/16	5/16	1/2	2	101-252	**42.30**	102-253	**63.60**
3/8	3/8	5/8	2	101-253	**60.10**	102-254	**85.30**
7/16	7/16	5/8	2-1/2	101-254	**76.90**	102-255	**102.30**
1/2	1/2	5/8	2-1/2	101-255	**96.40**	102-256	**123.20**
5/8	5/8	3/4	3	101-256	**149.50**	102-257	**186.00**
3/4	3/4	1	3	101-257	**232.90**	102-258	**289.70**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1	3	2	39	101-670	**35.00**	102-259	**46.50**
1.5	3	3	39	101-671	**20.10**	102-261	**26.80**
2	3	4	39	101-672	**22.60**	102-263	**29.90**
2.5	3	5	39	101-673	**20.10**	-	-
3	3	6	39	101-674	**19.40**	102-267	**26.10**
3.5	4	7	51	101-675	**27.10**	102-269	**36.20**
4	4	8	51	101-676	**26.20**	102-271	**35.00**
4.5	5	9	51	101-677	**28.50**	-	-
5	5	10	51	101-678	**29.00**	102-275	**38.70**
6	6	12	51	101-679	**29.60**	102-277	**39.60**
7	8	12	51	101-680	**29.60**	102-279	**39.50**
8	8	12	51	101-681	**42.30**	102-281	**55.90**
9	10	14	51	101-682	**49.00**	-	-
10	10	14	51	101-683	**60.40**	102-285	**79.30**
11	11	16	64	101-684	**62.50**	-	-
12	12	16	64	101-685	**96.70**	-	-

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | LONG LENGTH | 30°

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	1/8	3/4	2-1/4	102-971	**20.50**	102-780	**23.90**
3/16	3/16	3/4	2-1/2	102-972	**28.90**	102-782	**32.80**
1/4	1/4	1-1/8	3	102-973	**36.90**	102-784	**42.40**
5/16	5/16	1-1/8	3	102-974	**41.60**	102-786	**49.10**
3/8	3/8	1-1/8	3	102-975	**53.60**	102-788	**62.10**
7/16	7/16	2	4	102-976	**77.40**	102-790	**89.80**
1/2	1/2	2	4	102-977	**89.40**	102-792	**102.70**
5/8	5/8	2-1/4	5	102-978	**206.80**	102-794	**212.70**
3/4	3/4	2-1/4	5	102-979	**305.30**	102-796	**302.20**
1	1	2-1/4	5	102-980	**540.30**	102-798	**421.00**

Bright: Speeds & Feeds ☞ P. A36
TiAIN: Speeds & Feeds ☞ P. A37

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
3	3	19	57	101-580	**36.80**	102-085	**48.70**
4	4	19	57	101-581	**41.20**	102-086	**54.30**
5	5	25	64	101-582	**42.20**	102-087	**52.30**
6	6	28	76	101-583	**54.10**	102-089	**72.10**
8	8	29	76	101-584	**66.60**	-	-
10	10	32	76	101-585	**84.50**	-	-
12	12	51	102	101-586	**154.30**	-	-
14	14	57	127	101-587	**235.60**	-	-
16	16	57	127	101-588	**287.10**	-	-
18	18	57	127	101-589	**330.30**	-	-
20	20	57	127	101-590	**373.80**	-	-
25	25	57	127	101-591	**749.10**	-	-

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	1	3	102-420	**24.20**	102-520	**26.80**
3/16	3/16	1-1/8	3	102-422	**34.10**	102-522	**35.40**
1/4	1/4	1-1/2	4	102-424	**43.70**	102-524	**45.70**
5/16	5/16	1-5/8	4	102-426	**49.20**	102-526	**53.20**
3/8	3/8	1-3/4	4	102-428	**62.10**	102-528	**66.70**
7/16	7/16	3	6	102-430	**121.80**	102-530	**101.80**
1/2	1/2	3	6	102-432	**119.30**	102-532	**123.00**
5/8	5/8	3	6	102-434	**246.00**	102-534	**231.00**
3/4	3/4	3	6	102-436	**361.70**	102-536	**338.60**
1	1	3	6	102-438	**643.00**	102-538	**583.60**

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.



MICROGRAIN CARBIDE | BRIGHT | TIALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-331	**49.90**	102-291	**57.00**
3/64	1/8	3/32	1-1/2	101-332	**34.00**	102-293	**43.30**
1/16	1/8	1/8	1-1/2	101-333	**30.60**	102-295	**41.10**
3/32	1/8	3/16	1-1/2	101-334	**30.60**	102-297	**41.10**
1/8	1/8	1/4	1-1/2	101-335	**28.40**	102-299	**38.30**
5/32	3/16	5/16	2	101-336	**41.80**	102-323	**54.10**
3/16	3/16	3/8	2	101-337	**40.90**	102-324	**52.10**
7/32	1/4	1/2	2-1/2	101-338	**53.20**	102-325	**76.20**
1/4	1/4	1/2	2-1/2	101-339	**51.60**	102-326	**75.60**
5/16	5/16	1/2	2-1/2	101-351	**40.50**	102-327	**78.70**
3/8	3/8	1/2	2-1/2	101-352	**79.40**	102-328	**113.30**
7/16	7/16	9/16	2-3/4	101-353	**102.50**	102-329	**144.70**
1/2	1/2	5/8	3	101-354	**134.40**	102-331	**172.10**

2 Flute Ball Nose Double End Regular Length

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



MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	3/8	3/8	3-1/16	101-320	**75.40**	102-333	**98.80**
5/32	3/8	7/16	3-1/8	101-321	**79.90**	102-335	**104.70**
3/16	3/8	1/2	3-1/4	101-322	**76.20**	102-337	**97.10**
7/32	3/8	9/16	3-3/8	101-323	**88.20**	102-339	**115.30**
1/4	3/8	5/8	3-3/8	101-324	**85.10**	102-341	**108.90**
9/32	3/8	11/16	3-3/8	101-325	**100.10**	102-343	**131.00**
5/16	3/8	3/4	3-1/2	101-326	**98.30**	102-345	**124.40**
11/32	3/8	3/4	3-1/2	101-327	**115.20**	102-347	**150.60**
3/8	3/8	3/4	3-1/2	101-328	**115.70**	102-349	**138.50**
7/16	1/2	7/8	4	101-329	**171.90**	-	-
1/2	1/2	1	4	101-330	**180.60**	102-352	**225.00**

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



MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A34
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/16	1/8	3/16	1-1/2	101-080	**18.30**	102-353	**26.00**
5/64	1/8	3/16	1-1/2	101-081	**20.20**	102-354	**26.90**
3/32	1/8	5/16	1-1/2	101-082	**18.30**	102-355	**26.10**
7/64	1/8	7/16	1-1/2	101-083	**20.20**	102-356	**27.10**
1/8	1/8	1/2	1-1/2	101-084	**18.30**	102-357	**24.30**
9/64	3/16	1/2	2	101-085	**28.40**	102-358	**36.00**
5/32	3/16	9/16	2	101-086	**26.30**	102-359	**37.00**
11/64	3/16	5/8	2	101-087	**26.90**	102-361	**37.80**
3/16	3/16	5/8	2	101-088	**26.30**	102-363	**34.50**
13/64	1/4	5/8	2-1/2	101-089	**36.20**	102-365	**48.10**
7/32	1/4	5/8	2-1/2	101-090	**34.50**	102-367	**46.00**
15/64	1/4	3/4	2-1/2	101-091	**37.90**	102-369	**50.20**
1/4	1/4	3/4	2-1/2	101-092	**33.30**	102-371	**47.10**
17/64	5/16	3/4	2-1/2	101-093	**39.50**	102-373	**52.20**
9/32	5/16	3/4	2-1/2	101-094	**39.50**	102-375	**52.90**
19/64	5/16	13/16	2-1/2	101-095	**41.10**	102-377	**54.90**
5/16	5/16	13/16	2-1/2	101-096	**38.50**	102-379	**63.20**
3/8	3/8	1	2-1/2	101-097	**52.00**	102-381	**75.30**
7/16	7/16	1	2-3/4	101-098	**71.10**	102-383	**102.90**
1/2	1/2	1	3	101-099	**85.30**	102-384	**118.40**
9/16	9/16	1-1/8	3-1/2	101-100	**116.90**	102-385	**133.20**
5/8	5/8	1-1/4	3-1/2	101-101	**142.70**	102-386	**192.50**
11/16	3/4	1-3/8	4	101-102	**218.40**	-	-
3/4	3/4	1-1/2	4	101-103	**208.90**	102-388	**270.80**
7/8	7/8	1-1/2	4	101-104	**356.10**	102-389	**445.90**
1	1	1-1/2	4	101-105	**386.90**	102-390	**472.10**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1	3	3	39	101-490	**28.30**	102-391	**32.30**
1.5	3	5	39	101-491	**18.40**	102-392	**24.60**
2	3	7	39	101-492	**20.20**	102-393	**25.40**
2.5	3	8	39	101-493	**19.50**	-	-
3	3	10	39	101-494	**15.10**	-	-
3.5	4	12	51	101-495	**25.20**	102-396	**33.30**
4	4	14	51	101-496	**21.80**	-	-
4.5	5	14	51	101-497	**27.90**	102-398	**35.80**
5	5	16	51	101-498	**27.90**	102-399	**35.80**
6	6	19	64	101-499	**33.30**	102-401	**44.70**
7	8	19	64	101-500	**37.80**	102-403	**51.00**
8	8	21	64	101-501	**38.70**	102-405	**52.30**
9	10	22	70	101-502	**44.50**	102-407	**71.20**
10	10	25	70	101-503	**52.00**	102-409	**70.30**
11	11	25	70	101-504	**71.40**	-	-
12	12	25	76	101-505	**85.70**	102-413	**109.40**
14	14	30	89	101-506	**116.30**	102-415	**149.90**
16	16	32	89	101-507	**143.20**	102-417	**182.30**
18	18	35	102	101-508	**185.00**	102-419	**243.50**
20	20	38	102	101-509	**209.70**	102-421	**303.00**
22	22	38	102	101-510	**357.30**	102-423	**469.10**
25	25	38	102	101-511	**388.30**	102-425	**509.70**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

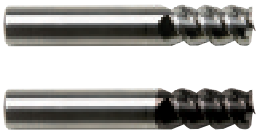
Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

END MILLS

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 60°

Bright: Speeds & Feeds☞ P. A35
TiAlN: Speeds & Feeds☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	1/2	1-1/2	101-000	**23.30**	102-427	**31.20**
3/16	3/16	5/8	2	101-002	**32.90**	102-429	**41.80**
1/4	1/4	3/4	2-1/2	101-004	**43.80**	102-431	**55.30**
5/16	5/16	13/16	2-1/2	101-006	**61.40**	102-433	**74.00**
3/8	3/8	1	2-1/2	101-008	**66.00**	102-435	**86.70**
7/16	7/16	1	2-3/4	101-010	**82.20**	102-437	**106.70**
1/2	1/2	1	3	101-012	**103.30**	102-439	**130.20**
5/8	5/8	1-1/4	3-1/2	101-014	**207.90**	102-440	**252.50**
3/4	3/4	1-1/2	4	101-016	**248.50**	102-441	**313.30**
1	1	1-1/2	4	101-018	**460.60**	102-442	**552.70**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $
6	6	19	64	101-730	**37.90**
8	8	21	64	101-731	**45.40**
10	10	25	70	101-732	**68.60**
12	12	25	76	101-733	**81.40**
14	14	29	89	101-734	**135.00**
16	16	32	89	101-735	**161.00**
18	18	38	102	101-736	**267.50**
20	20	38	102	101-737	**317.30**
25	25	38	102	101-738	**484.80**

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



MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 30°

Bright: Speeds & Feeds☞ P. A36
TiAlN: Speeds & Feeds☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/16	1/8	3/16	1-1/2	101-110	**20.90**	102-455	**28.30**
5/64	1/8	3/16	1-1/2	101-111	**23.10**	102-457	**26.40**
3/32	1/8	5/16	1-1/2	101-112	**20.90**	102-459	**28.30**
7/64	1/8	7/16	1-1/2	101-113	**34.80**	102-461	**39.70**
1/8	1/8	1/2	1-1/2	101-114	**20.90**	102-463	**28.30**
9/64	3/16	1/2	2	101-115	**32.50**	102-465	**42.80**
5/32	3/16	9/16	2	101-116	**30.20**	102-467	**38.70**
11/64	3/16	5/8	2	101-117	**32.60**	102-469	**42.80**
3/16	3/16	5/8	2	101-118	**30.20**	102-470	**38.70**
13/64	1/4	5/8	2-1/2	101-119	**39.60**	102-471	**54.00**
7/32	1/4	5/8	2-1/2	101-120	**39.60**	102-472	**54.00**
15/64	1/4	3/4	2-1/2	101-121	**47.50**	102-473	**58.70**
1/4	1/4	3/4	2-1/2	101-122	**38.20**	102-474	**51.50**
17/64	5/16	3/4	2-1/2	101-123	**45.60**	102-475	**61.90**
9/32	5/16	3/4	2-1/2	101-124	**45.60**	102-476	**62.00**
19/64	5/16	13/16	2-1/2	101-125	**47.20**	102-477	**64.10**
5/16	5/16	13/16	2-1/2	101-126	**44.30**	102-478	**59.80**
3/8	3/8	1	2-1/2	101-127	**59.80**	102-479	**80.80**
7/16	7/16	1	2-3/4	101-128	**81.90**	102-481	**106.80**
1/2	1/2	1	3	101-129	**98.20**	102-483	**124.90**
9/16	9/16	1-1/8	3-1/2	101-130	**134.40**	-	-
5/8	5/8	1-1/4	3-1/2	101-131	**164.10**	102-487	**204.00**
11/16	3/4	1-3/8	4	101-132	**251.10**	-	-
3/4	3/4	1-1/2	4	101-133	**228.80**	102-491	**287.10**
7/8	7/8	1-1/2	4	101-134	**411.00**	-	-
1	1	1-1/2	4	101-135	**444.90**	102-495	**553.60**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1	3	3	39	101-520	**32.60**	102-497	**37.20**
1.5	3	5	39	101-521	**21.10**	102-499	**28.20**
2	3	7	39	101-522	**23.10**	102-501	**29.90**
2.5	3	8	39	101-523	**20.10**	102-503	**26.90**
3	3	10	39	101-524	**20.10**	102-505	**26.90**
3.5	4	12	51	101-525	**29.00**	102-507	**38.70**
4	4	14	51	101-526	**30.20**	102-509	**38.80**
4.5	5	14	51	101-527	**32.20**	102-511	**42.70**
5	5	16	51	101-528	**32.20**	102-513	**40.50**
6	6	19	64	101-529	**38.10**	102-515	**51.50**
7	8	19	64	101-530	**40.00**	-	-
8	8	21	64	101-531	**44.50**	102-519	**60.10**
9	10	22	70	101-532	**51.20**	102-521	**80.40**
10	10	25	70	101-533	**48.40**	102-523	**79.50**
11	11	25	70	101-534	**66.50**	-	-
12	12	25	76	101-535	**98.50**	102-527	**125.60**
14	14	30	89	101-536	**133.70**	102-529	**174.70**
16	16	32	89	101-537	**164.60**	102-531	**204.80**
18	18	35	102	101-538	**212.60**	102-533	**277.10**
20	20	38	102	101-539	**240.30**	102-535	**316.90**
22	22	38	102	101-540	**411.00**	102-537	**539.40**
25	25	38	102	101-541	**361.40**	102-539	**586.00**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

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





MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	1/8	1-1/2	103-781	**16.40**	102-899	**24.20**
3/64	1/8	9/64	1-1/2	103-782	**11.60**	102-831	**22.60**
1/16	1/8	3/16	1-1/2	103-870	**10.60**	102-832	**16.90**
5/64	1/8	1/4	1-1/2	103-783	**10.50**	102-833	**20.40**
3/32	1/8	5/16	1-1/2	103-871	**10.60**	102-834	**16.90**
7/64	1/8	3/8	1-1/2	103-784	**10.60**	102-835	**20.40**
1/8	1/8	1/2	1-1/2	103-860	**10.60**	102-836	**16.40**
9/64	3/16	1/2	2	103-785	**13.10**	102-837	**20.40**
5/32	3/16	9/16	2	103-861	**13.10**	102-839	**31.60**
11/64	3/16	9/16	2	103-786	**14.70**	102-841	**25.90**
3/16	3/16	5/8	2	103-862	**14.70**	102-838	**20.00**
13/64	1/4	5/8	2-1/2	103-787	**18.50**	102-843	**19.10**
7/32	1/4	5/8	2-1/2	103-863	**18.50**	102-845	**38.40**
1/4	1/4	3/4	2-1/2	103-864	**18.50**	102-840	**23.10**
9/32	5/16	3/4	2-1/2	103-865	**24.10**	102-847	**47.70**
5/16	5/16	13/16	2-1/2	103-866	**24.10**	102-842	**33.40**
11/32	3/8	7/8	2-1/2	103-789	**30.10**	102-849	**61.90**
3/8	3/8	1	2-1/2	103-867	**30.10**	102-844	**39.60**
13/32	7/16	1	2-3/4	103-790	**46.00**	102-851	**84.00**
7/16	7/16	1	2-3/4	103-868	**46.00**	102-846	**54.30**
1/2	1/2	1	3	103-869	**55.70**	102-848	**66.00**
9/16	9/16	1-1/8	3-1/2	103-933	**80.10**	102-850	**90.60**
5/8	5/8	1-1/4	3-1/2	103-934	**99.80**	102-852	**103.60**
11/16	3/4	1-3/8	4	103-935	**140.70**	102-854	**148.00**
3/4	3/4	1-1/2	4	103-936	**140.70**	102-856	**158.00**
7/8	7/8	1-1/2	4	103-937	**197.50**	102-858	**216.30**
1	1	1-1/2	4	103-938	**226.30**	102-860	**245.70**
6PC Set: 1/4", 5/16", 3/8", 1/2", 5/8", 3/4"				103-847	**442.70**		
5PC Set: 3/16", 1/4", 5/16", 3/8", 1/2"						102-959	**162.60**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1	3	3	39	101-550	**28.30**	102-601	**32.30**
1.5	3	5	39	101-551	**18.30**	102-603	**24.60**
2	3	7	39	102-716	**11.30**	102-605	**19.50**
2.5	3	8	39	102-717	**11.30**	102-607	**19.50**
3	3	10	39	102-718	**11.30**	102-609	**19.50**
3.5	4	12	51	102-719	**13.40**	102-611	**27.70**
4	4	14	51	102-720	**13.40**	102-613	**27.70**
4.5	5	14	51	102-721	**16.30**	102-615	**30.80**
5	5	16	51	102-722	**16.30**	102-617	**30.80**
6	6	19	64	102-723	**19.40**	102-619	**36.00**
7	8	19	64	102-724	**25.50**	102-621	**43.80**
8	8	21	64	102-725	**25.50**	102-623	**43.80**
9	10	22	70	102-726	**37.90**	102-625	**71.20**
10	10	25	70	102-727	**37.90**	102-627	**71.20**
11	11	25	70	102-728	**58.60**	102-629	**87.50**
12	12	25	76	102-729	**58.60**	102-657	**87.50**
14	14	30	89	102-731	**84.30**	102-659	**151.00**
16	16	32	89	102-732	**105.20**	102-661	**163.40**
18	18	35	102	102-733	**136.00**	102-663	**243.50**
20	20	38	102	102-734	**163.30**	102-665	**303.00**
22	22	38	102	102-736	**356.10**	102-667	**443.00**
25	25	38	102	102-735	**249.50**	102-669	**399.80**

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.





MICROGRAIN CARBIDE | BRIGHT | TIALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-260	**27.70**	102-540	**32.50**
3/64	1/8	3/32	1-1/2	101-261	**19.70**	102-541	**27.40**
1/16	1/8	1/8	1-1/2	101-262	**17.40**	102-542	**25.20**
5/64	1/8	5/32	1-1/2	101-263	**16.00**	102-543	**26.70**
3/32	1/8	3/16	1-1/2	101-264	**17.40**	102-544	**31.60**
7/64	1/8	7/32	1-1/2	101-265	**19.70**	102-545	**25.90**
1/8	1/8	1/4	1-1/2	101-266	**16.90**	102-546	**27.60**
9/64	3/16	9/32	2	101-267	**19.70**	102-547	**25.90**
5/32	3/16	5/16	2	101-268	**21.80**	-	-
3/16	3/16	3/8	2	101-269	**22.80**	102-549	**30.20**
7/32	1/4	7/16	2	101-270	**25.20**	102-551	**39.60**
1/4	1/4	1/2	2	101-271	**25.80**	102-553	**41.60**
5/16	5/16	1/2	2	101-272	**36.80**	102-555	**59.20**
3/8	3/8	5/8	2	101-273	**52.20**	102-557	**72.40**
7/16	7/16	5/8	2-1/2	101-274	**63.70**	102-559	**89.70**
1/2	1/2	5/8	2-1/2	101-275	**83.90**	102-561	**104.20**
5/8	5/8	3/4	3	101-276	**130.10**	102-563	**178.20**
3/4	3/4	1	3	101-277	**201.80**	102-565	**262.00**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1	3	2	39	101-690	**27.70**	102-567	**31.50**
1.5	3	3	39	101-691	**17.40**	102-569	**23.50**
2	3	4	39	101-692	**19.70**	102-570	**25.40**
2.5	3	5	39	101-693	**17.40**	102-571	**23.30**
3	3	6	39	101-694	**16.90**	102-572	**22.60**
3.5	4	7	51	101-695	**23.60**	102-573	**31.60**
4	4	8	51	101-696	**22.80**	102-574	**30.00**
4.5	5	9	51	101-697	**18.70**	-	-
5	5	10	51	101-698	**25.50**	-	-
6	6	12	51	101-699	**25.80**	102-577	**36.00**
7	8	12	51	101-700	**25.80**	102-578	**34.30**
8	8	12	51	101-701	**37.10**	102-579	**49.00**
9	10	14	51	101-702	**42.50**	-	-
10	10	14	51	101-703	**52.40**	102-583	**69.60**
11	11	16	64	101-704	**67.10**	-	-
12	12	16	64	101-705	**84.20**	-	-

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

END MILLS

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	1/8	3/4	2-1/4	102-981	**16.80**	102-922	**20.70**
3/16	3/16	3/4	2-1/4	102-982	**18.90**	102-924	**22.60**
1/4	1/4	1-1/8	3	102-983	**22.90**	102-926	**27.00**
5/16	5/16	1-1/8	3	102-984	**32.90**	102-928	**42.50**
3/8	3/8	1-1/8	3	102-985	**41.30**	102-930	**47.30**
7/16	7/16	2	4	102-986	**68.40**	102-932	**71.50**
1/2	1/2	2	4	102-987	**80.80**	102-934	**82.20**
5/8	5/8	2-1/4	5	102-988	**206.80**	102-936	**148.80**
3/4	3/4	2-1/4	5	102-989	**196.70**	102-938	**205.00**
1	1	2-1/4	5	102-990	**394.10**	102-940	**371.10**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
3	3	19	57	101-600	**32.10**	102-901	**36.60**
4	4	19	57	101-601	**35.70**	102-903	**43.70**
5	5	25	64	101-602	**36.70**	102-905	**45.00**
6	6	28	76	101-603	**47.10**	102-907	**60.00**
8	8	29	76	101-604	**57.70**	102-909	**72.40**
10	10	32	76	101-605	**73.30**	102-911	**97.90**
12	12	51	102	101-606	**133.70**	102-913	**153.10**
14	14	57	127	101-607	**204.00**	102-915	**266.10**
16	16	57	127	101-608	**261.80**	-	-
18	18	57	127	101-609	**286.20**	102-919	**356.00**
20	20	57	127	101-610	**323.80**	102-917	**402.80**
25	25	57	127	101-611	**651.50**	-	-

4 Flute Double End Regular Length

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



MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	3/8	3/8	3-1/16	101-340	**65.60**	102-589	**87.70**
5/32	3/8	7/16	3-1/8	101-341	**69.70**	-	-
3/16	3/8	1/2	3-1/4	101-342	**69.50**	102-593	**89.90**
7/32	3/8	9/16	3-3/8	101-343	**76.70**	102-595	**101.30**
1/4	3/8	5/8	3-3/8	101-344	**77.70**	102-597	**102.50**
9/32	3/8	11/16	3-3/8	101-345	**86.70**	102-599	**113.00**
5/16	3/8	3/4	3-1/2	101-346	**89.80**	102-671	**116.90**
11/32	3/8	3/4	3-1/2	101-347	**100.60**	-	-
3/8	3/8	3/4	3-1/2	101-348	**100.30**	102-675	**127.50**
7/16	1/2	7/8	4	101-349	**130.70**	-	-
1/2	1/2	1	4	101-350	**149.00**	102-679	**192.50**

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	1/8	1	3	102-450	**17.90**	102-550	**21.40**
3/16	3/16	1-1/8	3	102-452	**20.30**	102-552	**23.60**
1/4	1/4	1-1/2	4	102-454	**25.00**	102-554	**29.70**
5/16	5/16	1-5/8	4	102-456	**36.70**	102-556	**46.00**
3/8	3/8	1-3/4	4	102-458	**46.20**	102-558	**50.90**
7/16	7/16	3	6	102-460	**97.70**	102-560	**104.80**
1/2	1/2	3	6	102-462	**100.80**	102-562	**107.50**
5/8	5/8	3	6	102-464	**180.00**	102-564	**174.80**
3/4	3/4	3	6	102-466	**233.00**	102-566	**256.00**
1	1	3	6	102-468	**467.00**	102-568	**433.80**

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.



MICROGRAIN CARBIDE | BRIGHT | TiALN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/16	1/8	1/8	1-1/2	102-230	**14.80**	102-330	**19.00**
3/32	1/8	3/16	1-1/2	102-232	**14.80**	102-332	**19.00**
1/8	1/8	1/4	1-1/2	102-234	**14.10**	102-334	**18.40**
5/32	3/16	5/16	2	102-236	**20.10**	102-336	**23.80**
3/16	3/16	3/8	2	102-238	**20.10**	102-338	**23.80**
7/32	1/4	1/2	2-1/2	102-240	**24.80**	102-340	**27.90**
1/4	1/4	1/2	2-1/2	102-242	**24.70**	102-342	**27.90**
5/16	5/16	1/2	2-1/2	102-244	**36.30**	102-344	**42.40**
3/8	3/8	1/2	2-1/2	102-246	**36.60**	102-346	**44.90**
7/16	7/16	9/16	2-3/4	102-248	**54.80**	102-348	**60.80**
1/2	1/2	5/8	3	102-250	**66.00**	102-350	**71.10**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

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.





MICROGRAIN CARBIDE | BRIGHT | TiALN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A35
TiAIN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Corner Radius	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/8	.015"	1/8	1/2	1-1/2	101-175	**21.90**	101-833	**27.20**
3/16	.020"	3/16	5/8	2	101-176	**30.20**	101-834	**38.70**
3/16	.030"	3/16	5/8	2	101-177	**30.20**	101-835	**38.70**
1/4	.020"	1/4	3/4	2-1/2	101-178	**39.10**	101-836	**49.70**
1/4	.030"	1/4	3/4	2-1/2	101-179	**39.10**	101-837	**49.70**
1/4	.045"	1/4	3/4	2-1/2	101-180	**40.50**	101-838	**49.70**
5/16	.020"	5/16	13/16	2-1/2	101-181	**45.50**	101-839	**59.00**
5/16	.030"	5/16	13/16	2-1/2	101-182	**45.50**	101-862	**59.00**
5/16	.045"	5/16	13/16	2-1/2	101-183	**45.50**	101-863	**59.00**
3/8	.020"	3/8	1	2-1/2	101-184	**61.10**	101-864	**78.90**
3/8	.030"	3/8	1	2-1/2	101-185	**61.10**	101-865	**78.90**
3/8	.045"	3/8	1	2-1/2	101-186	**61.10**	101-866	**78.90**
1/2	.020"	1/2	1	3	101-187	**98.80**	101-867	**128.20**
1/2	.030"	1/2	1	3	101-188	**98.80**	101-868	**128.20**
1/2	.045"	1/2	1	3	101-189	**98.80**	101-869	**128.20**
1/2	.060"	1/2	1	3	101-190	**98.80**	101-892	**128.20**
5/8	.020"	5/8	1-1/4	3-1/2	101-191	**166.10**	101-893	**215.70**
5/8	.030"	5/8	1-1/4	3-1/2	101-192	**165.60**	101-894	**214.90**
5/8	.045"	5/8	1-1/4	3-1/2	101-193	**165.60**	101-895	**214.90**
5/8	.060"	5/8	1-1/4	3-1/2	101-194	**171.00**	101-896	**222.00**
5/8	.090"	5/8	1-1/4	3-1/2	101-195	**171.80**	101-897	**222.90**
3/4	.020"	3/4	1-1/2	4	101-197	**235.00**	101-898	**305.20**
3/4	.030"	3/4	1-1/2	4	101-198	**235.00**	101-899	**305.20**
3/4	.045"	3/4	1-1/2	4	101-199	**243.30**	101-990	**315.90**
3/4	.060"	3/4	1-1/2	4	101-200	**242.30**	101-991	**314.70**
3/4	.090"	3/4	1-1/2	4	101-201	**230.80**	101-992	**299.70**
3/4	.125"	3/4	1-1/2	4	101-196	**246.40**	101-993	**320.10**
1	.020"	1	1-1/2	4	101-203	**438.00**	101-994	**568.80**
1	.030"	1	1-1/2	4	101-204	**436.30**	101-995	**566.70**
1	.045"	1	1-1/2	4	101-205	**445.00**	101-996	**578.10**
1	.060"	1	1-1/2	4	101-206	**407.30**	101-997	**503.90**
1	.090"	1	1-1/2	4	101-207	**437.10**	101-998	**567.80**
1	.125"	1	1-1/2	4	101-202	**459.10**	101-999	**587.80**

4 Flute Ball Nose Stub Length

Strength, rigidity and improved tool life can be obtained with this Stub Length End Mill.





MICROGRAIN CARBIDE | BRIGHT | TiALN | STUB LENGTH | 30°

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-280	**35.00**	102-681	**43.90**
3/64	1/8	3/32	1-1/2	101-281	**22.60**	102-683	**29.60**
1/16	1/8	1/8	1-1/2	101-282	**20.10**	102-685	**26.80**
5/64	1/8	5/32	1-1/2	101-283	**22.60**	102-687	**31.40**
3/32	1/8	3/16	1-1/2	101-284	**20.10**	102-689	**26.60**
7/64	1/8	7/32	1-1/2	101-285	**22.60**	102-691	**30.60**
1/8	1/8	1/4	1-1/2	101-286	**19.40**	102-693	**27.40**
9/64	3/16	9/32	2	101-287	**28.50**	102-694	**38.00**
5/32	3/16	5/16	2	101-288	**28.40**	102-695	**36.90**
3/16	3/16	3/8	2	101-289	**26.20**	102-781	**35.10**
7/32	1/4	7/16	2	101-290	**29.00**	102-783	**39.10**
1/4	1/4	1/2	2	101-291	**29.60**	102-785	**44.80**
5/16	5/16	1/2	2	101-292	**42.30**	102-787	**63.60**
3/8	3/8	5/8	2	101-293	**60.10**	102-789	**85.30**
7/16	7/16	5/8	2-1/2	101-294	**76.90**	102-791	**104.40**
1/2	1/2	5/8	2-1/2	101-295	**96.70**	102-793	**123.20**
5/8	5/8	3/4	3	101-296	**149.50**	102-795	**186.00**
3/4	3/4	1	3	101-297	**232.90**	102-797	**289.70**

Bright: Speeds & Feeds ☞ P. A36
TiAIN: Speeds & Feeds ☞ P. A37

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAIN Code No.	Price $
1	3	2	39	101-710	**22.50**	102-891	**36.90**
1.5	3	3	39	101-711	**17.40**	102-893	**23.50**
2	3	4	39	101-712	**19.80**	-	-
2.5	3	5	39	101-713	**17.40**	-	-
3	3	6	39	101-714	**16.90**	102-941	**22.90**
3.5	4	7	51	101-715	**27.10**	-	-
4	4	8	51	101-716	**23.00**	-	-
4.5	5	9	51	101-717	**28.50**	-	-
5	5	10	51	101-718	**29.10**	102-935	**38.70**
6	6	12	51	101-719	**27.20**	102-945	**36.30**
7	8	12	51	101-720	**25.90**	-	-
8	8	12	51	101-721	**30.00**	-	-
9	10	14	51	101-722	**48.80**	102-943	**64.20**
10	10	14	51	101-723	**52.40**	-	-
11	11	16	64	101-724	**67.10**	-	-
12	12	16	64	101-725	**84.20**	-	-

END MILLS

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



Inch

MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH | 30°

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	1/2	1-1/2	103-880	**13.20**	102-882	**18.70**
3/16	3/16	5/8	2	103-881	**19.00**	102-884	**23.80**
1/4	1/4	3/4	2-1/2	103-882	**24.10**	102-886	**27.90**
5/16	5/16	13/16	2-1/2	103-883	**27.90**	102-888	**36.70**
3/8	3/8	1	2-1/2	103-884	**37.40**	102-890	**46.00**
1/2	1/2	1	3	103-885	**61.60**	102-892	**71.40**
9/16	9/16	1-1/8	3-1/2	103-939	**97.00**	102-894	**100.60**
5/8	5/8	1-1/4	3-1/2	103-940	**117.20**	102-896	**118.30**
11/16	3/4	1-3/8	4	103-941	**164.30**	102-895	**230.70**
3/4	3/4	1-1/2	4	103-942	**164.30**	102-898	**179.10**
7/8	7/8	1-1/2	4	103-943	**227.90**	102-897	**390.40**
1	1	1-1/2	4	103-944	**262.20**	102-900	**277.70**

Metric

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1	3	3	39	102-737	**32.60**	101-635	**37.20**
1.5	3	5	39	102-738	**20.90**	101-636	**27.70**
2	3	7	39	102-760	**14.20**	101-637	**23.00**
2.5	3	8	39	102-761	**14.20**	101-638	**23.00**
3	3	10	39	102-762	**14.20**	101-639	**20.10**
3.5	4	12	51	102-763	**15.60**	101-656	**27.70**
4	4	14	51	102-764	**19.10**	101-657	**31.60**
4.5	5	14	51	102-765	**21.20**	101-658	**35.50**
5	5	16	51	102-766	**21.20**	101-659	**35.50**
6	6	19	64	102-767	**25.60**	101-660	**37.10**
7	8	19	64	102-768	**29.60**	101-661	**51.40**
8	8	21	64	102-769	**29.60**	101-662	**51.40**
9	10	22	70	102-770	**46.10**	101-663	**80.40**
10	10	25	70	102-771	**46.00**	101-664	**82.10**
11	11	25	70	102-772	**65.50**	101-665	**102.50**
12	12	25	76	102-773	**65.50**	101-666	**102.50**
14	14	30	89	102-775	**103.70**	101-667	**173.30**
16	16	32	89	102-776	**125.70**	101-668	**187.60**
18	18	35	102	102-777	**130.70**	101-669	**286.00**
20	20	38	102	102-778	**190.70**	101-686	**362.10**
25	25	38	102	102-779	**291.90**	101-687	**485.30**

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.



Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

MICROGRAIN CARBIDE | BRIGHT | TIALN | LONG LENGTH | 30°

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	3/4	2-1/4	102-991	**20.50**	102-942	**23.90**
3/16	3/16	3/4	2-1/2	102-992	**25.20**	102-944	**32.80**
1/4	1/4	1-1/8	3	102-993	**36.90**	102-946	**42.40**
5/16	5/16	1-1/8	3	102-994	**41.60**	102-948	**49.10**
3/8	3/8	1-1/8	3	102-995	**53.60**	102-950	**62.10**
7/16	7/16	2	4	102-996	**77.20**	102-952	**89.80**
1/2	1/2	2	4	102-997	**89.40**	102-954	**102.70**
5/8	5/8	2-1/4	5	102-998	**196.90**	102-956	**212.70**
3/4	3/4	2-1/4	5	102-999	**305.30**	102-958	**302.20**
1	1	2-1/4	5	103-000	**542.20**	102-960	**421.00**

Metric

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
3	3	19	57	101-620	**36.80**	101-764	**42.00**
4	4	19	57	101-621	**40.90**	101-765	**56.10**
5	5	25	64	101-622	**42.20**	101-766	**52.30**
6	6	28	76	101-623	**54.10**	101-767	**72.20**
8	8	29	76	101-624	**66.40**	101-768	**87.00**
10	10	32	76	101-625	**84.20**	101-769	**107.20**
12	12	51	102	101-626	**154.30**	101-770	**176.70**
14	14	57	127	101-627	**235.60**	-	-
16	16	57	127	101-628	**287.10**	101-772	**353.00**
18	18	57	127	101-629	**330.30**	-	-
20	20	57	127	101-630	**372.40**	101-774	**463.40**
25	25	57	127	101-631	**749.10**	-	-

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



Inch

MICROGRAIN CARBIDE | BRIGHT | TIALN | REG LENGTH

TiAlN: Speeds & Feeds ☞ P. A37

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	TiAlN Code No.	Price $
1/4	1/4	3/4	2-1/2	102-185	**63.70**
5/16	5/16	3/4	2-1/2	102-190	**74.50**
3/8	3/8	1	2-1/2	102-200	**85.20**
1/2	1/2	1-1/4	3	102-205	**113.20**
5/8	5/8	1-1/4	3-1/2	102-210	**185.80**
3/4	3/4	1-5/8	4	102-215	**218.70**
1	1	1-3/4	4	102-220	**428.10**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

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.



MICROGRAIN CARBIDE | BRIGHT | TiAlN | X-LONG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	1/8	1	3	102-480	**24.20**	102-580	**26.80**
3/16	3/16	1-1/8	3	102-482	**34.10**	102-582	**41.50**
1/4	1/4	1-1/2	4	102-484	**43.70**	102-584	**45.70**
5/16	5/16	1-5/8	4	102-486	**49.20**	102-586	**53.20**
3/8	3/8	1-3/4	4	102-488	**62.10**	102-588	**66.70**
7/16	7/16	3	6	102-490	**121.80**	102-590	**125.30**
1/2	1/2	3	6	102-492	**119.30**	102-592	**123.00**
5/8	5/8	3	6	102-494	**245.10**	102-594	**230.20**
3/4	3/4	3	6	102-496	**361.70**	102-596	**338.60**
1	1	3	6	102-498	**640.70**	102-598	**581.40**

4 Flute Ball Nose Double End Regular Length

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



MICROGRAIN CARBIDE | BRIGHT | TiAlN | REG LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/8	3/8	3/8	3-1/16	101-360	**75.40**	101-708	**98.80**
5/32	3/8	7/16	3-1/8	101-361	**80.20**	-	**-**
3/16	3/8	1/2	3-1/4	101-362	**80.20**	101-726	**102.40**
7/32	3/8	9/16	3-3/8	101-363	**88.20**	-	**-**
1/4	3/8	5/8	3-3/8	101-364	**89.80**	101-728	**114.80**
9/32	3/8	11/16	3-3/8	101-365	**100.10**	-	**-**
5/16	3/8	3/4	3-1/2	101-366	**103.60**	101-739	**131.20**
11/32	3/8	3/4	3-1/2	101-367	**115.70**	-	**-**
3/8	3/8	3/4	3-1/2	101-368	**115.70**	101-748	**145.90**
7/16	1/2	7/8	4	101-369	**171.90**	-	**-**
1/2	1/2	1	4	101-370	**180.60**	101-763	**225.00**

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.



MICROGRAIN CARBIDE | BRIGHT | TiAlN | STUB LENGTH | 30°

Bright: Speeds & Feeds ☞ P. A36
TiAlN: Speeds & Feeds ☞ P. A37

Inch

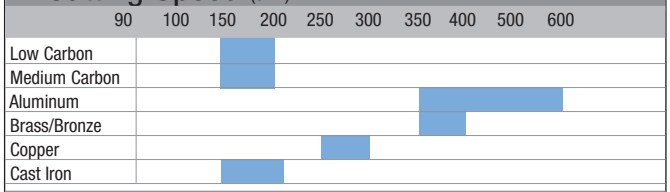
Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price $	TiAlN Code No.	Price $
1/32	1/8	5/64	1-1/2	101-355	**49.90**	101-776	**57.00**
3/64	1/8	3/32	1-1/2	101-356	**34.00**	101-777	**43.30**
1/16	1/8	1/8	1-1/2	101-357	**30.60**	101-778	**41.10**
3/32	1/8	3/16	1-1/2	101-358	**30.60**	101-779	**35.90**
1/8	1/8	1/4	1-1/2	101-359	**28.40**	101-802	**38.30**
5/32	3/16	5/16	2	101-371	**41.80**	101-803	**54.10**
3/16	3/16	3/8	2	101-372	**40.90**	101-804	**52.10**
7/32	1/4	1/2	2-1/2	101-373	**53.20**	101-805	**76.20**
1/4	1/4	1/2	2-1/2	101-374	**51.60**	101-806	**75.60**
5/16	5/16	1/2	2-1/2	101-375	**74.60**	101-807	**107.30**
3/8	3/8	1/2	2-1/2	101-376	**79.70**	101-808	**113.30**
7/16	7/16	9/16	2-3/4	101-377	**102.50**	101-809	**144.70**
1/2	1/2	5/8	3	101-378	**134.40**	101-832	**172.10**

Cutting Conditions for Bright Carbide

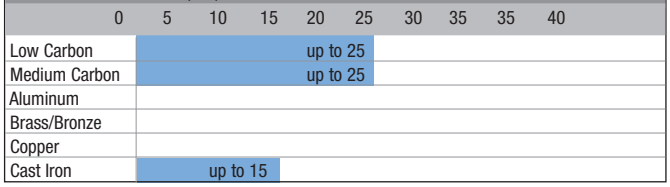
Materials

Main Group	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

Cutting Speed (sfm)



Hardness (hrc)

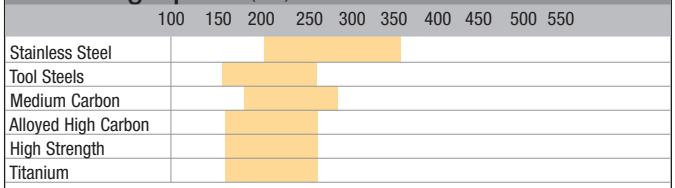


Cutting Conditions for TiAlN

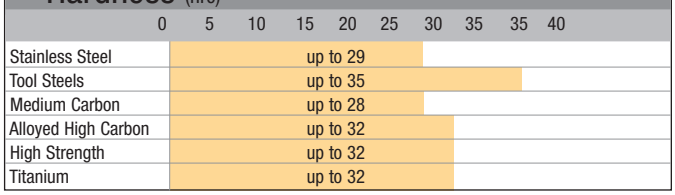
Materials

Main Group	Sub-Group	Condition	Hardness (HRc)	Cutting Speed (SFM)
Stainless Steels	300 Series, 400 Series	Annealed Annealed	<29 <29	200-350 200-350
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

Cutting Speed (sfm)



Hardness (hrc)



END MILLS

Sowa Typhoon End Mills

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 MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/8	3/16	1-1/2	104-602	**26.10**
3/32	1/8	5/16	1-1/2	104-601	**25.00**
1/8	1/8	1/2	1-1/2	104-600	**28.90**
5/32	3/16	9/16	2	104-603	**32.30**
3/16	3/16	5/8	2	104-604	**32.30**
7/32	1/4	5/8	2-1/2	104-605	**28.80**
1/4	1/4	3/4	2-1/2	104-608	**39.40**
9/32	5/16	3/4	2-1/2	104-607	**51.20**
5/16	5/16	13/16	2-1/2	104-612	**51.20**
3/8	3/8	1	2-1/2	104-616	**67.10**
7/16	7/16	1	2-3/4	104-618	**77.30**
1/2	1/2	1	3	104-620	**96.30**
9/16	9/16	1-1/8	3-1/2	104-622	**148.40**
5/8	5/8	1-1/4	3-1/2	104-624	**175.40**
11/16	3/4	1-3/8	4	104-630	**249.00**
3/4	3/4	1-1/2	4	104-628	**236.20**
7/8	7/8	1-1/2	4	104-631	**305.40**
1	1	1-1/2	4	104-632	**418.40**

Metric

Cutting Dia. (mm)	Shank Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
1	3	3	39	101-780	**23.90**
1.5	3	5	39	101-781	**20.80**
2	3	7	39	101-782	**21.90**
2.5	3	8	39	101-783	**21.90**
3	3	10	39	101-784	**21.90**
3.5	4	12	51	101-785	**29.20**
4	4	14	51	101-786	**29.20**
4.5	5	14	51	101-787	**32.50**
5	5	16	51	101-788	**32.30**
6	6	19	64	101-789	**42.10**
7	8	19	64	101-790	**54.40**
8	8	21	64	101-791	**56.70**
9	10	22	70	101-792	**81.70**
10	10	25	70	101-793	**77.50**
11	12	25	70	101-794	**95.40**
12	12	25	76	101-795	**112.60**
14	14	30	89	101-796	**152.90**
16	16	32	89	101-797	**176.40**
18	18	35	102	101-798	**249.20**
20	20	38	102	101-799	**300.50**
22	22	38	102	101-800	**378.30**
25	25	38	102	101-801	**437.80**

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 MICROGRAIN CARBIDE | Mod AlTiN | LONG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/4	2-1/4	104-815	**34.40**
3/16	3/16	3/4	2-1/4	104-816	**36.70**
1/4	1/4	1-1/8	3	104-818	**46.70**
5/16	5/16	1-1/8	3	104-820	**67.50**
3/8	3/8	1-1/8	3	104-822	**72.80**
1/2	1/2	2	4	104-824	**127.50**
5/8	5/8	2-1/4	5	104-826	**315.30**
3/4	3/4	2-1/4	5	104-830	**402.20**
1	1	2-1/4	5	104-831	**515.90**

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 MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Corner Radius	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	.015"	1/8	1/2	1-1/2	102-602	**42.40**
3/16	.020"	3/16	5/8	2	102-610	**42.10**
1/4	.020"	1/4	3/4	2-1/2	102-616	**42.00**
1/4	.030"	1/4	3/4	2-1/2	102-618	**44.40**
5/16	.020"	5/16	13/16	2-1/2	102-620	**60.70**
3/8	.020"	3/8	1	2-1/2	102-628	**65.10**
3/8	.030"	3/8	1	2-1/2	102-630	**65.10**
1/2	.020"	1/2	1	3	102-636	**124.30**
1/2	.030"	1/2	1	3	102-638	**124.30**
1/2	.060"	1/2	1	3	102-640	**124.30**

2 Flute Ball Nose Regular Length - Typhoon

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



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/8	3/16	1-1/2	104-649	**37.90**
3/32	1/8	5/16	1-1/2	104-651	**36.80**
1/8	1/8	1/2	1-1/2	104-650	**35.70**
5/32	3/16	9/16	2	104-653	**38.40**
3/16	3/16	5/8	2	104-654	**38.40**
7/32	1/4	5/8	2-1/2	104-655	**51.50**
1/4	1/4	3/4	2-1/2	104-658	**54.10**
9/32	5/16	3/4	2-1/2	104-657	**69.60**
5/16	5/16	13/16	2-1/2	104-662	**70.40**
3/8	3/8	1	2-1/2	104-666	**82.30**
7/16	7/16	1	2-3/4	104-668	**88.80**
1/2	1/2	1	3	104-670	**124.30**
9/16	9/16	1-1/8	3-1/2	104-672	**187.30**
5/8	5/8	1-1/4	3-1/2	104-674	**213.70**
3/4	3/4	1-1/2	4	104-678	**283.70**
7/8	7/8	1-1/2	4	104-681	**428.80**
1	1	1-1/2	4	104-682	**389.40**

Metric

Cutting Dia. (mm)	Shank Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
1	3	3	39	101-810	**27.20**
1.5	3	5	39	101-811	**25.20**
2	3	7	39	101-812	**25.20**
2.5	3	8	39	101-813	**25.50**
3	3	10	39	101-814	**25.20**
3.5	4	12	51	101-815	**33.70**
4	4	14	51	101-816	**33.60**
4.5	5	14	51	101-817	**35.90**
5	5	16	51	101-818	**37.20**
6	6	19	64	101-819	**48.30**
7	8	19	64	101-820	**62.60**
8	8	21	64	101-821	**68.60**
9	10	22	70	101-822	**93.90**
10	10	25	70	101-823	**93.90**
11	12	25	70	101-824	**86.80**
12	12	25	76	101-825	**129.50**
14	14	30	89	101-826	**175.90**
16	16	32	89	101-827	**202.80**
18	18	35	102	101-828	**231.90**
20	20	38	102	101-829	**344.30**
22	22	38	102	101-830	**446.40**
25	25	38	102	101-831	**516.50**

Sowa Typhoon End Mills

2 Flute Ball Nose Long Length - Typhoon



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

SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | LONG LENGTH

Speeds & Feeds ☞ P. A41

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/4	2-1/4	104-652	**44.20**
3/16	3/16	3/4	2-1/4	104-656	**33.60**
1/4	1/4	1-1/8	3	104-660	**72.40**
5/16	5/16	1-1/8	3	104-663	**89.00**
3/8	3/8	1-1/8	3	104-667	**100.50**
1/2	1/2	2	4	104-671	**198.90**
5/8	5/8	2-1/4	5	104-675	**355.60**
3/4	3/4	2-1/4	5	104-679	**456.10**
1	1	2-1/4	5	104-683	**898.50**

2 Flute Mold Mill - Typhoon



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

SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A42

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	5/16	2-3/8	104-034	**77.70**
3/16	3/16	3/8	3-1/8	104-036	**55.60**
1/4	1/4	1/2	3-1/2	104-038	**78.10**
5/16	5/16	15/32	4	104-040 •	**114.20**
3/8	3/8	3/4	4	104-042	**107.10**
1/2	1/2	7/8	4-1/4	104-044	**245.10**
5/8	5/8	15/16	6	104-046 •	**278.60**
3/4	3/4	1-1/8	6	104-048 •	**434.40**
1	1	1-1/2	6	104-050 •	**695.00**

• Only available while quantities last

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 submicron grain carbide



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A41

Regular Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/32	1-1/2	153-110	**35.50**
3/16	3/16	9/64	2	153-112	**35.90**
1/4	1/4	3/16	2-1/2	153-114	**52.00**
3/8	3/8	9/32	2-1/2	153-116	**78.80**
1/2	1/2	3/8	3	153-118	**108.40**

Long Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/32	3	153-120	**40.10**
3/16	3/16	9/64	3	153-122	**40.60**
1/4	1/4	3/16	4	153-124	**70.80**
3/8	3/8	9/32	4	153-126	**82.50**
1/2	1/2	3/8	6	153-128	**154.50**

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 MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/8	3/16	1-1/2	104-702	**26.10**
3/32	1/8	5/16	1-1/2	104-701	**27.20**
1/8	1/8	1/2	1-1/2	104-700	**26.10**
5/32	3/16	9/16	2	104-703	**29.10**
3/16	3/16	5/8	2	104-704	**32.30**
7/32	1/4	5/8	2-1/2	104-705	**35.50**
1/4	1/4	3/4	2-1/2	104-708	**35.50**
9/32	5/16	3/4	2-1/2	104-707	**51.20**
5/16	5/16	13/16	2-1/2	104-712	**51.20**
3/8	3/8	1	2-1/2	104-716	**60.50**
7/16	7/16	1	2-3/4	104-718	**77.30**
1/2	1/2	1	3	104-720	**96.30**
9/16	9/16	1-1/8	3-1/2	104-722	**148.40**
5/8	5/8	1-1/4	3-1/2	104-724	**175.40**
11/16	3/4	1-3/8	4	104-730	**201.50**
3/4	3/4	1-1/2	4	104-728	**248.10**
7/8	7/8	1-1/2	4	104-731	**377.30**
1	1	1-1/2	4	104-732	**416.90**

Metric

Cutting Dia. (mm)	Shank Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
1	3	3	39	101-840	**23.90**
1.5	3	5	39	101-841	**21.90**
2	3	7	39	101-842	**21.90**
2.5	3	8	39	101-843	**21.90**
3	3	10	39	101-844	**21.90**
3.5	4	12	51	101-845	**29.20**
4	4	14	51	101-846	**29.20**
4.5	5	14	51	101-847	**32.30**
5	5	16	51	101-848	**32.30**
6	6	19	64	101-849	**42.10**
7	8	19	64	101-850	**54.30**
8	8	21	64	101-851	**59.40**
9	10	22	70	101-852	**77.50**
10	10	25	70	101-853	**81.30**
11	12	25	70	101-854	**95.40**
12	12	25	76	101-855	**112.10**
14	14	30	89	101-856	**152.40**
16	16	32	89	101-857	**176.20**
18	18	35	102	101-858	**249.10**
20	20	38	102	101-859	**299.20**
22	22	38	102	101-860	**452.50**
25	25	38	102	101-861	**437.80**

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 MICROGRAIN CARBIDE | Mod AlTiN | LONG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/4	2-1/4	104-832	**34.40**
3/16	3/16	3/4	2-1/4	104-834	**36.70**
1/4	1/4	1-1/8	3	104-836	**46.70**
5/16	5/16	1-1/8	3	104-838	**67.50**
3/8	3/8	1-1/8	3	104-840	**81.00**
1/2	1/2	2	4	104-842	**127.10**
5/8	5/8	2-1/4	5	104-844	**259.20**
3/4	3/4	2-1/4	5	104-846	**385.20**
1	1	2-1/4	5	104-848	**877.10**

END MILLS

Sowa Typhoon End Mills

4 Flute Corner Radius - Typhoon

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



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A40

Inch

Cutting Dia. (in.)	Corner Radius	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	.015"	1/8	1/2	1-1/2	102-652	42.40
1/8	.030"	1/8	1/2	1-1/2	102-656 •	31.50
3/16	.020"	3/16	5/8	2	102-660	42.00
1/4	.020"	1/4	3/4	2-1/2	102-666	42.00
1/4	.030"	1/4	3/4	2-1/2	102-668	42.00
5/16	.020"	5/16	13/16	2-1/2	102-670	60.70
5/16	.030"	5/16	13/16	2-1/2	102-672	60.70
3/8	.020"	3/8	1	2-1/2	102-678	65.10
3/8	.030"	3/8	1	2-1/2	102-680	65.10
1/2	.020"	1/2	1	3	102-686	114.10
1/2	.030"	1/2	1	3	102-688	114.10
1/2	.060"	1/2	1	3	102-690	124.30

• Only available while quantities last

4 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 submicron grain carbide



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A41

Regular Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/32	1-1/2	153-130	33.70
3/16	3/16	9/64	2	153-132	45.90
1/4	1/4	3/16	2-1/2	153-134	64.00
3/8	3/8	9/32	2-1/2	153-136	73.20
1/2	1/2	3/8	3	153-138	152.00

Long Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/32	3	153-140	40.10
3/16	3/16	9/64	3	153-142	48.10
1/4	1/4	3/16	4	153-144	73.50
3/8	3/8	9/32	4	153-146	94.40
1/2	1/2	3/8	6	153-148	218.60

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

4 Flute Ball Nose Regular Length - Typhoon

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



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A41

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/8	3/16	1-1/2	104-752	37.90
3/32	1/8	5/16	1-1/2	104-751	36.80
1/8	1/8	1/2	1-1/2	104-750	39.50
5/32	3/16	9/16	2	104-753	42.70
3/16	3/16	5/8	2	104-754	38.40
7/32	1/4	5/8	2-1/2	104-755	60.10
1/4	1/4	3/4	2-1/2	104-758	54.10
9/32	5/16	3/4	2-1/2	104-757	73.10
5/16	5/16	13/16	2-1/2	104-762	70.40
3/8	3/8	1	2-1/2	104-766	82.30
7/16	7/16	1	2-3/4	104-768	109.70
1/2	1/2	1	3	104-770	124.30
9/16	9/16	1-1/8	3-1/2	104-772	187.30
5/8	5/8	1-1/4	3-1/2	104-774	212.90
11/16	3/4	1-3/8	4	104-780	299.10
3/4	3/4	1-1/2	4	104-778	299.10
7/8	7/8	1-1/2	4	104-781	476.60
1	1	1-1/2	4	104-782	481.10

Metric

Cutting Dia. (mm)	Shank Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
1	3	3	39	101-870	27.20
1.5	3	5	39	101-871	25.20
2	3	7	39	101-872	25.20
2.5	3	8	39	101-873	25.20
3	3	10	39	101-874	25.20
3.5	4	12	51	101-875	33.60
4	4	14	51	101-876	33.60
4.5	5	14	51	101-877	30.20
5	5	16	51	101-878	37.20
6	6	19	64	101-879	48.30
7	8	19	64	101-880	62.40
8	8	21	64	101-881	68.60
9	10	22	70	101-882	93.90
10	10	25	70	101-883	93.90
11	12	25	70	101-884	86.80
12	12	25	76	101-885	129.10
14	14	30	89	101-886	175.90
16	16	32	89	101-887	202.80
18	18	35	102	101-888	286.50
20	20	38	102	101-889	345.60
22	22	38	102	101-890	446.40
25	25	38	102	101-891	516.50

Sowa Typhoon End Mills

4 Flute Ball Nose Long Length - Typhoon

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





Speeds & Feeds ☞ P. A41

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	1/8	3/4	2-1/4	104-833	**46.20**
3/16	3/16	3/4	2-1/4	104-835	**55.90**
1/4	1/4	1-1/8	3	104-837	**71.00**
5/16	5/16	1-1/8	3	104-839	**88.70**
3/8	3/8	1-1/8	3	104-841	**100.50**
1/2	1/2	2	4	104-843	**198.90**
5/8	5/8	2-1/4	5	104-845	**354.20**
3/4	3/4	2-1/4	5	104-847	**456.10**
1	1	2-1/4	5	104-849	**880.30**

Multi-Flute Regular Length - Typhoon

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.





Speeds & Feeds ☞ P. A42

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	No. of Flutes	Code No.	Price $
1/8	1/8	1/2	1-1/2	4	101-050	**25.20**
3/16	3/16	5/8	2	4	101-052	**58.70**
1/4	1/4	3/4	2-1/2	6	101-054	**71.90**
5/16	5/16	13/16	2-1/2	6	101-056	**60.50**
3/8	3/8	1	2-1/2	6	101-058	**80.60**
7/16	7/16	1	2-3/4	6	101-060	**112.50**
1/2	1/2	1	3	6	101-062	**130.40**
9/16	9/16	1-1/8	3-1/2	6	101-064	**156.80**
5/8	5/8	1-1/4	3-1/2	6	101-066	**216.20**
3/4	3/4	1-1/2	4	6	101-068	**264.50**
7/8	7/8	1-1/2	4	6	101-070	**414.70**
1	1	1-1/2	4	8	101-072	**479.80**

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.





Speeds & Feeds ☞ P. A43

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	No. of Flutes	Code No.	Price $
1/4	1/4	3/4	2-1/2	3	104-800	**47.70**
5/16	5/16	3/4	2-1/2	3	104-802	**66.50**
3/8	3/8	7/8	2-1/2	3	104-804	**78.60**
1/2	1/2	1	3	4	104-806	**125.20**
5/8	5/8	1-1/4	3-1/2	4	104-810	**228.10**
3/4	3/4	1-5/8	4	4	104-812	**307.10**
1	1	1-3/4	4	5	104-814	**424.60**

SOMTA

4 Flute Carbide VariCut End Mills



Made in South Africa

VariCut is designed with a new patent pending core form and a new end geometry that uses unequal flute spacing to enable higher feed rates. VariCut has reinforced corner geometry, using a radius which results in less power consumption during cutting.

- Sub-micron carbide grade of European origin
- Specially adapted TiAlN coating which further improves operational performance and tool life
- Cylindrical shank with h6 tolerance
- Chatter-free machining in a wide range of speeds, feeds, and applications which prevents chipping on cutting edges and corners resulting in excellent surface finish on milled parts.

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Chamfer 45°	Code No.	Price $
1/4"	1/4"	3/4"	2-1/2"	0.016	153-301	**50.50**
3/8"	3/8"	7/8"	2-1/2"	0.020	153-303	**79.40**
1/2"	1/2"	1-1/4"	3"	0.020	153-305	**136.50**
5/8"	5/8"	1-1/4"	3-1/2"	0.020	153-307	**248.50**
3/4"	3/4"	1-1/2"	4"	0.020	153-309	**468.40**
1"	1"	1-1/2"	4"	0.020	153-311	**835.00**

Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+.000"-.002"	+.0000"-.0005"

Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+.000mm-.051mm	+.000mm-.013mm

Steel | Stainless Steel | Cast Iron/Hardened | Aluminum

END MILLS

Sowa Variable Helix Carbide End Mills

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 submicron grain carbide



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | REG LENGTH

Speeds & Feeds ☞ P. A18

Inch

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	.010-.015	153-000	**20.40**	153-250	**20.40**		
3/16	3/16	3/8	1-1/2	.010-.015	153-001	**28.80**				
3/16	3/16	5/8	2	.015-.020	153-002	**28.80**	153-252	**28.80**		
1/4	1/4	1/2	2	.015-.020	153-004	**35.00**	153-254	**35.00**		
1/4	1/4	3/4	2-1/2	.015-.020	153-006	**39.50**	153-256	**39.50**		
1/4	1/4	1-1/8	3	.015-.020	153-008	**55.40**	153-258	**55.40**		
5/16	5/16	1/2	2	.015-.020	153-010	**53.40**	153-260	**53.40**		
5/16	5/16	13/16	2-1/2	.015-.020	153-012	**55.00**	153-262	**55.00**		
5/16	5/16	1-1/8	3	.015-.020	153-014	**58.90**	153-264	**58.90**		
3/8	3/8	5/8	2	.015-.020	153-016	**57.50**	153-266	**57.50**	153-500	**69.00**
3/8	3/8	1	2-1/2	.015-.020	153-018	**62.10**	153-268	**62.10**	153-502	**76.40**
3/8	3/8	1-1/8	3	.015-.020	153-020	**76.60**	153-270	**76.60**	153-504	**89.80**
7/16	7/16	1	2-3/4	.015-.020	153-022	**88.80**	153-272	**88.80**	153-506	**100.40**
1/2	1/2	5/8	2-1/2	.025-.030	153-024	**89.60**	153-274	**89.60**	153-508	**100.80**
1/2	1/2	1	3	.025-.030	153-026	**92.90**	153-276	**92.90**	153-510	**104.80**
1/2	1/2	1-1/4	3	.025-.030	153-027	**111.90**	153-277	**111.90**	153-512	**159.20**
1/2	1/2	2	4	.025-.030	153-028	**128.70**	153-278	**128.70**	153-514	**135.00**
5/8	5/8	3/4	3	.030-.035	153-030	**153.70**	153-280	**153.70**	153-516	**174.30**
5/8	5/8	1-1/4	3-1/2	.030-.035	153-032	**166.70**	153-282	**166.70**		
5/8	5/8	2-1/4	5	.030-.035	153-034	**215.10**	153-284	**215.10**	153-518	**226.80**
3/4	3/4	1	3	.030-.035	153-036	**228.40**	153-286	**219.50**	153-520	**232.80**
3/4	3/4	1-1/2	4	.030-.035	153-038	**228.40**	153-288	**228.40**		
3/4	3/4	2-1/4	5	.030-.035	153-040	**351.60**	153-290	**351.60**	153-522	**360.40**
1	1	1-1/2	4	.030-.035	153-042	**405.40**	153-292	**405.40**	153-526	**406.10**
1	1	2-1/4	5	.030-.035	153-041	**589.10**	153-293	**589.10**	153-524	**633.90**
1-1/4	1-1/4	2-1/4	5	.030-.035	153-043	**1,057.70**	153-294	**1,101.60**		

5 Flute *Variable Helix* Carbide End Mill - Typhoon

- 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
- Made from premium submicron grain carbide



SUB-MICRON MICROGRAIN CARBIDE | Mod AlTiN | 5 FLUTE | REG LENGTH

Speeds & Feeds ☞ P. A18

Inch

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	.015-.020	153-100	**55.60**
3/8	3/8	1	2-1/2	.015-.020	153-102	**72.30**
1/2	1/2	1	3	.025-.030	153-104	**129.20**
5/8	5/8	1-1/4	3-1/2	.030-.035	153-106	**238.20**
3/4	3/4	1-1/2	4	.030-.035	153-108	**334.20**
1	1	1-1/2	4	.030-.035	153-109	**514.20**

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 - Rc 18-24	150-500	0.0004	0.0008	0.0015	0.0045
Steel - Rc 25-37	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.

QTT QUALITY TECH TOOL

MADE IN USA

Premium Class End Mills
Sub-Micrograin Carbide

2 Flute Square End Necked Design - Standard & Long



SUB MICROGRAIN CARBIDE | TiAlN | Regular & Long Length | 30°

Speeds & Feeds ☞ P. A43

PC410

Cutting Dia. (mm)	Flute Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
.5	.7	2.5	.45	6	60	101-900	**64.00**
.5	.7	4.0	.45	6	60	101-901	**57.60**
.5	.7	6.0	.45	6	60	101-902	**57.60**
.6	.9	3.0	.55	6	60	101-903	**64.00**
.6	.9	6.0	.55	6	60	101-904	**57.60**
.8	1.2	4.0	.75	6	60	101-905	**63.20**
.8	1.2	6.0	.75	6	60	101-906	**57.60**
1.0	1.5	5.0	.95	6	60	101-907	**55.50**
1.0	1.5	8.0	.95	6	60	101-908	**49.90**
1.0	1.5	12	.95	6	60	101-909	**49.90**
1.2	1.8	6.0	1.15	6	60	101-910	**62.10**
1.2	1.8	10	1.15	6	60	101-911	**55.80**
1.4	2.1	7.0	1.35	6	60	101-912	**63.00**
1.4	2.1	12	1.35	6	60	101-913	**56.50**
1.4	2.1	16	1.35	6	60	101-914	**56.50**
1.5	2.3	7.5	1.45	6	60	101-915	**55.80**
1.5	2.3	10	1.45	6	60	101-916	**50.20**
1.5	2.3	20	1.45	6	60	101-917	**51.70**
1.6	2.4	8.0	1.55	6	60	101-918	**63.00**
1.6	2.4	12	1.55	6	60	101-919	**56.70**
1.6	2.4	20	1.55	6	60	101-920	**58.00**
1.8	2.7	6.0	1.75	6	60	101-921	**56.70**
1.8	2.7	9.0	1.75	6	60	101-922	**63.00**
1.8	2.7	12	1.75	6	60	101-923	**57.00**
1.8	2.7	20	1.75	6	60	101-924	**58.30**
2.0	3.0	6.0	1.95	6	60	101-925	**51.90**
2.0	3.0	10	1.95	6	60	101-926	**51.90**
2.0	3.0	16	1.95	6	60	101-927	**52.70**
2.0	3.0	20	1.95	6	60	101-928	**53.80**
2.5	3.7	12.5	2.4	6	60	101-929	**52.60**

2 Flute Ball Nose Necked Design - Short Length



SUB MICROGRAIN CARBIDE | TiAlN | SHORT LENGTH | 30°

Speeds & Feeds ☞ P. A44

PC413

Cutting Dia. (mm)	Flute Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
1.0	2.0	2.5	0.95	6	50	101-935	**69.10**
1.2	1.2	3.0	1.15	6	50	101-936	**69.10**
1.4	1.4	7.0	1.35	6	50	101-937	**80.70**
1.5	1.5	3.8	1.45	6	50	101-938	**72.00**
1.6	1.6	4.0	1.55	6	50	101-939	**80.70**
1.8	1.8	4.5	1.75	6	50	101-940	**80.70**
2.0	2.0	5.0	1.95	6	50	101-941	**72.00**
2.5	2.5	5.0	2.40	6	50	101-942	**77.10**
3.0	3.0	6.0	2.85	6	50	101-943	**77.10**
3.5	3.5	6.0	3.35	6	50	101-944	**85.10**
4.0	4.0	6.0	3.85	6	50	101-945	**77.10**
5.0	5.0	7.5	4.85	6	50	101-946	**82.20**
6.0	6.0	9.0	5.85	6	50	101-947	**87.00**

2 Fl. Ball Nose Necked Design - Standard/Extended Reach



SUB MICROGRAIN CARBIDE | TiAlN | EXTENDED REACH | 30°

Speeds & Feeds ☞ P. A44

PC419/PC419L

Cutting Dia. (mm)	Flute Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
.5	.7	2.5	.45	6	60	102-125	**86.80**
.5	.5	2.5	.45	6	60	102-126	**97.90**
.6	.6	3.0	.55	6	60	102-127	**86.80**
.6	.6	6.0	.55	6	60	102-128	**90.30**
.8	.8	4.0	.75	6	60	102-129	**89.10**
.8	.8	8.0	.75	6	60	102-130	**91.60**
1.0	1.0	5.0	.95	6	60	102-131	**78.80**
1.0	1.0	8.0	.95	6	60	102-132	**80.20**
1.0	1.0	10	.95	6	60	102-133	**81.40**
1.0	1.0	12	.95	6	60	102-134	**82.40**
1.0	1.0	16	.95	6	60	102-135	**84.40**
1.0	1.0	20	.95	6	60	102-136	**86.40**
1.2	1.2	6.0	1.15	6	60	102-137	**79.30**
1.2	1.2	12	1.15	6	60	102-138	**82.40**
1.4	1.4	7.0	1.35	6	60	102-139	**79.80**
1.4	1.4	12	1.35	6	60	102-140	**82.40**
1.5	1.5	6.0	1.45	6	60	102-141	**79.30**
1.5	1.5	7.5	1.45	6	60	102-142	**80.20**
1.5	1.5	10	1.45	6	60	102-143	**81.40**
1.5	1.5	12	1.45	6	60	102-144	**82.40**
1.5	1.5	20	1.45	6	60	102-145	**86.40**
1.6	1.6	8.0	1.55	6	60	102-146	**80.20**
1.6	1.6	16	1.55	6	60	102-147	**84.40**
1.8	1.8	9.0	1.75	6	60	102-148	**81.00**
1.8	1.8	16	1.75	6	60	102-149	**84.40**
2.0	2.0	8.0	1.95	6	60	102-151	**80.20**
2.0	2.0	10	1.95	6	60	102-152	**78.90**
2.0	2.0	12	1.95	6	60	102-154	**78.90**
2.0	2.0	16	1.95	6	60	102-153	**79.00**
2.0	2.0	20	1.95	6	60	102-156	**79.00**
2.0	2.0	25	2.40	6	60	102-157	**79.10**
2.5	2.5	12.5	2.40	6	60	102-158	**78.90**
2.5	2.5	16	2.40	6	60	102-159	**79.00**
2.5	2.5	20	2.40	6	60	102-161	**79.00**
3.0	3.0	10	2.85	6	70	102-162	**86.10**
3.0	3.0	12	2.85	6	70	102-164	**87.00**
3.0	3.0	15	2.85	6	70	102-167	**88.60**
3.0	3.0	20	2.85	6	70	102-163	**91.60**
3.0	3.0	25	2.85	6	70	102-166	**94.10**
3.0	3.0	30	2.85	6	70	102-168	**96.70**
3.0	3.0	35	2.85	6	70	102-169	**96.70**
3.5	3.5	17.5	3.35	6	70	102-171	**89.70**
4.0	4.0	8.0	3.85	6	70	102-172	**84.90**
4.0	4.0	12	3.85	6	70	102-173	**87.00**
4.0	4.0	16	3.85	6	70	102-174	**89.20**
4.0	4.0	20	3.85	6	70	102-177	**91.60**
4.0	4.0	25	3.85	6	70	102-176	**94.10**
4.0	4.0	30	3.85	6	70	102-178	**96.70**
5.0	5.0	25	4.85	6	80	102-179	**94.40**
6.0	6.0	30	5.85	6	90	102-181	**100.10**

END MILLS

QUALITY TECH TOOL

MADE IN USA

Premium Class End Mills
Sub-Micrograin Carbide

2 Flute Square End - Long Reach



SUB MICROGRAIN CARBIDE | TiAlN | LONG REACH | 30°

PC412

Speeds & Feeds ☞ P. A45

Cutting Dia. (mm)	Radius (mm)	Flute Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
0.5	.05	.7	2.0	.46	6	50	101-948	**95.40**
0.5	.05	.7	4.0	.46	6	50	101-949	**95.40**
1.0	.1	1.5	4.0	.95	6	50	101-950	**77.60**
1.0	.1	1.5	8.0	.95	6	50	101-951	**91.90**
1.0	.1	1.5	12	.95	6	50	101-952	**77.60**
1.0	.2	1.5	4.0	.95	6	50	101-953	**91.90**
1.0	.2	1.5	8.0	.95	6	50	101-954	**91.90**
1.0	.2	1.5	12	.95	6	50	101-955	**77.60**
1.0	.3	1.5	4.0	.95	6	50	101-956	**91.90**
1.0	.3	1.5	8.0	.95	6	50	101-957	**91.90**
1.0	.3	1.5	12	.95	6	50	101-958	**91.90**
1.5	.3	2.3	6.0	1.45	6	50	101-959	**81.30**
1.5	.3	2.3	12	1.45	6	50	101-960	**81.30**
1.5	.3	2.3	18	1.45	6	50	101-961	**88.50**
1.5	.5	2.3	6.0	1.45	6	60	101-963	**101.90**
1.5	.5	2.3	12	1.45	6	60	101-964	**88.50**
1.5	.5	2.3	18	1.45	6	60	101-965	**100.40**
2.0	.3	3.0	10	1.94	6	60	101-966	**101.90**
2.0	.3	3.0	16	1.94	6	60	101-967	**86.10**
2.0	.3	3.0	24	1.94	6	70	101-968	**100.40**
2.0	.3	3.0	30	1.94	6	70	101-969	**94.50**
2.0	.5	3.0	10	1.94	6	60	102-300	**86.10**
2.0	.5	3.0	16	1.94	6	60	102-301	**86.10**
2.0	.5	3.0	24	1.94	6	70	102-302	**104.90**
2.0	.5	3.0	30	1.94	6	70	102-303	**100.40**
2.5	.5	3.7	15	2.40	6	70	102-304	**108.80**
2.5	.5	3.7	30	2.40	6	70	102-305	**100.40**
3.0	.5	4.5	12	2.85	6	70	102-306	**114.10**
3.0	.5	4.5	24	2.85	6	80	102-307	**114.10**
3.0	1.0	4.5	12	2.85	6	70	102-309	**114.10**
3.0	1.0	4.5	24	2.85	6	80	102-310	**114.10**
3.0	1.0	4.5	36	2.85	6	80	102-311	**114.10**
3.5	.5	5.0	16	3.35	6	80	102-312	**114.10**
3.5	.5	5.0	32	3.35	6	80	102-313	**114.10**
3.5	1.0	5.0	16	3.35	6	80	102-314	**114.10**
4.0	.5	6.0	16	3.80	6	80	102-315	**110.20**
4.0	.5	6.0	24	3.80	6	80	102-316	**114.10**
4.0	.5	6.0	32	3.80	6	80	102-317	**110.20**
4.0	1.0	6.0	16	3.80	6	80	102-318	**114.10**
4.0	1.0	6.0	24	3.80	6	80	102-319	**114.10**
4.0	1.0	6.0	32	3.80	6	80	102-320	**114.10**
4.5	.5	8.0	16	4.30	6	80	102-321	**114.10**
4.5	.5	8.0	32	4.30	6	80	102-322	**114.10**

2 Flute Tapered Pencil Neck Ball Nose



SUB MICROGRAIN CARBIDE | TiAlN | LONG REACH | 30°

PC418

Speeds & Feeds ☞ P. A45

Cutting Dia. (mm)	Flute Length (mm)	Non Taper Neck Length (mm)	Neck Length (mm)	Max. Neck Dia. (mm)	Neck Incline	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
1.0	2.5	4.0	20	3.8	5°	6	60	101-970	**87.00**
1.0	2.5	4.0	40	4.8	3°	6	80	101-971	**92.70**
1.0	2.5	4.0	20	1.8	1.5°	6	70	101-972	**89.80**
2.0	5.0	7.0	20	4.3	5°	6	60	101-973	**87.00**
2.0	5.0	7.0	40	5.5	3°	6	80	101-974	**92.70**
2.0	5.0	7.0	20	2.7	1.5°	6	70	101-975	**89.80**
3.0	8.0	10.5	30	5.0	3°	6	70	101-976	**89.80**
3.0	8.0	10.5	50	5.1	1.5°	6	90	101-977	**95.40**
4.0	8.0	10.5	28	6.0	3°	6	70	101-978	**89.60**
4.0	8.0	10.5	48	6.0	1.5°	6	90	101-979	**95.10**
5.0	10	12.5	40	8.0	3°	8	90	101-980	**114.40**
5.0	10	12.5	60	7.5	1.5°	8	110	101-981	**121.10**
6.0	12	14.5	33.5	8.0	3°	8	90	101-982	**119.80**
6.0	12	14.5	52	8.0	1.5°	8	110	101-983	**119.80**
8.0	14	16.5	35.5	10	3°	10	100	101-984	**155.40**
8.0	14	16.5	54.5	10	1.5°	10	120	101-985	**165.40**
10	18	20.5	39.5	12	3°	12	110	101-986	**191.80**
10	18	20.5	58.5	12	1.5°	12	130	101-987	**202.00**
12	22	25	60	16	3°	16	140	101-988	**287.60**
12	22	25	80	14.9	1.5°	16	160	101-989	**314.20**

4 Flute Square End Long Reach



SUB MICROGRAIN CARBIDE | TiAlN | LONG REACH | 30°

PC411

Speeds & Feeds ☞ P. A45

Cutting Dia. (mm)	Flute Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	4.5	15	2.85	6	70	101-930	**64.80**
3.5	5.3	17.5	3.35	6	70	101-931	**68.40**
4.0	6.0	20	3.85	6	70	101-932	**67.00**
5.0	7.5	25	4.85	6	80	101-933	**72.10**
6.0	9.0	30	5.85	6	90	101-934	**75.30**

2 Flute For Aluminum

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.





Speeds & Feeds ☞ P. A21

Inch

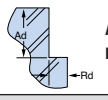
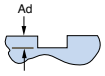
Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	1/4	3/4	2-1/2	101-020	**65.10**
1/4	1/4	1-1/2	4	101-022	**99.50**
5/16	5/16	13/16	2-1/2	101-024	**78.60**
5/16	5/16	1-5/8	4	101-026	**116.30**
3/8	3/8	1	2-1/2	101-028	**90.60**
3/8	3/8	1-3/4	4	101-030	**136.30**
1/2	1/2	1	3	101-032	**148.10**
1/2	1/2	2	4	101-034	**193.80**
5/8	5/8	1-1/4	3-1/2	101-036	**220.90**
5/8	5/8	2-1/4	5	101-038	**358.50**
3/4	3/4	1-1/2	4	101-040	**358.00**
3/4	3/4	2-1/4	5	101-042	**388.30**
1	1	2-1/4	5	101-044	**711.70**
1	1	3	6	101-046	**849.60**

Metric

Cutting Dia. (mm)	Shank Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
6	6	19	63	101-390	**97.90**
6	6	38	102	101-391	**82.30**
8	8	21	63	101-392	**118.20**
8	8	41	102	101-393	**142.40**
10	10	25	70	101-394	**136.40**
10	10	51	102	101-395	**122.10**
12	12	26	76	101-396	**181.10**
12	12	51	102	101-397	**237.00**
16	16	32	89	101-398	**270.40**
16	16	57	127	101-399	**438.70**
20	20	38	102	101-400	**459.80**
20	20	57	127	101-401	**574.80**
25	25	57	127	101-402	**1,072.00**
25	25	76	152	101-403	**1,279.50**

2 Flute Aluminum Speeds & Feeds

Side Milling

Work Material		Aluminum		Slotting Aluminum	
Hardness					
Depth of Cut		 Ad= 1.5D Rd= 0.1D		 Ad=0.5D	
Mill Dia. (inch4)	mm	V=660 SFM Speed RPM	Feed in/min	V=660 SFM 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

3 Flute Square End 40° Helix Carbide End Mills

- Special geometry allows for high chip loads and feed rates.
- 3 flute Design excellent for slotting and profiling at high speeds.
- Made from premium submicron grain carbide.
- Cutting diameter tolerance +.000/-.002





Speeds & Feeds ☞ P. A21

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
1/32	1/8	3/32	1-1/2	153-300	**24.10**	153-350	**28.10**
3/64	1/8	1/8	1-1/2	153-302	**24.10**	153-352	**22.80**
1/16	1/8	3/16	1-1/2	153-304	**21.70**	153-354	**25.70**
3/32	1/8	3/8	1-1/2	153-306	**21.70**	153-356	**25.70**
1/8	1/8	1/2	1-1/2	153-308	**18.90**	153-358	**22.80**
9/64	3/16	9/16	2	153-310	**29.10**	153-360	**27.80**
5/32	3/16	9/16	2	153-312	**29.10**	153-362	**27.80**
11/64	3/16	9/16	2	153-314	**30.50**	153-364	**28.80**
3/16	3/16	5/8	2	153-316	**26.90**	153-366	**31.80**
13/64	1/4	5/8	2-1/2	153-318	**36.60**	153-368	**36.00**
7/32	1/4	5/8	2-1/2	153-320	**38.40**	153-370	**37.60**
15/64	1/4	3/4	2-1/2	153-322	**36.70**	153-372	**36.10**
1/4	1/4	3/4	2-1/2	153-324	**32.80**	153-374	**40.50**
17/64	5/16	3/4	2-1/2	153-326	**55.90**	153-376	**54.10**
5/16	5/16	13/16	2-1/2	153-328	**45.30**	153-378	**55.80**
5/16	5/16	1-5/8	4	153-330	**66.00**	153-380	**80.20**
3/8	3/8	1	2-1/2	153-332	**55.70**	153-382	**66.40**
3/8	3/8	1-1/8	3	153-334	**69.50**	153-384	**81.00**
1/2	1/2	1	3	153-336	**85.10**	153-386	**100.90**
1/2	1/2	2	4	153-338	**104.30**	153-388	**124.70**
5/8	5/8	1-1/4	3-1/2	153-340	**155.30**	153-390	**177.70**
5/8	5/8	2-1/4	5	153-342	**206.60**	153-392	**239.40**
3/4	3/4	1-1/2	4	153-344	**249.30**	153-394	**275.60**

3 Flute Aluminum Speeds & Feeds

Chip load per tooth					
Material	SFM	1/8	1/4"	1/2"	1"
Aluminum Alloys	600/1200	.0010	.0020	.0040	.0080

RPM= 3.82 x sfm ÷ dia SFM= rpm x .262 ÷ dia
IPM= chip load x No. of teeth x rpm

END MILLS

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 submicron grain carbide.
- Cutting diameter tolerance +.000/-.002





Speeds & Feeds ☞ P. A22

Regular Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
1/8	1/8	3/8	1-1/2	0.010	153-208	**17.00**	153-400	**20.40**
3/16	3/16	5/8	2	0.010	153-210	**23.80**	153-402	**27.80**
1/4	1/4	3/4	2-1/2	0.010	153-212	**29.50**	153-404	**37.20**
5/16	5/16	13/16	2-1/2	0.010	153-214	**39.90**	153-406	**49.00**
3/8	3/8	1	2-1/2	0.015	153-216	**44.00**	153-408	**54.70**
7/16	7/16	1	2-3/4	0.015	153-218	**50.80**	153-410	**78.10**
1/2	1/2	1	3	0.020	153-220	**76.90**	153-412	**89.80**
5/8	5/8	1-1/4	3-1/2	0.020	153-222	**139.20**	153-414	**161.70**
3/4	3/4	1-1/2	4	0.030	153-224	**219.90**	153-416	**237.90**
1	1	1-1/2	4	0.030	153-226	**334.80**	153-418	**360.20**

Long Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
1/4	1/4	1-1/8	3	0.010	153-228	**39.90**	153-420	**47.70**
5/16	5/16	1-1/8	3	0.010	153-230	**40.60**	153-422	**58.20**
3/8	3/8	1-1/8	3	0.015	153-232	**63.20**	153-424	**74.60**
1/2	1/2	2	4	0.020	153-234	**95.20**	153-426	**115.40**
5/8	5/8	2-1/4	5	0.020	153-236	**151.60**	153-428	**227.00**
3/4	3/4	2-1/4	5	0.030	153-238	**275.60**	153-430	**317.00**
1	1	2-1/4	5	0.030	153-240	**322.50**	153-432	**461.80**

2 Flute Corner Radius Aluminum Speeds & Feeds

Chip load per tooth					
Material	**SFM**	**1/8**	**1/4"**	**1/2"**	**1"**
Aluminum Alloys	600/1200	.0010	.0020	.0040	.0080

RPM= 3.82 x sfm ÷ dia SFM= rpm x .262 ÷ dia
IPM= chip load x No. of teeth x rpm

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 submicron grain carbide.
- Cutting diameter tolerance +.000/-.002





Speeds & Feeds ☞ P. A22

Regular Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
1/8	1/8	3/8	1-1/2	0.005	153-150	**17.00**	153-044	**20.20**
3/16	3/16	5/8	2	0.005	153-152	**22.80**	153-046	**27.40**
1/4	1/4	3/4	2-1/2	0.005	153-154	**30.60**	153-048	**36.70**
5/16	5/16	13/16	2-1/2	0.005	153-156	**39.90**	153-050	**51.60**
3/8	3/8	1	2-1/2	0.005	153-158	**45.80**	153-052	**54.60**
7/16	7/16	1	2-3/4	0.005	153-160	**64.80**	153-054	**62.40**
1/2	1/2	1-1/4	3	0.005	153-162	**76.90**	153-056	**88.30**
5/8	5/8	1-5/8	3-1/2	0.005	153-164	**132.60**	153-058	**161.70**
3/4	3/4	1-5/8	4	0.005	153-166	**210.50**	153-060	**234.20**
1	1	1-1/2	4	0.005	153-168	**334.80**	153-062	**289.80**

Long Length

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Corner Radius	Bright Finish Code No.	Price $	TiCN Coated Code No.	Price $
1/4	1/4	1-1/8	3	0.005	153-170	**39.90**	153-434	**46.10**
5/16	5/16	1-1/8	3	0.005	153-172	**44.40**	153-436	**56.90**
3/8	3/8	1-1/8	3	0.005	153-174	**63.10**	153-438	**72.20**
1/2	1/2	1-1/2	4	0.005	153-176	**95.20**	153-440	**111.80**
1/2	1/2	2	4	0.005	153-178	**95.20**	153-442	**111.80**
5/8	5/8	2-1/4	5	0.005	153-180	**181.80**	153-444	**214.70**
3/4	3/4	2-1/4	5	0.005	153-182	**234.80**	153-446	**306.20**
1	1	2-1/4	5	0.005	153-184	**412.90**	153-448	**362.30**

3 Flute Corner Radius Aluminum Speeds & Feeds

Chip load per tooth					
Material	**SFM**	**1/8**	**1/4"**	**1/2"**	**1"**
Aluminum Alloys	600/1200	.0010	.0020	.0040	.0080

RPM= 3.82 x sfm ÷ dia SFM= rpm x .262 ÷ dia
IPM= chip load x No. of teeth x rpm

2 Flute Regular Length HSCO & HSS

These end mills are furnished as regular 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







Inch

Speeds & Feeds ☞ P. A46

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	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 $
1/8	3/8	3/8	2-5/16	103-050	**12.80**	104-570	**22.20**	104-450	**10.30**		
5/32	3/8	7/16	2-5/16	103-052	**12.80**			104-452	**10.30**	103-003 •	**11.20**
3/16	3/8	7/16	2-5/16	103-054	**12.80**	104-571	**22.20**	104-454	**10.30**		
7/32	3/8	1/2	2-5/16	103-056	**12.80**			104-456	**10.30**	103-005 •	**11.20**
1/4	3/8	1/2	2-5/16	103-058	**12.80**	104-572	**23.40**	104-458	**10.30**		
9/32	3/8	9/16	2-5/16	103-060	**12.80**			104-460	**10.30**	103-007 •	**11.20**
5/16	3/8	9/16	2-5/16	103-062	**12.80**	104-573	**26.80**	104-462	**10.30**		
11/32	3/8	9/16	2-5/16	103-064	**12.80**			104-464	**8.50**		
3/8	3/8	9/16	2-5/16	103-066	**12.80**	104-574	**27.40**	104-466	**10.30**	103-010 •	**13.50**
13/32	3/8	13/16	2-1/2	103-068	**19.30**			104-468	**15.60**		
7/16	3/8	13/16	2-1/2	103-070	**19.30**	104-575	**36.60**	104-470	**15.60**	103-011 •	**20.50**
15/32	3/8	13/16	2-1/2	103-072	**19.30**			104-472	**15.60**		
1/2	1/2	1	3	103-074	**19.30**	104-576	**39.10**	104-474	**15.60**		
17/32	1/2	1	3	103-076	**29.70**						
9/16	1/2	1-1/8	3-1/8	103-078	**29.70**			104-476	**22.00**		
5/8	5/8	1-5/16	3-7/16	103-082	**35.40**	104-577	**57.90**	104-478	**27.50**		
11/16	5/8	1-5/16	3-7/16	103-086	**41.10**			104-480	**32.80**	103-015 •	**36.00**
3/4	3/4	1-5/16	3-7/16	103-090	**45.80**	104-578	**84.30**	104-482	**35.70**		
13/16	5/8	1-1/2	3-5/8	103-094	**49.90**			104-484	**44.30**		
7/8	3/4	1-1/2	3-3/4	103-098	**52.70**	104-579	**100.10**	104-486	**42.20**		
1	1	1-5/8	4-1/8	103-110	**67.80**	104-580	**120.80**	104-488	**53.10**		
1-1/8	1	1-5/8	4-1/8	103-112	**109.10**	104-581	**130.00**	104-490	**92.70**		
1-1/4	1-1/4	1-5/8	4-1/8	103-116	**118.40**	104-582	**191.10**	104-492	**100.70**	103-019 •	**125.60**
1-3/8	1-1/4	1-5/8	4-1/8	103-120	**147.10**						
1-1/2	1-1/4	1-5/8	4-1/8	103-124	**176.60**			104-494	**150.20**		
1-3/4	1-1/4	1-5/8	4-1/8	103-126	**225.10**			104-496	**191.40**		
2	1-1/4	1-5/8	4-1/8	103-128	**264.70**			104-498	**224.90**		
6PC Set	**Contains: 1/4" - 3/4"**			103-574	**175.90**						

• Only available while quantities last

2 Flute Regular Length HSCO - Metric

These end mills are furnished as regular 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





Speeds & Feeds ☞ P. A46

Metric

Cutting Dia. (mm)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
2 mm	3/8	5/16	2-5/16	103-700	**19.20**
3 mm	3/8	5/16	2-5/16	103-702	**19.20**
3.5 mm	3/8	7/16	2-5/16	103-703	**19.20**
4 mm	3/8	7/16	2-5/16	103-704	**19.20**
5 mm	3/8	1/2	2-5/16	103-706	**19.20**
5.5 mm	3/8	1/2	2-5/16	103-707	**19.20**
6 mm	3/8	1/2	2-5/16	103-708	**19.20**
7 mm	3/8	9/16	2-5/16	103-710	**19.20**
8 mm	3/8	9/16	2-5/16	103-712	**19.20**
9 mm	3/8	9/16	2-5/16	103-713	**19.20**
10 mm	3/8	13/16	2-1/2	103-714	**19.20**
11 mm	3/8	13/16	2-1/2	103-715	**29.20**
12 mm	3/8	13/16	2-1/2	103-716	**29.20**
14 mm	1/2	1-1/8	3-1/8	103-718	**33.60**
16 mm	5/8	1-5/16	3-7/16	103-720	**51.30**
18 mm	5/8	1-5/16	3-7/16	103-722	**59.80**
20 mm	5/8	1-1/2	3-3/4	103-724	**66.80**
22 mm	3/4	1-1/2	3-3/4	103-726	**76.90**
24 mm	3/4	2	4-1/2	103-728	**99.00**

2 Flute Extended Shank HSCO





Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Length Below Shank	Overall Length (in.)	Comb. Shank Code No.	Comb. Shank Price $	Weldon Flat Code No.	Weldon Flat Price $
1/8	3/8	3/8	13/16	2-3/8			103-158	**19.30**
3/16	3/8	1/2	1-1/8	2-11/16	103-622 •	**18.90**	103-160	**19.30**
1/4	3/8	5/8	1-1/2	3-1/16	103-624 •	**17.00**	103-162	**19.30**
5/16	3/8	3/4	1-3/4	3-5/16			103-164	**19.60**
3/8	3/8	3/4	1-3/4	3-5/16	103-628 •	**17.10**	103-166	**19.60**
1/2	1/2	1	2-7/32	4	103-630 •	**20.50**	103-168	**23.30**
5/8	5/8	1-3/8	2-23/32	4-5/8	103-632 •	**41.20**	103-170	**48.10**
3/4	3/4	1-5/8	3-11/32	5-3/8	103-634 •	**69.70**	103-172	**54.40**
7/8	7/8	2	4	6	103-636 •	**70.40**	103-174	**72.30**
1	1	2-1/2	4-31/32	7-1/4			103-176	**101.50**
1-1/4	1-1/4	3	4-31/32	7-1/4			103-178	**135.20**

• Only available while quantities last

END MILLS

Sowa

2 Flute Long Length HSCO



HSCO | BRIGHT | LONG LENGTH | 30°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	1-1/4	3-1/8	103-130	**20.60**
5/16	3/8	1-3/8	3-1/8	103-132	**20.60**
3/8	3/8	1-1/2	3-1/4	103-134	**20.60**
1/2	1/2	2	4	103-136	**25.50**
5/8	5/8	2	4-1/8	103-138	**42.20**
3/4	3/4	2-1/4	4-1/2	103-140	**54.80**
7/8	7/8	2-1/2	4-3/4	103-142	**63.30**
1	1	3	5-1/2	103-144	**88.40**
1-1/8	1	3	5-1/2	103-146	**130.80**
1-1/4	1-1/4	3	5-1/2	103-150	**157.90**
1-1/2	1-1/4	3	5-1/2	103-152	**205.00**
1-3/4	1-1/4	3	5-1/2	103-154	**223.30**
2	1-1/4	3	5-1/2	103-156	**276.40**

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. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	5/8	2-7/16	103-506	**12.80**
5/16	3/8	3/4	2-1/2	103-507	**12.80**
3/8	3/8	3/4	2-1/2	103-508	**12.80**
7/16	3/8	1	2-11/16	103-509	**21.30**
1/2	1/2	1-1/4	3-1/4	103-510	**21.30**
5/8	5/8	1-5/8	3-3/4	103-511	**37.10**
3/4	3/4	1-5/8	3-7/8	103-512	**48.00**
7/8	3/4	1-7/8	4-1/8	103-513	**55.70**
1	1	2	4-1/2	103-514	**71.40**
1-1/4	1-1/4	2	4-1/2	103-515	**107.20**
1-1/2	1-1/4	2	4-1/2	103-516	**162.70**
2	1-1/4	2	4-1/2	103-517	**237.90**

2 Flute Long Length HSS For Aluminum



HSS | BRIGHT | LONG LENGTH | 42°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	1-1/4	3-1/16	103-518	**16.50**
5/16	3/8	1-3/8	3-1/8	103-519	**16.70**
3/8	3/8	1-1/2	3-1/4	103-520	**16.70**
7/16	1/2	1-3/4	3-3/4	103-521	**27.70**
1/2	1/2	2	4	103-522	**27.70**
5/8	5/8	2-1/2	4-5/8	103-523	**48.00**
3/4	3/4	3	5-1/4	103-524	**62.40**
1	1	4	6-1/2	103-525	**92.80**
1-1/4	1-1/4	4	6-1/2	103-526	**139.20**
1-1/2	1-1/4	4	6-1/2	103-527	**199.90**
2	1-1/4	4	6-1/2	103-528	**344.20**

2 Flute Extra Long Length HSS For Aluminum



HSS | BRIGHT | X-LONG LENGTH | 42°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	1-3/4	3-9/16	103-529	**18.20**
5/16	3/8	2	3-3/4	103-530	**18.20**
3/8	3/8	2-1/2	4-1/4	103-531	**18.20**
1/2	1/2	3	5	103-532	**33.30**
5/8	5/8	4	6-1/8	103-533	**62.40**
3/4	3/4	4	6-1/4	103-534	**81.10**
1	1	6	8-1/2	103-535	**120.50**
1-1/4	1-1/4	6	8-1/2	103-536	**180.80**
1-1/2	1-1/4	8	10-1/2	103-537	**288.80**

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



HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	3/8	3/8	3-1/16	103-180	**19.10**
5/32	3/8	7/16	3-1/8	103-182	**19.10**
3/16	3/8	7/16	3-1/8	103-184	**19.10**
7/32	3/8	1/2	3-1/8	103-186	**15.90**
1/4	3/8	1/2	3-1/8	103-188	**19.10**
9/32	3/8	9/16	3-1/8	103-190	**15.90**
5/16	3/8	9/16	3-1/8	103-192	**19.10**
11/32	3/8	9/16	3-1/8	103-194	**19.10**
3/8	3/8	9/16	3-1/8	103-196	**19.10**
13/32	1/2	9/16	3-1/8	103-198	**30.80**
7/16	1/2	13/16	3-3/4	103-200	**30.80**
15/32	1/2	13/16	3-3/4	103-202	**25.60**
1/2	1/2	13/16	3-3/4	103-204	**30.80**
9/16	5/8	1-1/8	4-1/2	103-206	**47.50**
5/8	5/8	1-1/8	4-1/2	103-208	**56.30**
11/16	3/4	1-5/16	5	103-210	**54.20**
3/4	3/4	1-5/16	5	103-212	**73.00**
1	1	1-5/8	5-7/8	103-220	**115.40**

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.



HSCO | BRIGHT | STUB LENGTH | 30°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/32	3/16	3/64	2	103-281	**18.20**
3/64	3/16	1/16	2	103-282	**17.30**
1/16	3/16	3/32	2	103-283	**16.50**
5/64	3/16	1/8	2	103-284	**15.00**
3/32	3/16	9/64	2	103-285	**16.50**
7/64	3/16	5/32	2	103-286	**13.60**
1/8	3/16	3/16	2	103-288	**16.50**
9/64	3/16	7/32	2	103-289	**13.60**
5/32	3/16	15/64	2	103-290	**16.50**
11/64	3/16	1/4	2	103-291	**13.60**
3/16	3/16	9/32	2	103-292	**13.60**

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.



HSCO | BRIGHT | REG LENGTH | 30°

Inch

Speeds & Feeds ☞ P. A46

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/32	3/16	3/32	2-1/4	103-441	18.20
3/64	3/16	9/64	2-1/4	103-442	17.30
1/16	3/16	3/16	2-1/4	103-443	16.50
5/64	3/16	15/64	2-1/4	103-444	16.50
3/32	3/16	9/32	2-1/4	103-445	16.50
7/64	3/16	21/64	2-1/4	103-446	13.60
1/8	3/16	3/8	2-1/4	103-447	16.50
9/64	3/16	13/32	2-1/4	103-448	13.60
5/32	3/16	7/16	2-1/4	103-449	16.50
11/64	3/16	1/2	2-1/4	103-450	16.50
3/16	3/16	1/2	2-1/4	103-451	16.50

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



HSCO | BRIGHT | LONG LENGTH | 30°

Inch

Speeds & Feeds ☞ P. A46

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	7/32	2-1/2	103-452	17.80
5/64	3/16	1/4	2-1/2	103-453	17.80
3/32	3/16	9/32	2-5/8	103-454	17.80
7/64	3/16	9/32	2-5/8	103-455	17.80
1/8	3/16	3/4	3-1/8	103-456	18.90
9/64	3/16	3/4	3-1/8	103-457	18.90
5/32	3/16	7/8	3-1/4	103-458	18.90
11/64	3/16	7/8	3-1/4	103-459	18.90
3/16	3/16	1	3-3/8	103-460	18.90

2 Flute Ball Nose Regular Length HSCO



HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
1/8	3/8	3/8	2-5/16	103-801 •	21.20	103-394	20.10
3/16	3/8	1/2	2-3/8	103-802 •	17.50	103-395	20.10
1/4	3/8	5/8	2-7/16	103-803 •	17.50	103-396	20.10
5/16	3/8	3/4	2-1/2	103-804 •	17.50	103-397	20.10
3/8	3/8	3/4	2-1/2			103-398	20.10
7/16	1/2	1	3	103-806 •	24.80	103-399	28.40
1/2	1/2	1	3			103-400	28.40
5/8	5/8	1-3/8	3-1/2	103-808 •	42.20	103-402	45.80
3/4	3/4	1-5/8	3-7/8	103-809 •	54.10	103-404	58.60
7/8	3/4	2	4-1/4	103-810 •	62.10	103-405	67.50
1	1	2-1/4	4-3/4	103-811 •	92.00	103-406	82.40

• Only available while quantities last

2 Flute Ball Nose Extended Shank HSCO



HSCO | BRIGHT | EXTENDED SHANK | 30°

Speeds & Feeds ☞ P. A46

Inch

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 $
1/8	3/8	3/8	13/16	2-3/8	103-821 •	23.30	103-410	26.70
3/16	3/8	1/2	1-1/8	2-11/16	103-822 •	23.30	103-411	26.70
1/4	3/8	5/8	1-1/2	3-1/16	103-823 •	23.30	103-412	26.70
5/16	3/8	3/4	1-3/4	3-5/16			103-413	26.80
3/8	3/8	3/4	1-3/4	3-5/16	103-825 •	23.60	103-414	26.80
7/16	1/2	1	1-7/8	3-11/16			103-415	28.30
1/2	1/2	1	2-1/4	4	103-827 •	28.30	103-416	32.30
5/8	5/8	1-3/8	2-3/4	4-5/8			103-417	58.80
3/4	3/4	1-5/8	3-3/8	5-3/8			103-418	78.70
1	1	2-1/2	5	7-1/4	103-830 •	104.80	103-419	116.10

• Only available while quantities last

2 Flute Ball Nose Double End HSCO & HSS



HSCO | HSS | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	HSCO Code No.	Price $	HSS Code No.	Price $
1/8	3/8	3/8	3-1/16	104-174	37.20	104-226	24.70
3/16	3/8	7/16	3-1/8	104-176	30.70	104-228	29.90
1/4	3/8	1/2	3-1/8	104-178	37.20	104-230	24.70
5/16	3/8	9/16	3-1/8	104-180	37.20	104-232	22.40
3/8	3/8	9/16	3-1/8	104-182	37.20	104-234	24.70
7/16	1/2	13/16	3-3/4	104-184	44.90	104-236	36.00
1/2	1/2	13/16	3-3/4	104-186	54.30	104-238	36.00
5/8	5/8	1-1/8	4-1/2	104-188	95.70	104-240	63.40
3/4	3/4	1-5/16	5	104-190	115.30	104-242	67.40
1	1	1-5/8	5-7/8	104-192	139.60	104-244	111.70

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. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	3/32	2	103-270	35.70
3/32	3/16	9/64	2	103-271	35.70
1/8	3/16	3/16	2	103-272	30.80
5/32	3/16	15/64	2	103-273	23.00
3/16	3/16	9/32	2	103-274	30.80

END MILLS

2 Flute Ball Nose Double End Reg. 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



Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/32	3/16	3/32	2	103-420	**51.20**
3/64	3/16	1/16	2	103-421	**42.60**
1/16	3/16	3/32	2	103-488	**35.70**
5/64	3/16	1/8	2	103-489	**29.50**
3/32	3/16	9/64	2	103-490	**35.70**
7/64	3/16	21/64	2-1/4	103-491	**37.60**
1/8	3/16	3/8	2-1/4	103-492	**25.60**
9/64	3/16	13/32	2-1/4	103-493	**26.90**
5/32	3/16	7/16	2-1/4	103-494	**30.80**
11/64	3/16	1/2	2-1/4	103-495	**26.90**
3/16	3/16	1/2	2-1/4	103-496	**28.40**

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



Speeds & Feeds ☞ P. A46

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	7/32	2-1/2	103-497	**37.10**
3/32	3/16	9/32	2-5/8	103-499	**30.60**
1/8	3/16	3/4	3-1/8	103-501	**27.50**
5/32	3/16	7/8	3-1/4	103-503	**33.30**
3/16	3/16	1	3-3/8	103-504	**33.30**

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



Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/4	3/32	31/32	103-580	**9.90**
3/32	1/4	5/32	1-1/64	103-582	**9.90**
1/8	1/4	3/16	1-3/32	103-584	**9.90**
5/32	1/4	1/4	1-9/32	103-586	**9.90**
3/16	1/4	9/32	1-11/32	103-588	**9.90**
7/32	1/4	5/16	1-13/32	103-590	**9.90**
1/4	1/4	3/8	1-13/32	103-592	**9.90**

3 Flute Long Length Throwaway HSCO





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	1/4	5/32	1-3/32	103-594	**10.90**
5/64	1/4	7/32	1-3/16	103-596	**10.90**
3/32	1/4	1/4	1-1/4	103-598	**10.90**
7/64	1/4	9/32	1-9/32	103-600	**10.90**
1/8	1/4	5/16	1-11/32	103-602	**10.90**
9/64	1/4	11/32	1-7/16	103-604	**10.90**
5/32	1/4	3/8	1-17/32	103-606	**10.90**
11/64	1/4	13/32	1-19/32	103-608	**10.90**
3/16	1/4	7/16	1-21/32	103-610	**10.90**
13/64	1/4	15/32	1-11/16	103-612	**10.90**
7/32	1/4	1/2	1-3/4	103-614	**10.90**
15/64	1/4	9/16	1-13/16	103-616	**10.90**
1/4	1/4	5/8	1-3/4	103-618	**10.90**

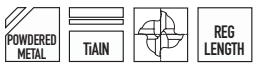
Variable Helix PMX End Mills

4 Flute Variable Helix Powdered Metal TiAlN Coated

High Performance Powder Metal Steel: high resistance and toughness
Variable Helix geometry to avoid vibration and cutting edge scaling
Noise reduction for silent and soft machining



- Weldon Flat



Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	5/8	2-7/16	102-284	**37.80**
5/16	3/8	3/4	2-1/2	102-286	**40.00**
3/8	3/8	3/4	2-1/2	102-288	**41.10**
7/16	3/8	1	2-11/16	102-290	**49.50**
1/2	1/2	1-1/4	3-1/4	102-292	**48.30**
5/8	5/8	1-5/8	3-3/4	102-294	**65.60**
3/4	3/4	1-5/8	3-7/8	102-296	**99.00**
1	1	2	4-1/2	102-298	**172.50**

Speeds & Feeds

Material	SFM	1/4	5/16	3/8	7/16	1/2	5/8	3/4	1
Low Carbon	148-246	.0015	.0017	.0028	.0034	.0034	.0057	.0057	.0057
Tool Steels	65-155	.0012	.0015	.0026	.0026	.0026	.0037	.0037	.0037
Stainless 300	65-115	.0012	.0015	.0026	.0026	.0026	.0037	.0037	.0037
Stainless 400	98-148	.0012	.0015	.0026	.0026	.0026	.0037	.0037	.0037
Cast Iron	115-213	.0015	.0017	.0028	.0034	.0034	.0057	.0057	.0057
Titanium	98-148	.0020	.0030	.0038	.0045	.0045	.0063	.0074	.0074
Bronze	360-689	.0020	.0030	.0038	.0045	.0045	.0063	.0074	.0074
Aluminum 60-61	951-1378	.0020	.0030	.0038	.0045	.0045	.0063	.0074	.0074
Aluminum 70-75	295-557	.0015	.0017	.0028	.0034	.0034	.0057	.0057	.0057

* 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.

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.







Inch

Speeds & Feeds ☞ P. A47

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 $
1/8	3/8	3/8	2-5/16	4	103-222	**13.40**	104-522	**24.00**	104-400	**10.80**		
5/32	3/8	7/16	2-3/8	4	103-223	**13.40**			104-402	**10.70**	103-021 •	**11.70**
3/16	3/8	1/2	2-3/8	4	103-224	**13.40**	104-524	**24.00**	104-404	**10.70**		
7/32	3/8	9/16	2-7/16	4	103-225	**13.40**			104-406	**10.70**	103-023 •	**13.00**
1/4	3/8	5/8	2-7/16	4	103-226	**13.40**	104-526	**23.00**	104-408	**10.70**		
9/32	3/8	11/16	2-1/2	4	103-227	**13.40**			104-410	**9.90**		
5/16	3/8	3/4	2-1/2	4	103-228	**13.40**	104-528	**27.40**	104-412	**11.90**		
11/32	3/8	3/4	2-1/2	4	103-229	**13.40**			104-414	**10.70**	103-027 •	**11.70**
3/8	3/8	3/4	2-1/2	4	103-230	**13.40**	104-530	**28.20**	104-416	**10.70**		
13/32	3/8	1	2-11/16	4	103-231	**21.30**			104-418	**11.90**		
7/16	3/8	1	2-11/16	4	103-232	**21.30**	104-532	**37.60**	104-420	**17.20**	103-029 •	**22.60**
1/2	1/2	1-1/4	3-1/4	4	103-235	**21.30**	104-535	**39.10**	104-422	**17.20**		
9/16	1/2	1-3/8	3-3/8	4	103-237	**40.70**			104-424	**30.30**	103-031 •	**43.20**
5/8	5/8	1-5/8	3-3/4	4	103-240	**38.70**	104-540	**58.70**	104-426	**31.00**		
11/16	5/8	1-5/8	3-3/4	4	103-242	**45.10**			104-428	**36.10**	103-033 •	**39.60**
3/4	3/4	1-5/8	3-7/8	4	103-246	**50.20**	104-546	**81.30**	104-430	**39.40**		
13/16	3/4	1-7/8	4-1/8	4	103-248	**58.00**						
7/8	3/4	1-7/8	4-1/8	4	103-252	**58.00**			104-432	**51.60**		
1	1	2	4-1/2	4	103-259	**74.70**	104-559	**126.30**	104-434	**58.80**		
1-1/8	1	2	4-1/2	4			104-561	**185.50**				
1-1/8	1	2	4-1/2	6	103-261	**119.80**			104-436	**101.90**		
1-1/4	1-1/4	2	4-1/2	4			104-564	**213.00**				
1-1/4	1-1/4	2	4-1/2	6	103-264	**136.30**			104-438	**115.90**		
1-3/8	1	2	4-1/2	6	103-265	**143.80**						
1-1/2	1-1/4	2	4-1/2	4							103-046 •	**189.40**
1-1/2	1-1/4	2	4-1/2	6	103-267	**196.30**	104-567	**227.70**	104-442	**167.00**	103-044 •	**208.30**
2	1-1/4	2	4-1/2	6	103-269	**304.30**			104-444	**310.40**		
6PC Set	**Contains: 1/4" - 3/4"**				103-581	**193.60**						

• Only available while quantities last

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





Metric

Speeds & Feeds ☞ P. A47

Cutting Dia. (mm)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
2 mm	3/8	3/8	2-5/16	103-730	**19.20**
3 mm	3/8	3/8	2-5/16	103-731	**19.20**
4 mm	3/8	1/2	2-3/8	103-732	**19.20**
5 mm	3/8	9/16	2-1/2	103-733	**19.20**
6 mm	3/8	5/8	2-1/2	103-734	**19.20**
7 mm	3/8	11/16	2-1/2	103-735	**19.20**
8 mm	3/8	3/4	2-1/2	103-736	**19.20**
10 mm	3/8	1	2-11/16	103-737	**19.20**
11 mm	3/8	1	2-11/16	103-749	**29.20**
12 mm	3/8	1	2-11/16	103-738	**29.20**
13 mm	1/2	1-1/4	3-1/4	103-750	**33.60**
14 mm	1/2	1-3/8	3-3/8	103-739	**33.60**
16 mm	5/8	1-5/8	3-3/4	103-740	**51.30**
18 mm	5/8	1-5/8	3-3/4	103-741	**59.80**
20 mm	5/8	1-7/8	4-1/8	103-742	**66.80**
22 mm	3/4	1-7/8	4-1/8	103-743	**77.50**
24 mm	3/4	2	4-1/2	103-744	**99.00**

Multi-Flute Long Length HSCO

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





Inch

Speeds & Feeds ☞ P. A47

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Comb. Shank Code No.	Comb. Shank Price $	Weldon Flat Code No.	Weldon Flat Price $
1/4	3/8	1-1/4	3-1/16	4			103-360	**21.60**
5/16	3/8	1-3/8	3-1/8	4			103-361	**21.60**
3/8	3/8	1-1/2	3-1/4	4			103-362	**21.60**
1/2	1/2	2	4	4	103-658 •	**26.70**	103-363	**28.00**
5/8	5/8	2-1/2	4-5/8	4	103-660 •	**53.20**	103-364	**50.20**
3/4	3/4	3	5-1/4	4			103-365	**66.40**
7/8	3/4	3-1/2	5-3/4	4	103-664 •	**137.40**	103-366	**78.00**
1	1	4	6-1/2	4	103-666 •	**112.10**	103-367	**105.90**
1-1/4	1-1/4	4	6-1/2	6			103-368	**172.00**
1-1/2	1-1/4	4	6-1/2	6			103-369	**257.00**

• Only available while quantities last

END MILLS

Multi-Flute Extra Long Length HSCO

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





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
1/4	3/8	1-3/4	3-9/16	4	103-370	**26.20**
5/16	3/8	2	3-3/4	4	103-371	**27.50**
3/8	3/8	2-1/2	4-1/4	4	103-372	**28.50**
1/2	1/2	3	5	4	103-373	**32.70**
5/8	5/8	4	6-1/8	4	103-374	**62.70**
3/4	3/4	4	6-1/4	4	103-375	**76.70**
7/8	3/4	5	7-1/4	4	103-376	**93.30**
1	1	6	8-1/2	4	103-377	**132.20**
1-1/4	1-1/4	6	8-1/2	6	103-378	**206.40**
1-1/2	1-1/4	8	10-1/2	6	103-378A	**298.00**

4 Flute Double End Regular Length HSCO

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





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	3/8	3/8	3-1/16	103-379	**20.10**
3/16	3/8	1/2	3-1/4	103-380	**20.10**
1/4	3/8	5/8	3-3/8	103-381	**20.10**
5/16	3/8	3/4	3-1/2	103-382	**20.10**
3/8	3/8	3/4	3-1/2	103-383	**20.10**
1/2	1/2	1	4-1/8	103-384	**34.00**
5/8	5/8	1-3/8	5	103-385	**61.80**
3/4	3/4	1-5/8	5-5/8	103-386	**80.30**
7/8	7/8	1-7/8	6-1/8	103-387	**93.30**
1	1	1-7/8	6-3/8	103-388	**126.90**

4 Flute Double End Stub Length Miniature HSCO

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





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	3/32	2	103-461	**16.50**
5/64	3/16	1/8	2	103-462	**16.50**
3/32	3/16	9/64	2	103-463	**16.50**
7/64	3/16	5/32	2	103-464	**13.60**
1/8	3/16	3/16	2	103-465	**16.50**
9/64	3/16	7/32	2	103-466	**13.60**
5/32	3/16	15/64	2	103-467	**16.50**
11/64	3/16	1/4	2	103-468	**13.60**
3/16	3/16	9/32	2	103-469	**13.60**

4 Flute Double End Regular Length Miniature HSCO

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





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	3/16	2-1/4	103-470	**16.50**
5/64	3/16	15/64	2-1/4	103-471	**16.50**
3/32	3/16	9/32	2-1/4	103-472	**16.50**
7/64	3/16	21/64	2-1/4	103-473	**16.50**
1/8	3/16	3/8	2-1/4	103-474	**16.50**
9/64	3/16	13/32	2-1/4	103-475	**16.50**
5/32	3/16	7/16	2-1/4	103-476	**16.50**
11/64	3/16	1/2	2-1/4	103-477	**15.00**
3/16	3/16	1/2	2-1/4	103-478	**13.60**

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.





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/16	3/16	7/32	2-1/2	103-479	**17.80**
5/64	3/16	1/4	2-1/2	103-480	**14.70**
3/32	3/16	9/32	2-5/8	103-481	**17.80**
7/64	3/16	9/32	2-5/8	103-482	**14.70**
1/8	3/16	3/4	3-1/8	103-483	**18.90**
9/64	3/16	3/4	3-1/8	103-484	**17.10**
5/32	3/16	7/8	3-1/4	103-485	**18.90**
11/64	3/16	7/8	3-1/4	103-486	**18.90**
3/16	3/16	1	3-3/8	103-487	**18.90**

60° High Helix Regular Length HSCO

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

- Centre cutting





Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
1/4	3/8	5/8	2-7/16	3	103-538	**20.60**
5/16	3/8	3/4	2-1/2	3	103-539	**20.60**
3/8	3/8	3/4	2-1/2	3	103-540	**20.60**
7/16	3/8	1	2-11/16	3	103-541	**31.40**
1/2	1/2	1-1/4	3-1/4	3	103-542	**31.40**
5/8	5/8	1-5/8	3-3/4	3	103-543	**56.90**
3/4	3/4	1-5/8	3-7/8	3	103-544	**74.10**
1	1	2	4-1/2	4	103-546	**109.90**
1-1/4	1-1/4	2	4-1/2	4	103-547	**203.10**
1-1/2	1-1/4	2	4-1/2	4	103-548	**292.80**
2	1-1/4	2	4-1/2	4	103-549	**453.70**

3/4" Shank Regular Length HSCO



HSCO | BRIGHT | REG LENGTH | 30°

Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
3/4	3/4	1-5/8	3-7/8	4	103-336	**45.80**
7/8	3/4	1-7/8	4-1/8	4	103-338	**52.80**
1	3/4	1-7/8	4-1/8	4	103-340	**67.80**
1-1/8	3/4	2	4-1/4	6	103-341	**109.10**
1-1/4	3/4	2	4-1/4	6	103-342	**118.40**
1-1/2	3/4	1-1/2	4-1/4	6	103-343	**136.70**
1-3/4	3/4	1-1/2	4-1/2	6	103-344	**202.70**
2	3/4	1-1/2	4-1/2	8	103-345	**279.30**

Multi-Flute Centre Cut Heavy Duty HSCO



HSCO | MULTIPLE LENGTHS | 30°

Speeds & Feeds ☞ P. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
2	2	2	5-3/4	103-389	**335.30**
2	2	4	7-3/4	103-390	**468.50**
2	2	5	8-3/4	103-391	**599.50**
2	2	6	9-3/4	103-392	**609.90**
2	2	8	11-3/4	103-393	**725.50**

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. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	3/8	3/8	2-5/16	104-950	**30.10**
3/16	3/8	1/2	2-3/8	104-952	**30.10**
1/4	3/8	5/8	2-7/16	104-954	**30.10**
5/16	3/8	3/4	2-1/2	104-956	**30.10**
3/8	3/8	3/4	2-1/2	104-958	**30.10**
7/16	3/8	1	2-11/14	104-960	**41.50**
1/2	1/2	1-1/4	3-1/4	104-962	**41.50**
5/8	5/8	1-5/8	3-3/4	104-964	**65.60**
11/16	3/4	1-5/8	3-3/4	104-966	**83.30**
3/4	3/4	1-5/8	3-7/8	104-968	**83.30**
7/8	7/8	1-7/8	4-1/8	104-970	**95.70**
1	1	2	4-1/2	104-972	**113.30**
1-1/8	1	2	4-1/2	104-974	**174.90**
1-1/4	1-1/4	2	4-1/2	104-976	**186.10**
1-1/2	1-1/4	2	4-1/2	104-978	**254.00**
2	1-1/4	2	4-1/2	104-980	**357.20**

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. A47

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/4	3/8	1-1/4	3-1/16	104-982	**38.70**
5/16	3/8	1-3/8	3-1/8	104-984	**38.70**
3/8	3/8	1-1/2	3-1/4	104-986	**38.70**
1/2	1/2	2	4	104-988	**48.10**
5/8	5/8	2-1/2	4-5/8	104-990	**77.90**
3/4	3/4	3	5-1/4	104-992	**100.50**
7/8	7/8	3-1/2	5-3/4	104-994	**106.30**
1	1	4	6-1/2	104-996	**146.50**

Regular Length Roughing End Mills HSCO

Multiple Flute: This general purpose rougher is designed for high production metal removal in a wide range of work piece 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. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Fl.	Comb. Shank Code No.	Price $	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/4	3/8	5/8	2-7/16	3	103-950 •	**26.10**	103-900	**29.50**	104-500	**23.70**
5/16	3/8	3/4	2-1/2	3	103-951 •	**26.10**	103-901	**29.50**	104-501	**44.30**
3/8	3/8	3/4	2-1/2	4			103-902	**29.50**	104-502	**44.30**
1/2	1/2	1-1/4	3-1/4	4	103-953 •	**43.30**	103-903	**40.30**	104-503	**35.20**
5/8	5/8	1-5/8	3-3/4	4			103-904	**52.70**	104-504	**82.80**
3/4	5/8	1-5/8	3-3/4	4	103-955 •	**53.30**	103-905	**59.90**	104-505	**98.70**
3/4	3/4	1-5/8	3-3/4	4			103-906	**59.90**	104-506	**96.60**
7/8	3/4	1-7/8	4-1/8	5	103-957 •	**71.10**	103-907	**66.40**	104-507	**105.80**
1	1	2	4-1/2	5			103-908	**89.00**	104-508	**140.80**
1-1/8	1	2	4-1/2	6	103-959 •	**96.80**	103-909	**109.40**	104-509	**132.80**
1-1/4	1-1/4	2	4-1/2	6			103-910	**142.10**	104-510	**218.90**
1-1/2	1-1/4	2	4-1/2	6			103-911	**169.60**	104-511	**215.00**
1-3/4	1-1/4	2	4-1/2	6			103-912	**191.70**		
2	2	2	5-3/4	8			103-913	**302.50**		
2	2	3	6-3/4	8			103-914	**324.90**		
2	2	4	7-3/4	8			103-915	**394.10**		

• Only available while quantities last

Medium Length Roughing End Mills HSCO



HSCO | BRIGHT | MEDIUM LENGTH | 30°

Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
1	1	3	5-1/2	5	103-916	**98.30**
1-1/4	1-1/4	3	5-1/2	6	103-917	**158.80**
1-1/2	1-1/4	3	5-1/2	6	103-918	**191.80**
2	2	6	9-3/4	8	103-919	**483.60**

END MILLS

Long Length Roughing End Mills HSCO





Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Comb. Shank Code No.	Price $	Weldon Flat Code No.	Price $
3/8	3/8	1-1/2	4	4			103-932	**42.40**
1/2	1/2	2	4	4	103-970 •	**47.80**	103-920	**52.70**
5/8	5/8	2-1/2	4-5/8	4	103-971 •	**68.60**	103-921	**64.00**
3/4	5/8	3	5-1/8	4	103-972 •	**61.10**	103-922	**69.00**
3/4	3/4	3	5-1/4	4			103-923	**69.00**
7/8	3/4	3-1/2	5-3/4	5	103-974 •	**74.10**	103-924	**83.50**
1	1	4	6-1/2	5			103-925	**107.20**
1-1/4	1-1/4	4	6-1/2	6	103-976 •	**151.20**	103-926	**170.70**
1-1/2	1-1/4	4	6-1/2	6			103-927	**202.80**
1-3/4	1-1/4	4	6-1/2	6	103-978 •	**213.00**	103-928	**257.40**
2	2	8	11-3/4	8			103-929	**661.40**

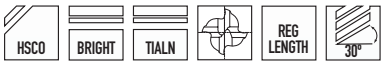
• Only available while quantities last

Regular Length Centre Cut Roughing End Mills HSCO

This general purpose rougher is designed for high production metal removal in a wide range of work piece 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





Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/2	1/2	1-1/4	3-1/4	4	103-100	**44.40**	103-585	**44.70**
5/8	5/8	1-5/8	3-3/4	4	103-101	**54.30**	103-591	**79.60**
3/4	3/4	1-5/8	3-7/8	4	103-102	**67.50**	103-587	**68.00**
1	1	2	4-1/2	5	103-103	**97.50**	103-593	**125.70**
1-1/4	1-1/4	2	4-1/2	6	103-104	**174.10**	103-589	**153.50**
1-1/2	1-1/4	2	4-1/2	6	103-105	**186.60**	103-595	**274.60**

Stub Length Centre Cutting Rougher HSCO

General purpose rougher is designed for high production metal removal in a wide range of work piece 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





Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/4	3/8	1/4	2-1/16	3	104-340	**32.90**	104-360	**51.20**
3/8	3/8	3/8	2-5/32	3	104-342	**36.20**	104-362	**51.20**
1/2	1/2	1/2	2-1/2	3	104-344	**48.40**	104-364	**63.70**
5/8	5/8	5/8	2-3/4	3	104-346	**49.00**	104-366	**64.40**
3/4	3/4	3/4	2-7/8	3	104-348	**80.90**	104-368	**89.00**
1	1	1	3-1/2	3	104-350	**96.60**	104-370	**141.00**

Reg. Length Roughing End Mills For Aluminum HSCO





Speeds & Feeds ☞ P. A48

Inch

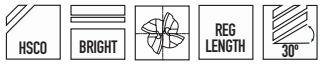
Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Code No.	Price $
1/4	3/8	5/8	2-7/16	3	104-052	**41.20**
5/16	3/8	3/4	2-1/2	3	104-054	**41.20**
3/8	3/8	3/4	2-1/2	3	104-056	**41.20**
1/2	1/2	1-1/4	3-1/4	3	104-058	**57.90**
5/8	5/8	1-5/8	3-3/4	3	104-060	**69.00**
3/4	3/4	1-5/8	3-3/4	3	104-062	**76.30**
1	1	2	4-1/2	3	104-066	**124.00**
1-1/4	1-1/4	2	4-1/2	3	104-068	**164.90**
1-1/2	1-1/4	2	4-1/2	3	104-070	**195.70**

Regular Length Ball Nose Rougher HSCO

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

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





Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $
1/4	3/8	5/8	2-7/16	3	104-088	**53.80**
5/16	3/8	3/4	2-1/2	3	104-089	**44.50**
3/8	3/8	3/4	2-1/2	4	104-090	**53.80**
1/2	1/2	1-1/4	3-1/4	4	104-091	**74.10**
5/8	5/8	1-5/8	3-3/4	4	104-092	**90.10**
3/4	3/4	1-3/4	4	4	104-093	**112.10**
1	3/4	2	4-1/2	5	104-094	**134.00**
1	1	2	4-1/2	5	104-095	**162.20**
1-1/4	1-1/4	2	4-1/2	6	104-096	**224.20**
1-1/2	1-1/4	2	4-1/2	6	104-097	**300.50**

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 work piece 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





Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/4	3/8	1/4	2-1/16	3	104-300	**39.80**	104-320	**39.10**
3/8	3/8	3/8	2-5/32	3	104-302	**39.80**	104-322	**47.20**
1/2	1/2	1/2	2-1/2	3	104-304	**53.50**	104-324	**67.70**
5/8	5/8	5/8	2-3/4	3	104-306	**65.20**	104-326	**84.70**
3/4	3/4	3/4	2-7/8	3	104-308	**73.50**	104-328	**114.30**
7/8	3/4	7/8	3-1/8	3	104-310	**86.00**	104-330	**120.30**
1	1	1	3-3/4	3	104-312	**96.70**	104-332	**141.00**

Regular Length Fine Pitch Rougher HSCO



HSCO | BRIGHT | TiALN | REG LENGTH | 30°

Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/4	3/8	5/8	2-7/16	3	104-150	**33.00**	104-202	**44.50**
5/16	3/8	3/4	2-1/2	3	104-152	**36.00**	104-204	**44.50**
3/8	3/8	3/4	2-1/2	4	104-154	**32.40**	104-206	**45.00**
7/16	3/8	1	2-11/16	4	104-156	**49.40**	104-208	**55.20**
1/2	1/2	1-1/4	3-1/4	4	104-158	**44.40**	104-210	**61.90**
5/8	5/8	1-5/8	3-3/4	4	104-160	**54.30**	104-212	**77.40**
3/4	3/4	1-5/8	3-7/8	4	104-162	**67.50**	104-214	**103.70**
7/8	3/4	1-7/8	4-1/8	5	104-164	**71.70**	104-216	**135.60**
1	1	2	4-1/2	5	104-166	**97.50**	104-218	**148.30**
1-1/4	1-1/4	2	4-1/2	6	104-168	**174.10**	104-220	**179.90**
1-1/2	1-1/4	2	4-1/2	6	104-170	**233.10**	104-222	**327.60**
2	1-1/4	2	4-1/2	6	104-172	**229.70**	104-224	**360.00**

Long Length Fine Pitch Rougher HSCO



HSCO | BRIGHT | TiALN | LONG LENGTH | 30°

Speeds & Feeds ☞ P. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $	TiAlN Coated Code No.	Price $
1/2	1/2	2	4	4	104-250	**49.10**	104-266	**77.40**
5/8	5/8	2-1/2	4-5/8	4	104-252	**78.30**	104-268	**104.70**
3/4	3/4	3	5-1/4	4	104-254	**84.20**	104-270	**143.70**
7/8	7/8	3-1/2	5-3/4	5	104-256	**102.20**	104-272	**132.40**
1	1	4	6-1/2	5	104-258	**131.20**	104-274	**224.40**
1-1/4	1-1/4	4	6-1/2	6	104-260	**192.20**	104-276	**209.80**
1-1/2	1-1/4	4	6-1/2	6	104-262	**207.50**	104-278	**368.10**
2	1-1/4	4	6-1/2	6	104-264	**321.00**	104-280	**507.90**

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. A48

Inch

Cutting Dia. (in.)	Shank Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Flutes	Bright Finish Code No.	Price $
1/4	3/8	5/8	2-7/16	4	103-550	**16.80**
5/16	3/8	3/4	2-1/2	4	103-551	**16.80**
3/8	3/8	3/4	2-1/2	4	103-552	**16.80**
7/16	3/8	1	2-11/16	4	103-553	**26.90**
1/2	1/2	1-1/4	3-1/4	4	103-554	**26.90**
5/8	5/8	1-5/8	3-3/4	4	103-555	**48.80**
3/4	3/4	1-5/8	3-3/4	4	103-556	**63.30**
7/8	3/4	1-7/8	4-1/8	5	103-557	**73.10**
1	1	2	4-1/2	5	103-559	**94.20**
1-1/4	1-1/4	2	4-1/2	6	103-560	**171.60**
1-1/2	1-1/4	2	4-1/2	6	103-561	**204.60**
2	1-1/4	2	4-1/2	6	103-562	**301.90**

High Speed Steel Tapered End Mills

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



Inch

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
1/2°							
	AX103	3/32	3/4	3/8	2-7/8	154-200	**65.80**
	AX105	3/32	1-1/4	3/8	3-1/4	154-201	**75.00**
	AX203	1/8	3/4	3/8	2-7/8	154-202	**65.80**
	AX305	3/16	1-1/4	3/8	3-1/4	154-203	**80.20**
	AX405	1/4	1-1/4	3/8	3-1/4	154-204	**84.50**
	AX409	1/4	2-1/4	1/2	4-1/4	154-205	**120.90**
	AX609	3/8	2-1/4	1/2	4-1/4	154-206	**133.50**
1°							
	A102	3/32	1/2	3/8	2-5/8	154-207	**62.30**
	A103	3/32	3/4	3/8	2-7/8	154-208	**66.70**
	A201	1/8	1/4	3/8	2-5/8	154-209	**59.70**
	A203	1/8	3/4	3/8	2-7/8	154-210	**66.70**
	A204	1/8	1	3/8	2-7/8	154-211	**74.20**
	A303	3/16	3/4	3/8	2-7/8	154-212	**67.60**
	A305	3/16	1-1/4	3/8	3-1/4	154-213	**81.20**
	A403	1/4	3/4	3/8	2-7/8	154-214	**68.20**
	A405	1/4	1-1/4	3/8	3-1/4	154-215	**85.10**
	A409	1/4	2-1/4	1/2	4-1/8	154-216	**128.80**
	A605	3/8	1-1/4	1/2	3-1/4	154-217	**103.20**
	A609	3/8	2-1/4	1/2	4-1/4	154-218	**143.60**
	A805	1/2	1-1/4	1/2	3-1/4	154-219	**132.50**
	A809	1/2	2-1/4	1/2	4-1/4	154-220	**162.60**
	A813	1/2	3-1/4	1/2	5-1/2	154-221	**201.30**
1-1/2°							
	AAX203	1/8	3/4	3/8	2-7/8	154-222	**67.60**
	AAX405	1/4	1-1/4	3/8	3-1/4	154-223	**85.50**
2°							
	B103	3/32	3/4	3/8	2-7/8	154-225	**67.90**
	B105	3/32	1-1/4	3/8	3-1/4	154-226	**77.10**
	B204	1/8	1	3/8	2-7/8	154-227	**76.90**
	B303	3/16	3/4	3/8	2-7/8	154-228	**68.90**
	B305	3/16	1-1/4	3/8	3-1/4	154-229	**83.20**
	B403	1/4	3/4	3/8	2-7/8	154-230	**69.30**
	B405	1/4	1-1/4	3/8	3-1/4	154-231	**85.90**
	B409	1/4	2-1/4	1/2	4-1/4	154-232	**134.70**
	B413	1/4	3-1/4	1/2	5-1/2	154-233	**199.80**
	B605	3/8	1-1/4	1/2	3-1/4	154-234	**124.60**
	B609	3/8	2-1/4	1/2	4-1/4	154-235	**156.10**
	B805	1/2	1-1/4	1/2	3-1/4	154-236	**134.20**
	B809	1/2	2-1/4	1/2	4-1/4	154-237	**169.10**
3°							
	C104	3/32	1	3/8	2-7/8	154-238	**75.50**
	C106	3/32	1-1/4	3/8	3-1/4	154-239	**81.70**
	C203	1/8	3/4	3/8	2-7/8	154-240	**69.10**
	C204	1/8	1	3/8	2-7/8	154-241	**77.30**
	C303	3/16	3/4	3/8	2-7/8	154-242	**70.50**
	C305	3/16	1-1/4	3/8	3-1/4	154-243	**85.50**
	C403	1/4	3/4	3/8	2-7/8	154-244	**73.90**
	C405	1/4	1-1/4	3/8	3-1/4	154-245	**87.20**
	C409	1/4	2-1/4	1/2	4-1/4	154-246	**151.00**
	C605	3/8	1-1/4	1/2	3-1/4	154-247	**129.50**
	C805	1/2	1-1/4	1/2	3-1/4	154-248	**139.00**
	C809	1/2	2-1/4	5/8	4-3/8	154-249	**201.40**
5°							
	E004	1/16	1	3/8	2-7/8	154-250	**81.70**
	E103	3/32	3/4	3/8	2-7/8	154-251	**72.10**
	E104	3/32	1	3/8	2-7/8	154-252	**76.40**
	E106	3/32	1-1/2	3/8	3-1/4	154-253	**83.70**
	E203	1/8	3/4	3/8	2-7/8	154-254	**70.00**
	E204	1/8	1	3/8	2-7/8	154-255	**77.50**
	E205	1/8	1-1/4	3/8	3-1/4	154-256	**83.20**
	E206	1/8	1-1/2	3/8	3-1/4	154-257	**96.10**
	E208	1/8	2	1/2	3-7/8	154-258	**125.80**
	E210B	1/8	2-1/2	1/2	4-1/2	154-259	**164.70**
	E303	3/16	3/4	3/8	2-7/8	154-260	**71.70**
	E305	3/16	1-1/4	1/2	3-1/4	154-261	**89.50**

END MILLS

High Speed Steel Tapered End Mills Continued

Angle/ Side	Tool No.	Tip Dia.	Length Of Cut	Shank Dia.	Overall Length	Code No.	Price $
5°							
	E403	1/4	3/4	3/8	2-7/8	154-262	76.30
	E405	1/4	1-1/4	1/2	3-1/4	154-264	93.40
	E409A	1/4	2-1/4	5/8	4-1/2	154-265	181.20
	E605	3/8	1-1/4	1/2	3-1/4	154-266	137.90
	E609	3/8	2-1/4	3/4	4-3/4	154-267	210.50
	E613	3/8	3-1/4	3/4	5-1/2	154-268	328.40
	E805	1/2	1-1/4	1/2	3-1/4	154-269	166.90
	E809	1/2	2-1/4	3/4	4-1/2	154-270	268.80
7°							
	G004	1/16	1	3/8	2-7/8	154-271	85.50
	G104	3/32	1	3/8	2-7/8	154-272	79.70
	G203	1/8	3/4	3/8	2-7/8	154-273	72.70
	G206	1/8	1-1/2	1/2	3-1/4	154-274	96.70
	G305	3/16	1-1/4	1/2	3-1/8	154-275	108.50
	G403	1/4	3/4	1/2	3	154-276	96.70
	G405	1/4	1-1/4	1/2	3-1/4	154-277	112.10
	G409	1/4	2-1/4	3/4	4-1/2	154-278	236.30
	G609	3/8	2-1/4	3/4	4-1/2	154-279	302.70
10°							
	J102	3/32	1/2	3/8	2-5/8	154-280	74.20
	J106	3/32	1-1/2	1/2	3-1/2	154-281	154.40
	J203	1/8	3/4	3/8	2-7/8	154-282	80.00
	J205	1/8	1-1/4	1/2	3-1/4	154-283	120.40
	J309	3/16	2-1/4	3/4	4-1/2	154-284	324.00
	J403	1/4	3/4	1/2	2-7/8	154-285	98.40
	J405	1/4	1-1/4	1/2	3-1/4	154-286	155.50
	J409	1/4	2-1/4	3/4	4-1/2	154-287	336.80
	J605	3/8	1-1/4	5/8	3-1/2	154-288	190.70
	J805	1/2	1-1/4	3/4	3-1/2	154-289	227.60
15°							
	P103	3/32	3/4	1/2	2-3/4	154-290	99.00
	P106	3/32	1-1/2	3/4	3-3/4	154-291	193.00
	P202	1/8	1/2	3/8	2-7/8	154-292	85.80
	P204	1/8	1	1/2	3	154-293	124.10
	P304	3/16	1	1/2	3	154-294	148.80
	P404	1/4	1	1/2	3	154-295	188.20
	P406	1/4	1-1/2	3/4	3-3/4	154-296	246.80
	P605	3/8	1-1/4	3/4	3-5/8	154-297	260.80
	P805	1/2	1-1/4	3/4	3-1/2	154-298	308.80
20°							
	T0002	1/32	1/2	3/8	2-1/2	154-319	152.70
	T002	1/16	1/2	3/8	2-1/2	154-320	122.10
	T103	3/32	3/4	1/2	2-3/4	154-321	124.10
	T202	1/8	1/2	3/8	2-1/2	154-299	125.50
	T204	1/8	1	1/2	3	154-322	215.20
	T304	3/16	1	1/2	3	154-323	230.00
	T404	1/4	1	1/2	3	154-324	240.70
	T406	1/4	1-1/2	3/4	4	154-325	371.80
	T504	5/16	1	3/4	3-3/8	154-326	259.90
	T506	5/16	1-1/2	3/4	3-1/2	154-327	385.00
	T606	3/8	1-1/2	3/4	4	154-328	567.60
	T608	3/8	2	1	4-1/2	154-329	759.30
	T809	1/2	2-1/4	1-1/4	4-3/4	154-330	866.00
30°							
	U002A	1/16	1/2	1/2	2-1/2	154-331	170.20
	U103	3/32	3/4	1/2	2-3/4	154-332	172.60
	U202	1/8	1/2	1/2	2-1/2	154-333	162.00
	U204B	1/8	1	1/2	3-1/8	154-334	348.80
	U204A	1/8	1	5/8	3-1/8	154-335	348.80
	U404	1/4	1	3/4	3-1/2	154-336	391.70
	U406	1/4	1-1/2	1	4-1/8	154-337	679.70
	U605	3/8	1-1/4	1	4	154-338	673.20
	U606	3/8	1-1/2	1	4-1/4	154-339	749.70
	U805	1/2	1-1/4	1	4	154-340	741.60
	U806	1/2	1-1/2	1	4-1/4	154-341	799.70
35°							
	V203 (4 fl.)	1/8	3/4	1/2	3	154-342	454.30
	V404 (4 fl.)	1/4	1	1	3-1/4	154-344	584.80
45°							
	WA215	1/8	5/16	1/2	2-5/8	154-345	194.00
	WA215 (SP)	1/8	5/16	1/2	2-5/8	154-346	202.80
	WA203	1/8	3/4	5/8	3-1/4	154-347	446.90
	WA203 (SP)	1/8	3/4	5/8	3-1/4	154-348	455.70
	WA204B	1/8	1	3/4	3-3/4	154-349	621.10
	WA204B (SP)	1/8	1	3/4	3-3/4	154-350	635.30
	WA204A	1/8	1	1	3-3/4	154-351	621.10
	WA204A (SP)	1/8	1	1	3-3/4	154-352	635.30

Carbide Miniature Tapered End Mills

- End cutting
- Weldon flat



Inch

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
1/2°							
	CM_AX1001	1/32	1/4	1/8	2-1/2	154-001	108.90
	CM-AX1002	1/32	1/2	1/8	2-1/2	154-002	117.90
	CM-AX011	3/64	1/4	1/8	2-1/2	154-003	112.10
	CM-AX012	3/64	1/2	1/8	2-1/2	154-004	119.60
	CM-AX002	1/16	1/2	1/8	2-1/2	154-005	125.40
	CM-AX003	1/16	3/4	1/8	2-1/2	154-006	131.50
	CM-AX004	1/16	1	1/8	2-1/2	154-007	161.40
	CM-AX022	5/64	1/2	1/8	2-1/2	154-008	125.40
	CM-AX023	5/64	3/4	1/8	2-1/2	154-009	114.00
	CM-AX024	5/64	1	1/8	2-1/2	154-010	148.80
1°							
	CM-A0001	1/32	1/4	1/8	2-1/2	154-011	110.20
	CM-A0002	1/32	1/2	1/8	2-1/2	154-012	118.00
	CM-A001	3/64	1/4	1/8	2-1/2	154-013	110.40
	CM-A012	3/64	1/2	1/8	2-1/2	154-014	108.80
	CM-A002	1/16	1/2	1/8	2-1/2	154-015	127.00
	CM-A003	1/16	3/4	1/8	2-1/2	154-016	133.10
	CM-A004	1/16	1	1/8	2-1/2	154-017	162.90
	CM-A022	5/64	1/2	1/8	2-1/2	154-018	130.00
	CM-A023	5/64	3/4	1/8	2-1/2	154-019	127.00
	CM-A024	5/64	1	1/8	2-1/2	154-020	164.30
1-1/2°							
	CM-AAX1001	1/32	1/4	1/8	2-1/2	154-022	112.10
	CM-AAX1002	1/32	1/2	1/8	2-1/2	154-023	119.40
	CM-AAX011	3/64	1/4	1/8	2-1/2	154-024	113.60
	CM-AAX012	3/64	1/2	1/8	2-1/2	154-025	119.60
	CM-AAX002	1/16	1/2	1/8	2-1/2	154-026	128.50
	CM-AAX003	1/16	3/4	1/8	2-1/2	154-027	134.50
	CM-AAX004	1/16	1	3/16	3	154-028	166.00
	CM-AAX022	5/64	1/2	1/8	2-1/2	154-029	131.50
	CM-AAX023	5/64	3/4	1/8	2-1/2	154-030	128.50
	CM-AAX024	5/64	1	3/16	3	154-032	137.10
2°							
	CM-B0001	1/32	1/4	1/8	2-1/2	154-033	113.60
	CM-B0002	1/32	1/2	1/8	2-1/2	154-034	120.80
	CM-B011	3/64	1/4	1/8	2-1/2	154-035	108.70
	CM-B012	3/64	1/2	1/8	2-1/2	154-036	108.90
	CM-B002	1/16	1/2	1/8	2-1/2	154-037	133.10
	CM-B003	1/16	3/4	1/8	2-1/2	154-038	136.10
	CM-B004	1/16	1	3/16	3	154-039	167.40
	CM-B022	5/64	1/2	1/8	2-1/2	154-040	133.10
	CM-B023	5/64	3/4	3/16	3	154-041	143.60
	CM-B024	5/64	1	3/16	3	154-042	167.40
3°							
	CM-C0001	1/32	1/4	1/8	2-1/2	154-043	115.00
	CM-C0002	1/32	1/2	1/8	2-1/2	154-044	122.80
	CM-C001	3/64	1/4	1/8	2-1/2	154-045	115.00
	CM-C012	3/64	1/2	1/8	2-1/2	154-046	124.10
	CM-C002	1/16	1/2	1/8	2-1/2	154-047	131.50
	CM-C003	1/16	3/4	3/16	3	154-048	137.50
	CM-C004	1/16	1	3/16	3	154-049	168.90
	CM-C022	5/64	1/2	3/16	3	154-050	158.50
	CM-C023	5/64	3/4	3/16	3	154-051	167.70
	CM-C024	5/64	1	3/16	3	154-052	167.70
5°							
	CM-E0001	1/32	1/4	1/8	2-1/2	154-053	151.50
	CM-E0002	1/32	1/2	3/16	3	154-054	124.10
	CM-E011	3/64	1/4	1/8	2-1/2	154-055	119.90
	CM-E012	3/64	1/2	3/16	3	154-056	125.20
	CM-E002	1/16	1/2	1/4	2-1/2	154-057	141.30
	CM-E003	1/16	3/4	1/4	2-1/2	154-058	139.00
	CM-E004	1/16	1	1/4	2-1/2	154-059	176.90
	CM-E022	5/64	1/2	3/16	3	154-060	165.50
	CM-E023	5/64	3/4	1/4	2-1/2	154-061	146.70
	CM-E024	5/64	1	3/8	2-1/2	154-062	214.80

Carbide Tapered End Mills

- End cutting
- Weldon flat



Inch

Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
1/2°							
	AX103C	3/32	3/4	1/4	2-1/2	154-063	**128.80**
	AX203C	1/8	3/4	1/4	2-1/2	154-064	**130.30**
	AX205C	1/8	1-1/4	1/4	3-1/2	154-065	**147.10**
	AX305C	3/16	1-1/4	1/4	3-1/2	154-067	**157.90**
	AX405C	1/4	1-1/4	3/8	3-1/2	154-069	**180.30**
1°							
	A102C	3/32	1/2	1/4	2	154-070	**118.40**
	A104C	3/32	1	1/4	3	154-071	**132.70**
	A203C	1/8	3/4	1/4	2-1/2	154-072	**138.60**
	A204C	1/8	1	1/4	3	154-073	**140.00**
	A206C	1/8	1-1/2	1/4	3-1/2	154-074	**158.70**
	A303C	3/16	3/4	1/4	2-1/2	154-075	**141.60**
	A305C	3/16	1-1/4	1/4	3-1/2	154-076	**159.40**
	A308C	3/16	2	3/8	4	154-077	**220.00**
	A403C	1/4	3/4	3/8	3	154-078	**156.60**
	A405C	1/4	1-1//4	3/8	3-1/2	154-079	**187.10**
	A409C	1/4	2-1/4	3/8	4	154-080	**268.40**
1-1/2°							
	AAX104C	3/32	1	1/4	3	154-081	**137.30**
	AAX204C	1/8	1	1/4	3	154-082	**141.60**
	AAX206C	1/8	1-1/2	1/4	3-1/2	154-083	**167.40**
	AAX305C	3/16	1-1/4	3/8	3-1/2	154-084	**167.70**
	AAX308C	3/16	2	3/8	4	154-085	**130.00**
	AAX403C	1/4	3/4	3/8	3	154-086	**188.00**
	AAX405C	1/4	1-1/4	3/8	3-1/2	154-087	**188.00**
2°							
	B103C	3/32	3/4	1/4	2-1/2	154-088	**137.10**
	B104C	3/32	1	1/4	3	154-089	**137.10**
	B203C	1/8	3/4	1/4	2-1/2	154-090	**141.10**
	B206C	1/8	1-1/2	1/4	3-1/2	154-091	**176.30**
	B303C	3/16	3/4	1/4	2-1/2	154-092	**145.00**
	B305C	3/16	1-1/4	3/8	3-1/2	154-093	**175.80**
	B307C	3/16	1-3/4	3/8	3-1/2	154-094	**205.20**
	B403C	1/4	3/4	3/8	3	154-095	**167.40**
	B405C	1/4	1-1/4	3/8	3-1/2	154-096	**189.50**
	B409C	1/4	2-1/4	1/2	4-1/2	154-097	**274.60**
3°							
	C104C	3/32	1	1/4	3	154-098	**143.50**
	C106C	3/32	1-1/2	1/4	3-1/2	154-099	**167.40**
	C203C	1/8	3/4	1/4	2-1/2	154-100	**142.90**
	C204C	1/8	1	1/4	2-1/2	154-101	**145.50**
	C206C	1/8	1-1/2	3/8	3-1/2	154-102	**184.90**
	C209C	1/8	2-1/4	3/8	4	154-103	**263.60**
	C256C	5/32	1-1/2	3/8	3-1/2	154-104	**192.70**
	C257C	5/32	1-3/4	3/8	3-1/2	154-105	**225.00**
	C303C	3/16	3/4	3/8	3	154-106	**158.70**
	C305C	3/16	1-1/4	3/8	3-1/2	154-107	**182.70**
	C403C	1/4	3/4	3/8	3	154-108	**171.60**
	C405C	1/4	1-1/4	3/8	3-1/2	154-109	**190.70**
	C409C	1/4	2-1/4	1/2	4-1/2	154-110	**283.30**
4°							
	D104C	3/32	1	1/4	3	154-111	**144.50**
	D203C	1/8	3/4	1/4	2-1/2	154-112	**147.30**
	D204C	1/8	1	3/8	3	154-113	**147.30**
	D303C	3/16	3/4	3/8	3	154-114	**160.60**
	D305C	3/16	1-1/4	3/8	3-1/2	154-115	**192.50**
	D405C	1/4	1-1/4	1/2	3-1/2	154-117	**206.70**

Inch

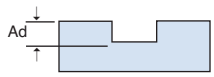
Angle Per Side	Tool No.	Tip Dia. (in.)	Length Of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Code No.	Price $
5°							
	E103C	3/32	3/4	1/4	3	154-118	**150.40**
	E104C	3/32	1	3/8	3	154-119	**168.90**
	E106C	3/32	1-1/2	3/8	3-1/2	154-120	**189.30**
	E203C	1/8	3/4	1/4	3	154-121	**144.30**
	E204C	1/8	1	3/8	3	154-122	**170.80**
	E206C	1/8	1-1/2	3/8	3-1/2	154-123	**189.90**
	E303C	3/16	3/4	3/8	3	154-124	**171.60**
	E305C	3/16	1-1/4	1/2	3-1/2	154-125	**219.40**
	E403C	1/4	3/4	3/8	3	154-126	**189.10**
	E405C	1/4	1-1/4	1/2	3-1/2	154-128	**217.10**
	E408C	1/4	2	5/8	4	154-129	**599.90**
7°							
	G104C	3/32	1	3/8	3	154-130	**190.10**
	G202C	1/8	1/2	1/4	2-1/2	154-131	**177.70**
	G203C	1/8	3/4	3/8	3	154-132	**177.70**
	G204C	1/8	1	3/8	3	154-133	**189.50**
	G206C	1/8	1-1/2	1/2	3-1/2	154-134	**212.80**
	G253C	5/32	3/4	3/8	2-1/2	154-135	**113.90**
	G305C	3/16	1-1/4	1/2	3-1/2	154-136	**238.20**
	G403C	1/4	3/4	1/2	3	154-137	**182.70**
	G405C	1/4	1-1/4	5/8	3-1/2	154-138	**330.60**
10°							
	J102C	3/32	1/2	3/8	2-1/2	154-140	**164.10**
	J106C	3/32	1-1/2	5/8	3-1/2	154-141	**343.00**
	J203C	1/8	3/4	3/8	2-1/2	154-142	**176.90**
	J204C	1/8	1	1/2	3-1/2	154-143	**221.10**
	J205C	1/8	1-1/4	5/8	3-1/2	154-144	**348.70**
	J305C	3/16	1-1/4	5/8	3-1/2	154-145	**348.70**
	J403C	1/4	3/4	1/2	3	154-146	**243.60**
	J404C	1/4	1	5/8	3	154-147	**325.10**
15°							
	P0003C	1/32	3/4	1/2	3	154-300	**327.50**
	P001C	1/16	1/4	1/4	2	154-301	**163.20**
	P103C	3/32	3/4	1/2	3	154-302	**224.10**
	P204C	1/8	1	5/8	3	154-148	**573.20**
	P304CA	3/16	1	3/4	3	154-149	**681.80**
	P404CA	1/4	1	3/4	3	154-150	**698.70**
	P606C	3/8	1-1/2	3/4	4	154-303	**1,180.50**
	P805C	1/2	1-1/4	3/4	3-1/2	154-304	**1,098.80**
	P809C	1/2	2-1/4	1	4-1/4	154-305	**2,006.80**
20°							
	T0001C	1/32	1/4	1/4	2	154-306	**175.80**
	T001C	1/16	1/4	1/4	2	154-307	**170.00**
	T002C	1/16	1/2	1/2	3	154-308	**220.70**
	T102C	3/32	1/2	1/2	3	154-309	**231.30**
	T202C	1/8	1/2	1/2	3	154-310	**259.10**
	T304CB	3/16	1	1/2	3	154-311	**736.20**
	T404CB	1/4	1	1/2	3	154-312	**866.90**
30°							
	U001C	1/16	1/4	3/8	2-1/2	154-313	**217.50**
	U101C	3/32	1/4	3/8	2-1/2	154-314	**226.80**
	U201C	1/8	1/4	1/2	3	154-315	**286.70**
	U202CB	1/8	1/2	1/2	2-1/2	154-316	**575.10**
	U404C	1/4	1	3/4	3	154-317	**1,570.70**
45°							
	WA215CB	1/8	7/16	1/2	2-1/2	154-318	**637.50**

END MILLS

Speeds & Feeds - 2 & 3 Fl. Square End, 2 Fl. Corner Radius, & 2 Fl. Miniature Bright Carbide End Mills

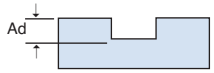
Slot Milling – 2 fl. Reg Length, 2 fl. Stub Length, 2 fl. Double End Reg & Stub Length, 2 fl. Corner Radius

Notes:
- Increase Speeds and Feeds 20% for 3 fl. Reg. Length
- Reduce Speeds and Feeds 25% for 2 fl. Long Length
- Reduce Speeds and Feeds 50% for 2 fl. Extra Long Length

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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						
					D < 1/8	0.3D					
					1/8 ≤ D	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

- For side milling, increase Feeds 25% or more.

Slot Milling – 2 fl. Miniature End Mills

Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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													
				Ad									
				D < 0.04	0.1D								
				0.04 ≤ D	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	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

Speeds & Feeds - 4 Fl. Square End, 4 Fl. Corner Radius & 3 Fl. 60º Bright Carbide End Mills

Side Milling - 4 fl. Reg Length, 4 fl. Stub Length, 4 fl. Double End Reg & Stub Length, 4 fl. Corner Radius

Notes: • Reduce Speeds and Feeds 25% for 4 fl. **LONG LENGTH**
• Reduce Speeds and Feeds 50% for 4 fl. **EXTRA LONG LENGTH**

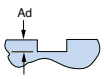
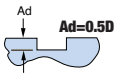
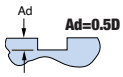
Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		Aluminum Alloys	
Work Material		Cast Iron	Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys			
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

- For slot milling, reduce Feeds 20% to 50%.

3 Flute 60º High Helix

Side Milling

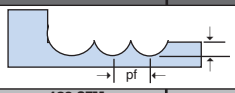
Slotting

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		Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Hardness						< HRC35		HRC35-45		HRC45-55				< HRC35		HRC35-45		HRC45-55	
Depth of Cut		 Ad=1.5D Rd= 0.1D						 Ad=1.5D Rd= 0.1D				 up to 1/2" Ad=1.0D over 1/2" Ad= 0.5D				 Ad=0.5D		 Ad=0.5D	
Mill Dia. (inch)	mm	390-460 SFM		130-164 SFM		Up to 100 SFM		Up to 66 SFM		Up to 50 SFM		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	Speed 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	2040	7.9	1360	4.7	900	2.0	680	0.8
5/16	8	5200	21.7	1800	10.6	1200	6.7	800	3.0	600	1.2	1530	7.9	1020	4.7	680	2.0	510	0.8
3/8	10	4200	23.6	1400	13.4	950	6.7	640	3.0	480	1.2	1190	9.1	810	4.7	540	2.0	410	0.8
1/2	12	3500	23.6	1200	14.2	800	7.1	530	3.0	400	1.2	1020	9.8	680	5.1	450	2.0	340	0.8
5/8	16	2600	23.6	900	15.7	600	7.1	400	3.0	300	1.2	760	10.6	510	5.1	340	2.0	260	0.8
3/4	20	2100	23.6	720	16.1	480	7.9	320	3.0	240	1.2	620	11.0	410	5.5	270	2.0	200	0.8
1	25	1700	23.6	580	13.8	380	7.1	250	3.0	190	1.2	500	9.4	320	5.1	210	2.0	160	0.8

END MILLS

Speeds & Feeds - 2, 3 & 4 Fl. Ball Nose Bright Carbide End Mills

Profiling – 2 fl. Reg Length, 2 fl. Stub Length, 2 fl. Double End Reg & Stub Length Ball Nose End Mills

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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)	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

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

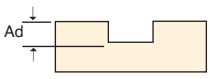
Notes:
- Increase Speeds and Feeds 20% for 3 fl. Reg. Length
- Reduce Speeds and Feeds 25% for 2 fl. Ball Nose Long Length
- Reduce Speeds and Feeds 50% for 2 fl. Ball nose Extra Long Length

Notes:
- Increase Speeds and Feeds 40% for 4fl. Ball Nose Reg. & Stub Length, also 4fl. 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

Speeds & Feeds - 2 Fl. Square End, TiAlN Coated Carbide End Mills

Slot Milling – 2 fl. Reg Length, 2 fl. Stub Length, 2 fl. Double End Reg & Stub Length

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

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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 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	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

- For side milling, increase Feeds 25% or more.

END MILLS

Speeds & Feeds - 4 Fl. Square End, TiAlN Coated Carbide End Mills

Side Milling - 4 fl. Reg Length, 4 fl. Double End Stub Length

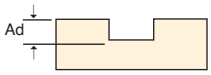
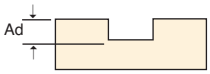
Notes: • Reduce Speeds and Feeds 25% for 4 fl. LONG LENGTH
• Reduce Speeds and Feeds 50% for 4 fl. EXTRA LONG LENGTH
• For slot milling, reduce Feeds 20% to 50%.

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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

Speeds & Feeds - TiAlN Coated Carbide Roughing End Mills - Side Milling

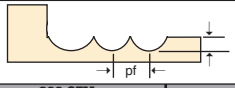
Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material		Cast Iron	Mild Steels Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels		Hardened Steels Stainless Steels	
Depth of Cut		 Ad = 1.5D Rd = 0.4D					 Ad = 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

Speeds & Feeds - TiAlN Coated Carbide Roughing End Mills - Slotting

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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 = 0.75D					 Ad = 0.5D			
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

Speeds & Feeds - 2 & 4 Fl. Ball Nose TiAlN Coated Carbide End Mills

Profiling - 2 fl. Reg Length Ball Nose End Mills

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		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	pf							
			D < 1/8	0.1D	0.2D						
			1/8 ≤ D	0.3D	0.7D						
Dia. (in)	(mm)	200 SFM		205 SFM		150 SFM		125 SFM		100 SFM		600 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	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

2 fl. Notes:

- 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

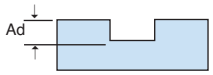
4 fl. Notes:

- Increase Speeds and Feeds 40% for 4fl. 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

END MILLS

Speeds & Feeds - 2 Fl. Square End & 2 Fl. Corner Radius Typhoon Mod. AlTiN Carbide End Mills

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

Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, 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															
Dia. (in)	(mm)	360 SFM		330 SFM		260 SFM		220 SFM		280 SFM		120 SFM		80 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	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

	Ad
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1/16 ≤ D<1/8	0.3D
1/16 ≤ D	0.5D

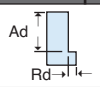
	Ad
D <1/16	0.02D
1/16 ≤ D	0.05D

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

Note: For side milling, increase Feeds 20% to 50%.

Speeds & Feeds - 4 Fl. Square End & 4 Fl. Corner Radius Typhoon Mod. AlTiN Carbide End Mills

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

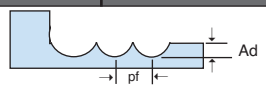
Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels, Stainless Steels, Inconel, Ni Based Alloys		Hardened Steels		Hardened Steels	
Depth of Cut															
Dia. (in)	(mm)	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 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	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

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

Ad	Rd
1D	0.02D

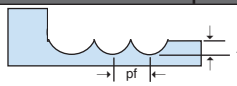
Speeds & Feeds - 2 & 4 Fl. Ball Nose Typhoon Mod. AlTiN Carbide End Mills

Profiling- 2 & 4 Flute Ball Nose

Hardness			Tensile Strength: Up to 750N/mm2	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material		Cast Iron		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, 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

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

High-Speed Light Milling - 2 & 4 Flute Ball Nose

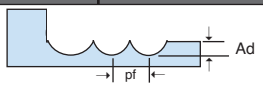
Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material		Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, Prehardened Steels, Ti Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened 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	23,180	59.4	17,650	39.4
3/32		27,490	137.8	21,750	110.2	21,250	98.4	20,450	88.6	14,705	61.0	10,950	39.4
1/8	3	20,475	139.2	16,325	114.4	15,825	100.1	15,150	90.0	11,000	63.4	8,355	40.0
5/32	4	18,085	145.4	15,525	133.1	15,025	108.0	13,555	96.2	11,000	74.4	7,960	43.1
3/16		16,085	154.6	15,110	153.3	14,230	112.8	11,585	91.9	10,230	80.8	7,675	46.3
7/32		15,215	175.0	14,160	164.9	12,600	110.9	10,160	89.4	9,715	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	9,080	84.8	6,305	43.5
9/32		12,990	163.1	11,490	144.5	10,035	93.6	8,150	76.2	8,150	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	7,215	67.6	5,000	35.4
11/32		10,760	134.3	9,355	117.3	8,285	76.9	6,610	61.9	6,610	61.9	4,575	32.4
3/8		9,975	124.2	8,660	108.0	7,575	70.7	6,035	56.4	6,035	56.4	4,180	29.6
13/32	10	9,250	115.0	8,025	99.5	6,950	65.0	5,540	51.6	5,540	51.6	3,840	27.2
7/16		8,630	107.1	7,465	92.5	6,475	60.4	5,165	47.6	5,165	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	4,500	41.5	3,125	22.0
9/16		6,675	83.2	5,785	71.4	5,000	46.4	3,975	37.5	3,975	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	3,575	33.7	2,465	17.4
11/16		5,465	67.6	4,705	58.7	4,075	38.3	3,250	30.7	3,250	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	2,925	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	2,550	24.1	1,755	12.3
1	25	3,740	46.6	3,250	40.8	2,805	26.4	2,215	21.0	2,215	21.0	1,525	10.7

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

END MILLS

Speeds & Feeds - Typhoon Mod. AlTiN Mold Mills

Mold Mills for Profile Milling

Hardness			Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material		Cast Iron	Mild Steels, Carbon Steels		Alloy Steels, Tool Steels, Ti Alloys (Annealed)		Hardened Steels, 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														
Dia. (in)	(mm)	550 SFM		550 SFM		450 SFM		360 SFM		270 SFM		230 SFM		200 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
1/8	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

	Ad
D <5/8	0.05D
5/8≤ D	0.03"

Speeds & Feeds - 6 Flute 60º High Spiral Typhoon Mod. AlTiN Carbide End Mills

Side Milling

Work Material	Mild Steel Carbon Steel Cast Iron		Alloyed Steels Tool Steels		Hardened Steels Tool Steels		Hardened Steels Tool Steels		Titanium Alloy		Nickel Base High-Temp Alloy	
Hardness	Up to HRC25		HRC25-45		HRC45-55		HRC55-60		HRC30-40		HRC25-45	
Depth of Cut	 Ad= 1.5D Rd= 0.1D				 Ad= 1.5D Rd= 0.05D				 Ad= 1.5D Rd= 0.05D			
Mill Diameter (inch)	mm	312-540 SFM		156-312 SFM		96-156 SFM		60-96 SFM		156-276 SFM		48-80 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
1/8	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

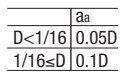
Speeds & Feeds - Typhoon Mod. AlTiN Carbide Roughing End Mills

Roughing Side Cutting

Hardness	Up to 30 HRC		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**		**1000 to 1200N/mm²**		**1200 to 1400N/mm²**		**1400 to 2000N/mm²**		**2000N/mm²-**	
		Speed 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	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

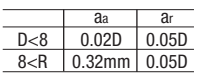
Speeds & Feeds - 2 Fl. Square End, Necked Design, Standard & Long Length Carbide End Mills - PC410

Slot Milling

Hardness	Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	96 m/min		78 m/min		66 m/min		60 m/min		36 m/min		18 m/min	
Depth of Cut							aa=0.02D					
Dia. (mm)	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**
0.5	44,160	350	44,160	280	44,160	280	42,090	210	26,220	110	13,800	40
0.6	44,160	410	44,160	350	40,710	300	34,500	280	21,390	110	11,660	40
0.8	43,470	550	37,260	480	30,360	350	26,220	280	15,870	110	8,760	40
1.0	36,570	690	29,670	620	24,150	480	20,700	350	13,110	110	6,970	40
1.5	24,150	830	19,320	690	15,870	550	13,800	350	8,760	110	4,620	40
2.0	17,940	830	14,490	690	12,280	550	10,490	350	6,550	110	3,450	40
2.5	14,490	830	11,940	690	9,800	550	8,420	350	5,240	110	2,760	40

Speeds & Feeds - 2 Fl. Ball Nose Necked Design Short Length & Extended Reach Carbide End Mills - PC413, PC419

High Speed Milling

Hardness	Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	290 m/min		250 m/min		220 m/min		175 m/min		175 m/min		120 m/min	
Depth of Cut	aa=0.02D ar=0.05D											
Dia. (mm)	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**
0.5	57,500	1,670	57,500	1,610	57,500	1,610	57,500	1,380	36,800	850	36,800	850
0.6	57,500	1,900	57,500	1,900	57,500	1,900	57,500	1,610	36,800	1,010	36,800	1,010
0.8	57,500	2,530	57,500	2,530	57,500	2,300	57,500	2,190	36,800	1,320	36,800	1,150
1	57,500	3,220	57,500	3,220	57,500	2,880	54,620	2,590	36,800	1,670	28,750	1,150
2	36,550	4,010	29,190	3,220	28,620	2,880	27,460	2,590	19,810	1,780	14,590	1,150
3	23,550	4,070	18,770	3,340	18,200	2,920	17,420	2,630	12,650	1,850	9,610	1,170
4	20,800	4,250	17,850	3,890	17,280	3,150	15,590	2,810	12,650	2,170	9,150	1,260
5	17,730	4,750	16,970	4,700	15,640	3,310	12,370	2,640	11,400	2,440	8,550	1,370
6	16,540	5,290	14,810	4,720	12,710	3,030	10,440	2,480	10,440	2,480	7,250	1,270
8	13,340	4,240	11,620	3,720	10,380	2,440	8,300	1,970	8,300	1,970	5,750	1,030
10	10,640	3,360	9,230	2,910	7,990	1,900	6,370	1,510	6,370	1,510	4,420	790
12	8,670	2,730	7,490	2,350	6,500	1,530	5,180	1,210	5,180	1,210	3,590	640

END MILLS

Speeds & Feeds - 2 Fl. Ball Nose Necked Design Short Length & Extended Reach Carbide End Mills - PC413, PC419

Profiling

Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	210 m/min	168 m/min		138 m/min		108 m/min		96 m/min		84 m/min		60 m/min	
Depth of Cut	a_a=0.1D a_r=0.2D									a_a=0.05D a_r=0.01D			
Dia. (mm)	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**	**Speed RPM**	**Feed mm/min**
0.5	52,990	1,040	52,990	1,040	52,990	830	52,990	520	52,990	410	63,290	280	46,370	210
0.6	52,990	1,120	52,990	1,120	52,990	910	52,990	550	52,990	440	63,290	300	46,370	210
0.8	52,990	1,240	52,990	1,240	52,990	980	52,990	580	52,990	460	39,580	330	28,980	220
1	52,990	1,260	52,990	1,260	52,160	1,020	41,400	660	36,430	470	31,460	350	23,180	230
2	39,120	1,550	31,800	1,260	26,080	1,020	21,020	660	18,490	480	15,970	350	12,010	230
3	24,510	1,550	19,830	1,260	16,640	1,040	13,370	680	11,720	500	10,050	360	7,510	240
4	19,250	1,550	15,870	1,260	13,290	1,040	10,610	730	9,270	610	7,950	440	5,930	280
5	15,320	1,740	12,250	1,410	10,230	1,060	8,130	740	7,160	610	6,110	470	4,580	290
6	12,590	1,810	10,050	1,470	8,380	1,140	6,640	790	5,840	660	4,980	500	3,710	310
8	9,950	2,140	7,950	1,720	6,600	1,300	5,260	910	4,600	750	3,930	530	2,910	350
10	7,650	1,960	6,110	1,560	5,080	1,210	4,030	860	3,530	710	3,040	550	2,250	340
12	6,210	1,790	4,940	1,420	4,150	1,140	3,300	800	2,880	680	2,440	500	1,810	320

Speeds & Feeds - 2 Fl. Square End Long Reach Carbide End Mills - PC412

Slot Milling

Hardness	Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	103 m/min		88 m/min		75 m/min		66 m/min		41 m/min		22 m/min	
Depth of Cut	D<1/16: a_a 0.05D 1/16≤D: a_a 0.1D						a_a=0.02D					
Dia. (mm)	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**
2	17,940	830	14,490	690	12,280	550	10,490	350	6,550	110	3,450	40
2.5	14,490	830	11,940	690	9,800	550	8,420	350	5,240	110	2,760	40
3	10,870	745	9,330	665	7,990	555	6,960	355	4,340	110	2,310	40
3.5	9,210	745	7,900	660	6,770	540	5,900	345	3,680	110	1,960	40
4	8,150	755	7,000	665	5,990	535	5,220	350	3,250	110	1,740	40
4.5	7,250	750	6,220	665	5,330	555	4,640	355	2,890	110	1,540	40

Speeds & Feeds - 2 Fl. Tapered Pencil Neck Ball Nose End Mills - PC418

High Speed Milling

Hardness	Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	261 m/min		226 m/min		196 m/min		157 m/min		157 m/min		109 m/min	
Depth of Cut	a_a=0.02D a_r=0.05D								a_a / a_r D<8: 0.02D / 0.05D 8<R: 0.32mm / 0.05D			
Dia. (mm)	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**
1	50,000	2,800	50,000	2,800	50,000	2,500	47,500	2,250	32,000	1,450	25,000	1,000
2	31,780	3,480	25,390	2,800	24,890	2,500	23,880	2,250	17,220	1,540	12,690	1,000
3	20,470	3,530	16,330	2,900	15,830	2,540	15,150	2,280	11,000	1,610	8,350	1,010
4	18,080	3,690	15,520	3,380	15,020	2,740	13,560	2,440	11,000	1,880	7,960	1,090
5	15,410	4,120	14,750	4,080	13,600	2,870	10,750	2,290	9,920	2,120	7,430	1,190
6	14,380	4,590	12,880	4,100	11,050	2,630	9,080	2,150	9,080	2,150	6,310	1,100
8	11,600	3,680	10,100	3,230	9,030	2,120	7,220	1,710	7,220	1,710	5,000	890
10	9,250	2,920	8,020	2,520	6,950	1,650	5,540	1,310	5,540	1,310	3,840	690
12	7,540	2,370	6,510	2,040	5,650	1,330	4,500	1,050	4,500	1,050	3,120	550

Profiling

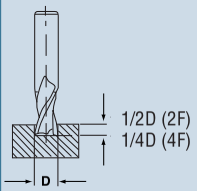
Hardness		Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	210 m/min	168 m/min		138 m/min		108 m/min		96 m/min		84 m/min		60 m/min	
Depth of Cut	a_a=0.1D a_r=0.2D									a_a=0.05D a_r=0.01D			
Dia. (mm)	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feedmm/min**
1	46,080	1,100	46,080	1,100	45,360	890	36,000	580	31,680	410	27,360	300	20,160	200
2	34,030	1,340	27,650	1,100	22,680	890	18,280	580	16,080	410	13,880	300	10,450	200
3	21,310	1,350	17,240	1,100	14,470	910	11,630	590	10,190	430	8,740	310	6,530	210
4	16,740	1,350	13,810	1,100	11,560	910	9,230	640	8,070	530	6,910	380	5,160	250
5	13,320	1,510	10,660	1,230	8,900	920	7,070	640	6,230	530	5,320	410	3,980	250
6	10,940	1,570	8,740	1,280	7,280	990	5,780	690	5,080	580	4,330	430	3,230	270
8	8,650	1,860	6,910	1,500	5,740	1,130	4,580	790	4,000	650	3,420	460	2,540	300
10	6,650	1,700	5,320	1,360	4,420	1,060	3,500	740	3,080	620	2,650	470	1,960	290
12	5,410	1,550	4,300	1,240	3,610	990	2,870	700	2,510	590	2,130	440	1,570	280

Speeds & Feeds - 4 Fl. Square End Long Reach Carbide End Mills - PC411

Slot Milling

Hardness	Tensile Strength: Up to 750N/mm2		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel, Carbon Steel		Alloy Steel, Tool Steel Ti Alloys *Annealed*		Hardened Steel, Prehardened Steel Ti Alloys *Solution Treated & Aged*		Hardened Steel, Prehardened Steel, Stainless Steel, Inconel Ni Based Alloys		Hardened Steel		Hardened Steel	
Cut Speed	100 m/min		80 m/min		68 m/min		56 m/min		36 m/min		25 m/min	
Depth of Cut	a_a=0.1D						a_a=0.02D					
Dia. (mm)	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**	**RPM**	**Feed mm/min**
3	12,280	1,380	9,940	970	8,140	690	7,040	550	4,420	210	2,900	70
4	9,250	1,380	7,450	970	6,210	690	5,240	550	3,310	210	2,210	70
5	7,310	1,380	5,930	970	4,970	690	4,280	550	2,620	210	1,790	70
6	6,210	1,380	4,970	970	4,140	690	3,450	550	2,210	210	1,520	70

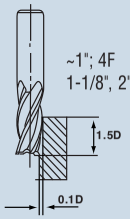
Materials	1. Mild Steels (Up to 70 x 10^3 lb/in^2) 2. Brass 3. Bronze		1. Medium Tensile Steels (70 x 10^3–115 x 10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Hard Brass and Bronze 5. Copper		1. High Tensile Steels (115 x 10^3–142 x 10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Steels (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 Titanium Alloys 3. High Strength Stainless Steels		1. Aluminum 2. Alloyed Aluminum 3. Plastic 4. Woods	
Hardness	Up to Bhn 145 Up to HrC 0		Bhn 145-237 HrC 0-22		Bhn 237-286 HrC 22-30		Bhn 286-390 HrC 30-42		Bhn 390-451 HrC 42-48			
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**	**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	.079	800	0.34	10000	9.00
5/32	3150	4.50	2360	3.04	1400	1.46	1000	.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%

Material	1. Mild Steels (Up to 70 x 10^3 lb/in^2) 2. Brass 3. Bronze		1. Medium Tensile Steels (70×10^3–115×10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Hard Brass and Bronze 5. Copper		1. High Tensile Steels (115×10^3–142×10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Steels (142×10^3–200×10^3 lb/in^2) 2. Tool Steels 3. Medium Strength Stainless Steels 4. Medium Strength Titanium Alloys		1. Heat Resistant High Alloys 2. High Strength Titanium Alloys 3. High Strength Stainless Steels		1. Aluminum 2. Alloyed Aluminum 3. Plastic 4. Woods	
Hardness	Up to Bhn 145 Up to HrC 0		Bhn 145-237 HrC 0-22		Bhn 237-286 HrC 22-30		Bhn 286-390 HrC 30-42		Bhn 390-451 HrC 42-48			
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	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:

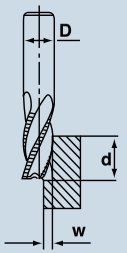
1) The cutting conditions in this table are given for reference, which should be varied depending on the machine, tooling, depth of cut, cutting fluid and other conditions
2) Use a holder of strong gripping force and machine of high stiffness
3) For 2FL end mill slow down to 1/2 of feed speed
4) For 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%

End Mill Cutting Dia. & 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

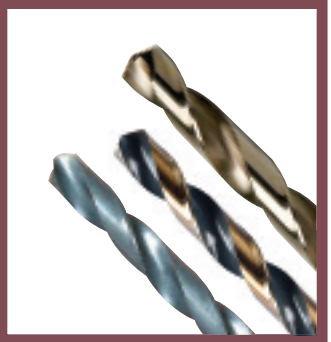
Material	1. Mild Steels (Up to 115 x 10^3 lb/in^2) 2. Mild Steel Forgings 3. Cast Iron 4. Brass and Bronze 5. Copper		1. High Tensile Steels (115 x 10^3–145 x 10^3 lb/in^2) 2. Unalloyed Titanium 3. Heat Resistant Ferritic Low Alloys		1. High Tensile Steels (145 x 10^3–200 x 10^3 lb/in^2) 2. Tool Steels 3. Medium Strength Titanium Alloys		1. Heat Resistant High Alloys High Strength Titanium Alloys 3. High Strength Stainless Steels 4. Woods		1. Aluminum 2. Alloyed Aluminum 3. Plastic Materials	
Hardness	Up to Bhn 237 Up to HrC 22		Bhn 237-286 HrC 22-30		Bhn 286-390 HrC 30-42		Bhn 390-451 HrC 42-48			
Cutting Speed	80~100 SFM		60~75 SFM		40~55 SFM		26~40 SFM		195~330 SFM	
Mill Dia.	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



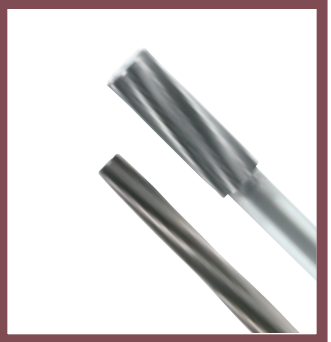
1/4" up to 1-1/8"
d=1.5 x D
W=0.5 x D
1-1/4" up to 2"
d=1 x D
W=0.5 x D

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%





DRILLS & REAMERS

QTT PREMIUM CLASS CARBIDE DRILLS

Non-Coolant Fed 3xD, 5xD	B2-3
Coolant Fed 3xD, 5xD, 8xD	B4-6

GENERAL DRILL INDEX

Jobber Drills	B7-21
High Performance Parabolic Jobber Drills	B8-9
HSS TiAlN Tip Jobber Drills	B10
Black & Gold Jobber Drills	B14
Slow & Fast Spiral Drills	B15-17
Left Hand Drills	B19-20
Jobber Length Twist Drill Sets	B21
Stub Drills	B22-25
High Performance Parabolic Stub Drills	B22-23
Prentice Drills	B25-26
Taper Length Drills	B26-28
Aircraft Extension Drills	B29-30
Extra Length Drills	B31-32
Taper Shank Drills	B32-41
Knock-Out Drill Drifts	B37
Oil Hole Drills & Coolant Inducer Sockets	B41-42
Core Drills	B43
Carbide Tipped Drills	B43-46
Masonry Drills	B46
Combined Drill & Countersinks, Centre Drills	B46-48
Spotting And Centering Drills	B48
Vent Drills	B49
Drill And Reamer Blanks	B49-50
Drill Sets, Stands & Dispensers	B51-53

SPADE DRILL SYSTEM B54-60

COUNTERSINKS

Chatterfree 0-Flute	B61
Single Flute	B61-63
3 & 4 Flute	B64
6 Flute & Multi-Flute	B65-67

REAMERS

Chucking Reamers	B68-74
Taper Pin & Bridge Reamers	B74-76
Jobber & Hand Reamers	B76-77
Taper Pipe Reamers	B76, B78
Shell Reamers & Arbors	B77
Brown and Sharpe & Morse Taper Reamers	B78
Expansion Chucking Reamers	B78
Adjustable Blade Reamers	B78

DRILL SPEEDS & FEEDS B79-82

QTT QUALITY TECH TOOL

MADE IN USA

Premium Class Drills Sub-Micrograin Carbide

3 X D Premium Class Sub-Micrograin Carbide Drills





Speeds & Feeds ☞ P. B79

PC243

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	20	6	62	133-400	**60.60**
3.1	20	6	62	133-401	**60.60**
3.2	20	6	62	133-402	**60.60**
3.3	20	6	62	133-403	**60.60**
3.4	20	6	62	133-404	**60.60**
3.5	20	6	62	133-405	**60.60**
3.6	20	6	62	133-406	**60.60**
3.7	24	6	62	133-407	**60.60**
3.8	24	6	66	133-408	**60.60**
3.9	24	6	66	133-409	**60.60**
4.0	24	6	66	133-410	**60.60**
4.1	24	6	66	133-411	**60.60**
4.2	24	6	66	133-412	**60.60**
4.3	24	6	66	133-413	**60.60**
4.4	24	6	66	133-414	**60.60**
4.5	24	6	66	133-415	**60.60**
4.6	24	6	66	133-416	**60.60**
4.7	24	6	66	133-417	**60.60**
4.8	28	6	66	133-418	**60.60**
4.9	28	6	66	133-419	**60.60**
5.0	28	6	66	133-420	**60.60**
5.1	28	6	66	133-421	**60.60**
5.2	28	6	66	133-422	**60.60**
5.3	28	6	66	133-423	**60.60**
5.4	28	6	66	133-424	**60.60**
5.5	28	6	66	133-425	**60.60**
5.6	28	6	66	133-426	**60.60**
5.7	28	6	66	133-427	**60.60**
5.8	28	6	66	133-428	**60.60**
5.9	28	6	66	133-429	**60.60**
6.0	28	6	66	133-430	**60.60**
6.1	34	8	79	133-431	**81.20**
6.2	34	8	79	133-432	**81.20**
6.3	34	8	79	133-433	**81.20**
6.4	34	8	79	133-434	**81.20**
6.5	34	8	79	133-435	**81.20**
6.6	34	8	79	133-436	**81.20**
6.7	34	8	79	133-437	**81.20**
6.8	34	8	79	133-438	**81.20**
6.9	34	8	79	133-439	**81.20**
7.0	34	8	79	133-440	**81.20**
7.1	41	8	79	133-441	**81.20**
7.2	41	8	79	133-442	**81.20**
7.3	41	8	79	133-443	**81.20**
7.4	41	8	79	133-444	**81.20**
7.5	41	8	79	133-445	**81.20**
7.6	41	8	79	133-446	**81.20**
7.7	41	8	79	133-447	**81.20**
7.8	41	8	79	133-448	**81.20**
7.9	41	8	79	133-449	**81.20**
8.0	41	8	79	133-450	**81.20**
8.1	47	10	89	133-451	**113.80**
8.2	47	10	89	133-452	**113.80**
8.3	47	10	89	133-453	**113.80**
8.4	47	10	89	133-454	**113.80**
8.5	47	10	89	133-455	**113.80**
8.6	47	10	89	133-456	**113.80**
8.7	47	10	89	133-457	**113.80**
8.8	47	10	89	133-458	**113.80**
8.9	47	10	89	133-459	**113.80**

3 X D Premium Class Sub-Micrograin Carbide Drills

PC243

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
9.0	47	10	89	133-460	**113.80**
9.1	47	10	89	133-461	**113.80**
9.2	47	10	89	133-462	**113.80**
9.3	47	10	89	133-463	**113.80**
9.4	47	10	89	133-464	**113.80**
9.5	47	10	89	133-465	**113.80**
9.6	47	10	89	133-466	**113.80**
9.7	47	10	89	133-467	**113.80**
9.8	47	10	89	133-468	**113.80**
9.9	47	10	89	133-469	**113.80**
10.0	47	10	89	133-470	**113.80**
10.1	55	12	102	133-471	**143.80**
10.2	55	12	102	133-472	**143.80**
10.3	55	12	102	133-473	**143.80**
10.4	55	12	102	133-474	**143.80**
10.5	55	12	102	133-475	**143.80**
10.6	55	12	102	133-476	**143.80**
10.7	55	12	102	133-477	**143.80**
10.8	55	12	102	133-478	**143.80**
10.9	55	12	102	133-479	**143.80**
11.0	55	12	102	133-480	**143.80**
11.1	55	12	102	133-481	**143.80**
11.2	55	12	102	133-482	**143.80**
11.3	55	12	102	133-483	**143.80**
11.4	55	12	102	133-484	**143.80**
11.5	55	12	102	133-485	**143.80**
11.6	55	12	102	133-486	**143.80**
11.7	55	12	102	133-487	**143.80**
11.8	55	12	102	133-488	**143.80**
11.9	55	12	102	133-489	**143.80**
12.0	55	12	102	133-490	**143.80**
12.1	60	14	107	133-491	**211.50**
12.2	60	14	107	133-492	**211.50**
12.3	60	14	107	133-493	**211.50**
12.4	60	14	107	133-494	**211.50**
12.5	60	14	107	133-495	**211.50**
12.6	60	14	107	133-496	**211.50**
12.7	60	14	107	133-497	**179.60**
12.8	60	14	107	133-498	**211.50**
12.9	60	14	107	133-499	**211.50**
13.0	60	14	107	133-500	**211.50**
13.1	60	14	107	133-501	**211.50**
13.2	60	14	107	133-502	**211.50**
13.3	60	14	107	133-503	**211.50**
13.4	60	14	107	133-504	**211.50**
13.5	60	14	107	133-505	**211.50**
14.0	60	14	107	133-506	**211.50**
14.5	65	16	115	133-507	**253.70**
15.0	65	16	115	133-508	**253.70**
15.5	65	16	115	133-509	**253.70**
16.0	65	16	115	133-510	**253.70**
16.5	73	18	123	133-511	**403.50**
17.0	73	18	123	133-512	**403.50**
17.5	73	18	123	133-513	**403.50**
18.0	73	18	123	133-514	**403.50**
18.5	79	20	131	133-515	**487.50**
19.0	79	20	131	133-516	**487.50**
19.5	79	20	131	133-517	**487.50**
20.0	79	20	131	133-518	**487.50**

QUALITY TECH TOOL

MADE IN USA

Premium Class Drills Sub-Micrograin Carbide

5 X D Premium Class Sub-Micrograin Carbide Drills





Speeds & Feeds ☞ P. B79

PC245

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	28	6	66	133-520	**67.70**
3.1	28	6	66	133-521	**67.70**
3.2	28	6	66	133-522	**67.70**
3.3	28	6	66	133-523	**67.70**
3.4	28	6	66	133-524	**67.70**
3.5	28	6	66	133-525	**67.70**
3.6	28	6	66	133-526	**67.70**
3.7	28	6	66	133-527	**67.70**
3.8	36	6	74	133-528	**73.60**
3.9	36	6	74	133-529	**73.60**
4.0	36	6	74	133-530	**73.60**
4.1	36	6	74	133-531	**73.60**
4.2	36	6	74	133-532	**73.60**
4.3	36	6	74	133-533	**73.60**
4.4	36	6	74	133-534	**73.60**
4.5	36	6	74	133-535	**73.60**
4.6	36	6	74	133-536	**73.60**
4.7	44	6	82	133-537	**73.60**
4.8	44	6	82	133-538	**73.60**
4.9	44	6	82	133-539	**73.60**
5.0	44	6	82	133-540	**73.60**
5.1	44	6	82	133-541	**73.60**
5.2	44	6	82	133-542	**73.60**
5.3	44	6	82	133-543	**73.60**
5.4	44	6	82	133-544	**73.60**
5.5	44	6	82	133-545	**73.60**
5.6	44	6	82	133-546	**73.60**
5.7	44	6	82	133-547	**73.60**
5.8	44	6	82	133-548	**73.60**
5.9	44	6	82	133-549	**73.60**
6.0	44	6	82	133-550	**73.60**
6.1	53	8	91	133-551	**104.90**
6.2	53	8	91	133-552	**104.90**
6.3	53	8	91	133-553	**104.90**
6.4	53	8	91	133-554	**104.90**
6.5	53	8	91	133-555	**104.90**
6.6	53	8	91	133-556	**104.90**
6.7	53	8	91	133-557	**104.90**
6.8	53	8	91	133-558	**104.90**
6.9	53	8	91	133-559	**104.90**
7.0	53	8	91	133-560	**104.90**
7.1	53	8	91	133-561	**104.90**
7.2	53	8	91	133-562	**104.90**
7.3	53	8	91	133-563	**104.90**
7.4	53	8	91	133-564	**104.90**
7.5	53	8	91	133-565	**104.90**
7.6	53	8	91	133-566	**104.90**
7.7	53	8	91	133-567	**104.90**
7.8	53	8	91	133-568	**104.90**
7.9	53	8	91	133-569	**104.90**
8.0	53	8	91	133-570	**104.90**
8.1	61	10	103	133-571	**124.00**
8.2	61	10	103	133-572	**124.00**
8.3	61	10	103	133-573	**124.00**
8.4	61	10	103	133-574	**124.00**
8.5	61	10	103	133-575	**124.00**
8.6	61	10	103	133-576	**124.00**
8.7	61	10	103	133-577	**124.00**
8.8	61	10	103	133-578	**124.00**
8.9	61	10	103	133-579	**124.00**

5 X D Premium Class Sub-Micrograin Carbide Drills

PC245

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
9.0	61	10	103	133-580	**124.00**
9.1	61	10	103	133-581	**124.00**
9.2	61	10	103	133-582	**124.00**
9.3	61	10	103	133-583	**124.00**
9.4	61	10	103	133-584	**124.00**
9.5	61	10	103	133-585	**124.00**
9.6	61	10	103	133-586	**124.00**
9.7	61	10	103	133-587	**124.00**
9.8	61	10	103	133-588	**124.00**
9.9	61	10	103	133-589	**124.00**
10.0	61	10	103	133-590	**124.00**
10.1	71	12	118	133-591	**197.10**
10.2	71	12	118	133-592	**197.10**
10.3	71	12	118	133-593	**197.10**
10.4	71	12	118	133-594	**197.10**
10.5	71	12	118	133-595	**197.10**
10.6	71	12	118	133-596	**197.10**
10.7	71	12	118	133-597	**197.10**
10.8	71	12	118	133-598	**197.10**
10.9	71	12	118	133-599	**197.10**
11.0	71	12	118	133-600	**197.10**
11.1	71	12	118	133-601	**197.10**
11.2	71	12	118	133-602	**197.10**
11.3	71	12	118	133-603	**197.10**
11.4	71	12	118	133-604	**197.10**
11.5	71	12	118	133-605	**197.10**
11.6	71	12	118	133-606	**197.10**
11.7	71	12	118	133-607	**197.10**
11.8	71	12	118	133-608	**197.10**
11.9	71	12	118	133-609	**197.10**
12.0	71	12	118	133-610	**197.10**
12.1	77	14	124	133-611	**247.20**
12.2	77	14	124	133-612	**247.20**
12.3	77	14	124	133-613	**247.20**
12.4	77	14	124	133-614	**247.20**
12.5	77	14	124	133-615	**247.20**
12.6	77	14	124	133-616	**247.20**
12.7	77	14	124	133-617	**246.40**
12.8	77	14	124	133-618	**247.20**
12.9	77	14	124	133-619	**247.20**
13.0	77	14	124	133-620	**247.20**
13.1	77	14	124	133-621	**247.20**
13.2	77	14	124	133-622	**247.20**
13.3	77	14	124	133-623	**247.20**
13.4	77	14	124	133-624	**247.20**
13.5	77	14	124	133-625	**247.20**
14.0	77	14	124	133-626	**247.20**
14.5	83	16	133	133-627	**322.10**
15.0	83	16	133	133-628	**322.10**
15.5	83	16	133	133-629	**322.10**
16.0	83	16	133	133-630	**322.10**
16.5	93	18	143	133-631	**431.50**
17.0	93	18	143	133-632	**431.50**
17.5	93	18	143	133-633	**431.50**
18.0	93	18	143	133-634	**431.50**
18.5	101	20	153	133-635	**508.90**
19.0	101	20	153	133-636	**508.90**
19.5	101	20	153	133-637	**508.90**
20.0	101	20	153	133-638	**508.90**

Premium Class Drills
Sub-Micrograin Carbide

Coolant Fed

3 X D Premium Class Sub-Micrograin Carbide Drills





Speeds & Feeds ☞ P. B80

PC253

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	20	6	62	138-210	**81.30**
3.1	20	6	62	138-211	**81.30**
3.2	20	6	62	138-212	**81.30**
3.3	20	6	62	138-213	**81.30**
3.4	20	6	62	138-214	**81.30**
3.5	20	6	62	138-215	**81.30**
3.6	20	6	62	138-216	**81.30**
3.7	24	6	62	138-217	**81.30**
3.8	24	6	66	138-218	**81.30**
3.9	24	6	66	138-219	**81.30**
4.0	24	6	66	138-220	**81.30**
4.1	24	6	66	138-221	**81.30**
4.2	24	6	66	138-222	**81.30**
4.3	24	6	66	138-223	**81.30**
4.4	24	6	66	138-224	**81.30**
4.5	24	6	66	138-225	**81.30**
4.6	24	6	66	138-226	**81.30**
4.7	24	6	66	138-227	**81.30**
4.8	28	6	66	138-228	**81.30**
4.9	28	6	66	138-229	**81.30**
5.0	28	6	66	138-230	**81.30**
5.1	28	6	66	138-231	**81.30**
5.2	28	6	66	138-232	**81.30**
5.3	28	6	66	138-233	**81.30**
5.4	28	6	66	138-234	**81.30**
5.5	28	6	66	138-235	**81.30**
5.6	28	6	66	138-236	**81.30**
5.7	28	6	66	138-237	**81.30**
5.8	28	6	66	138-238	**81.30**
5.9	28	6	66	138-239	**81.30**
6.0	28	6	66	138-240	**81.30**
6.1	34	8	79	138-241	**112.50**
6.2	34	8	79	138-242	**112.50**
6.3	34	8	79	138-243	**112.50**
6.4	34	8	79	138-244	**112.50**
6.5	34	8	79	138-245	**112.50**
6.6	34	8	79	138-246	**112.50**
6.7	34	8	79	138-247	**112.50**
6.8	34	8	79	138-248	**112.50**
6.9	34	8	79	138-249	**112.50**
7.0	34	8	79	138-250	**112.50**
7.1	41	8	79	138-251	**112.50**
7.2	41	8	79	138-252	**112.50**
7.3	41	8	79	138-253	**112.50**
7.4	41	8	79	138-254	**112.50**
7.5	41	8	79	138-255	**112.50**
7.6	41	8	79	138-256	**112.50**
7.7	41	8	79	138-257	**112.50**
7.8	41	8	79	138-258	**112.50**
7.9	41	8	79	138-259	**112.50**
8.0	41	8	79	138-260	**112.50**
8.1	47	10	89	138-261	**155.90**
8.2	47	10	89	138-262	**155.90**
8.3	47	10	89	138-263	**155.90**
8.4	47	10	89	138-264	**155.90**
8.5	47	10	89	138-265	**155.90**
8.6	47	10	89	138-266	**155.90**
8.7	47	10	89	138-267	**155.90**
8.8	47	10	89	138-268	**155.90**
8.9	47	10	89	138-269	**155.90**

3 X D Premium Class Sub-Micrograin Carbide Drills

PC253

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
9.0	47	10	89	138-270	**155.90**
9.1	47	10	89	138-271	**155.90**
9.2	47	10	89	138-272	**155.90**
9.3	47	10	89	138-273	**155.90**
9.4	47	10	89	138-274	**155.90**
9.5	47	10	89	138-275	**155.90**
9.6	47	10	89	138-276	**155.90**
9.7	47	10	89	138-277	**155.90**
9.8	47	10	89	138-278	**155.90**
9.9	47	10	89	138-279	**155.90**
10.0	47	10	89	138-280	**155.90**
10.1	55	12	102	138-281	**238.60**
10.2	55	12	102	138-282	**238.60**
10.3	55	12	102	138-283	**238.60**
10.4	55	12	102	138-284	**238.60**
10.5	55	12	102	138-285	**238.60**
10.6	55	12	102	138-286	**238.60**
10.7	55	12	102	138-287	**238.60**
10.8	55	12	102	138-288	**238.60**
10.9	55	12	102	138-289	**238.60**
11.0	55	12	102	138-290	**238.60**
11.1	55	12	102	138-291	**238.60**
11.2	55	12	102	138-292	**238.60**
11.3	55	12	102	138-293	**238.60**
11.4	55	12	102	138-294	**238.60**
11.5	55	12	102	138-295	**238.60**
11.6	55	12	102	138-296	**238.60**
11.7	55	12	102	138-297	**238.60**
11.8	55	12	102	138-298	**238.60**
11.9	55	12	102	138-299	**238.60**
12.0	55	12	102	138-300	**238.60**
12.1	60	14	107	138-301	**238.60**
12.2	60	14	107	138-302	**238.60**
12.3	60	14	107	138-303	**238.60**
12.4	60	14	107	138-304	**238.60**
12.5	60	14	107	138-305	**289.80**
12.6	60	14	107	138-306	**289.80**
12.7	60	14	107	138-307	**289.80**
12.8	60	14	107	138-308	**289.80**
12.9	60	14	107	138-309	**289.80**
13.0	60	14	107	138-310	**289.80**
13.1	60	14	107	138-311	**289.80**
13.2	60	14	107	138-312	**289.80**
13.3	60	14	107	138-313	**289.80**
13.4	60	14	107	138-314	**289.80**
13.5	60	14	107	138-315	**289.80**
14.0	60	14	107	138-316	**289.80**
14.5	65	16	115	138-317	**406.10**
15.0	65	16	115	138-318	**406.10**
15.5	65	16	115	138-319	**406.10**
16.0	65	16	115	138-320	**406.10**
16.5	73	18	123	138-321	**596.20**
17.0	73	18	123	138-322	**596.20**
17.5	73	18	123	138-323	**596.20**
18.0	73	18	123	138-324	**596.20**
18.5	79	20	131	138-325	**687.30**
19.0	79	20	131	138-326	**687.30**
19.5	79	20	131	138-327	**687.30**
20.0	79	20	131	138-328	**687.30**

Premium Class Drills
Sub-Micrograin Carbide

Coolant Fed

5 X D Premium Class Sub-Micrograin Carbide Drills





Speeds & Feeds ☞ P. B80

PC255

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	28	6	66	138-330	**112.40**
3.1	28	6	66	138-331	**112.40**
3.2	28	6	66	138-332	**112.40**
3.3	28	6	66	138-333	**112.40**
3.4	28	6	66	138-334	**112.40**
3.5	28	6	66	138-335	**112.40**
3.6	28	6	66	138-336	**112.40**
3.7	28	6	66	138-337	**112.40**
3.8	36	6	74	138-338	**112.40**
3.9	36	6	74	138-339	**112.40**
4.0	36	6	74	138-340	**112.40**
4.1	36	6	74	138-341	**112.40**
4.2	36	6	74	138-342	**112.40**
4.3	36	6	74	138-343	**112.40**
4.4	36	6	74	138-344	**112.40**
4.5	36	6	74	138-345	**112.40**
4.6	36	6	74	138-346	**112.40**
4.7	44	6	82	138-347	**112.40**
4.8	44	6	82	138-348	**112.40**
4.9	44	6	82	138-349	**112.40**
5.0	44	6	82	138-350	**112.40**
5.1	44	6	82	138-351	**112.40**
5.2	44	6	82	138-352	**112.40**
5.3	44	6	82	138-353	**112.40**
5.4	44	6	82	138-354	**112.40**
5.5	44	6	82	138-355	**112.40**
5.6	44	6	82	138-356	**112.40**
5.7	44	6	82	138-357	**112.40**
5.8	44	6	82	138-358	**112.40**
5.9	44	6	82	138-359	**112.40**
6.0	44	6	82	138-360	**112.40**
6.1	53	8	91	138-361	**135.40**
6.2	53	8	91	138-362	**135.40**
6.3	53	8	91	138-363	**135.40**
6.4	53	8	91	138-364	**135.40**
6.5	53	8	91	138-365	**135.40**
6.6	53	8	91	138-366	**135.40**
6.7	53	8	91	138-367	**135.40**
6.8	53	8	91	138-368	**135.40**
6.9	53	8	91	138-369	**135.40**
7.0	53	8	91	138-370	**135.40**
7.1	53	8	91	138-371	**135.40**
7.2	53	8	91	138-372	**135.40**
7.3	53	8	91	138-373	**135.40**
7.4	53	8	91	138-374	**135.40**
7.5	53	8	91	138-375	**135.40**
7.6	53	8	91	138-376	**135.40**
7.7	53	8	91	138-377	**135.40**
7.8	53	8	91	138-378	**135.40**
7.9	53	8	91	138-379	**135.40**
8.0	53	8	91	138-380	**135.40**
8.1	61	10	103	138-381	**162.30**
8.2	61	10	103	138-382	**162.30**
8.3	61	10	103	138-383	**162.30**
8.4	61	10	103	138-384	**162.30**
8.5	61	10	103	138-385	**162.30**
8.6	61	10	103	138-386	**162.30**
8.7	61	10	103	138-387	**162.30**
8.8	61	10	103	138-388	**162.30**
8.9	61	10	103	138-389	**162.30**

5 X D Premium Class Sub-Micrograin Carbide Drills

PC255

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
9.0	61	10	103	138-390	**162.30**
9.1	61	10	103	138-391	**162.30**
9.2	61	10	103	138-392	**162.30**
9.3	61	10	103	138-393	**162.30**
9.4	61	10	103	138-394	**162.30**
9.5	61	10	103	138-395	**162.30**
9.6	61	10	103	138-396	**162.30**
9.7	61	10	103	138-397	**162.30**
9.8	61	10	103	138-398	**162.30**
9.9	61	10	103	138-399	**162.30**
10.0	61	10	103	138-400	**162.30**
10.1	71	12	118	138-401	**304.50**
10.2	71	12	118	138-402	**304.50**
10.3	71	12	118	138-403	**304.50**
10.4	71	12	118	138-404	**304.50**
10.5	71	12	118	138-405	**304.50**
10.6	71	12	118	138-406	**304.50**
10.7	71	12	118	138-407	**304.50**
10.8	71	12	118	138-408	**304.50**
10.9	71	12	118	138-409	**304.50**
11.0	71	12	118	138-410	**304.50**
11.1	71	12	118	138-411	**304.50**
11.2	71	12	118	138-412	**304.50**
11.3	71	12	118	138-413	**304.50**
11.4	71	12	118	138-414	**304.50**
11.5	71	12	118	138-415	**304.50**
11.6	71	12	118	138-416	**304.50**
11.7	71	12	118	138-417	**304.50**
11.8	71	12	118	138-418	**304.50**
11.9	71	12	118	138-419	**304.50**
12.0	71	12	118	138-420	**304.50**
12.1	77	14	124	138-421	**304.50**
12.2	77	14	124	138-422	**304.50**
12.3	77	14	124	138-423	**304.50**
12.4	77	14	124	138-424	**304.50**
12.5	77	14	124	138-425	**351.20**
12.6	77	14	124	138-426	**351.20**
12.7	77	14	124	138-427	**351.20**
12.8	77	14	124	138-428	**351.20**
12.9	77	14	124	138-429	**351.20**
13.0	77	14	124	138-430	**351.20**
13.1	77	14	124	138-431	**351.20**
13.2	77	14	124	138-432	**351.20**
13.3	77	14	124	138-433	**351.20**
13.4	77	14	124	138-434	**351.20**
13.5	77	14	124	138-435	**351.20**
14.0	77	14	124	138-436	**351.20**
14.5	83	16	133	138-437	**451.50**
15.0	83	16	133	138-438	**451.50**
15.5	83	16	133	138-439	**451.50**
16.0	83	16	133	138-440	**451.50**
16.5	93	18	143	138-441	**632.60**
17.0	93	18	143	138-442	**632.60**
17.5	93	18	143	138-443	**632.60**
18.0	93	18	143	138-444	**632.60**
18.5	101	20	153	138-445	**735.90**
19.0	101	20	153	138-446	**735.90**
19.5	101	20	153	138-447	**735.90**
20.0	101	20	153	138-448	**735.90**

QUALITY TECH TOOL

MADE IN USA

Premium Class Drills
Sub-Micrograin Carbide

Coolant Fed

8 X D Premium Class Sub-Micrograin Carbide Drills





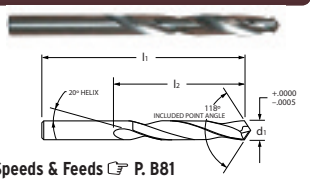
Speeds & Feeds ☞ P. B80

PC258

Cutting Dia. (mm)	Flute Length (mm)	Shank Dia. (mm)	Overall Length (mm)	Code No.	Price $
3.0	50	6	95	138-450	**247.90**
3.1	50	6	95	138-451	**247.90**
3.2	50	6	95	138-452	**247.90**
3.3	50	6	95	138-453	**247.90**
3.4	50	6	95	138-454	**247.90**
3.5	50	6	95	138-455	**247.90**
3.6	50	6	95	138-456	**247.90**
3.7	50	6	95	138-457	**247.90**
3.8	50	6	95	138-458	**247.90**
3.9	50	6	95	138-459	**247.90**
4.0	50	6	95	138-460	**247.90**
4.1	50	6	95	138-461	**247.90**
4.2	50	6	95	138-462	**247.90**
4.3	50	6	95	138-463	**247.90**
4.4	50	6	95	138-464	**247.90**
4.5	50	6	95	138-465	**247.90**
4.6	50	6	95	138-466	**247.90**
4.7	50	6	95	138-467	**247.90**
4.8	50	6	95	138-468	**247.90**
4.9	50	6	95	138-469	**247.90**
5.0	50	6	90	138-470	**247.90**
5.5	57	6	97	138-471	**247.90**
6.0	57	6	97	138-472	**247.90**
6.5	66	8	106	138-473	**303.70**
7.0	76	8	116	138-474	**303.70**
7.5	76	8	116	138-475	**303.70**
8.0	76	8	116	138-476	**303.70**
8.5	87	10	131	138-477	**363.50**
9.0	87	10	131	138-478	**363.50**
9.5	95	10	139	138-479	**363.50**
10.0	95	10	139	138-480	**363.50**
10.5	106	12	155	138-481	**474.30**
11.0	106	12	155	138-482	**474.30**
11.5	114	12	163	138-483	**474.30**
12.0	114	12	163	138-484	**474.30**
12.5	133	14	182	138-485	**588.50**
13.0	133	14	182	138-486	**588.50**
13.5	133	14	182	138-487	**588.50**
14.0	133	14	182	138-488	**588.50**
14.5	152	16	204	138-489	**764.80**
15.0	152	16	204	138-490	**764.80**
15.5	152	16	204	138-491	**764.80**
16.0	152	16	204	138-492	**764.80**
16.5	171	18	223	138-493	**1,257.50**
17.0	171	18	223	138-494	**1,257.50**
17.5	171	18	223	138-495	**1,257.50**
18.0	171	18	223	138-496	**1,257.50**
18.5	190	20	244	138-497	**1,551.40**
19.0	190	20	244	138-498	**1,551.40**
19.5	190	20	244	138-499	**1,551.40**
20.0	190	20	244	138-500	**1,551.40**

Carbide Jobber Drills

For use on:
- Non-ferrous alloys
- Cast Iron
- Plastics
- Aluminum
- High abrasive materials



Inch

Speeds & Feeds ☞ P. B81

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
56	.0465	3/4	1-1/2	171-063	16.10
3/64	.0469	3/4	1-1/2	170-600	15.90
55	.0520	3/4	1-1/2	171-064	16.30
54	.0550	3/4	1-1/2	171-065	16.30
53	.0595	3/4	1-1/2	171-066	16.30
1/16	.0625	3/4	1-1/2	170-602	16.90
52	.0635	3/4	1-1/2	171-067	16.00
51	.0670	3/4	1-1/2	171-068	16.00
50	.0700	7/8	1-3/4	171-069	16.40
49	.0730	7/8	1-3/4	171-070	16.40
48	.0760	7/8	1-3/4	171-071	16.90
5/64	.0781	7/8	1-3/4	170-604	16.90
47	.0785	7/8	1-3/4	171-072	16.90
46	.0810	7/8	1-3/4	171-073	17.30
45	.0820	7/8	1-3/4	171-074	17.30
44	.0860	1	2	171-075	17.90
43	.0890	1	2	171-076	18.40
42	.0935	1	2	171-077	18.60
3/32	.0938	1	2	170-606	18.60
41	.0960	1	2	171-078	19.00
40	.0980	1	2	171-079	19.10
39	.0995	1-1/4	2-1/4	171-080	19.80
38	.1015	1-1/4	2-1/4	171-081	19.80
37	.1040	1-1/4	2-1/4	171-082	20.20
36	.1065	1-1/4	2-1/4	171-083	21.10
7/64	.1094	1-1/4	2-1/4	170-608	21.10
35	.1100	1-1/4	2-1/4	171-084	21.10
34	.1110	1-1/4	2-1/4	171-085	21.10
33	.1130	1-1/4	2-1/4	171-086	21.90
32	.1160	1-1/4	2-1/4	171-087	22.20
31	.1200	1-1/4	2-1/4	171-088	22.10
1/8	.1250	1-1/4	2-1/4	170-610	22.60
30	.1285	1-1/4	2-1/4	171-089	23.70
29	.1360	1-3/8	2-1/2	171-090	24.90
28	.1405	1-3/8	2-1/2	171-091	24.90
9/64	.1406	1-3/8	2-1/2	170-612	24.90
27	.1440	1-3/8	2-1/2	171-092	25.80
26	.1470	1-3/8	2-1/2	171-093	26.20
25	.1495	1-3/8	2-1/2	171-094	26.20
24	.1520	1-3/8	2-1/2	171-096	27.00
23	.1540	1-3/8	2-1/2	171-097	27.90
5/32	.1562	1-3/8	2-1/2	170-614	27.90
22	.1570	1-3/8	2-1/2	171-098	27.90
21	.1590	1-3/8	2-1/2	171-099	29.10
20	.1610	1-3/8	2-1/2	171-100	29.10
19	.1660	1-5/8	2-3/4	171-101	30.50
18	.1695	1-5/8	2-3/4	171-102	30.90
11/64	.1719	1-5/8	2-3/4	170-616	33.00
17	.1730	1-5/8	2-3/4	171-103	33.00
16	.1770	1-5/8	2-3/4	171-104	34.50
15	.1800	1-5/8	2-3/4	171-105	34.50
14	.1820	1-5/8	2-3/4	171-106	35.20
13	.1850	1-5/8	2-3/4	171-107	35.80
3/16	.1875	1-5/8	2-3/4	170-618	33.90
12	.1890	1-5/8	2-3/4	171-108	36.60
11	.1910	1-5/8	2-3/4	171-109	36.60
10	.1935	1-5/8	2-3/4	171-110	37.00
9	.1960	1-3/4	3	171-111	37.50
8	.1991	1-3/4	3	171-112	37.90
7	.2010	1-3/4	3	171-113	38.20
13/64	.2031	1-3/4	3	170-620	38.90
6	.2040	1-3/4	3	171-114	39.30
5	.2055	1-3/4	3	171-115	39.30
4	.2090	1-3/4	3	171-116	40.30
3	.2130	1-3/4	3	171-117	41.40

Carbide Jobber Drills Continued

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
7/32	.2188	1-3/4	3	170-622	43.20
2	.2210	1-3/4	3	171-118	43.20
1	.2280	1-3/4	3	171-119	44.90
A	.2340	2	3-1/4	171-120	49.30
15/64	.2344	2	3-1/4	170-624	48.70
B	.2380	2	3-1/4	171-121	51.40
C	.2420	2	3-1/4	171-122	51.70
D	.2460	2	3-1/4	171-123	52.40
1/4	.2500	2	3-1/4	170-626	51.50
E	.2500	2	3-1/4	171-124	51.50
F	.2570	2	3-1/4	171-125	57.00
G	.2610	2-1/8	3-1/2	171-126	60.50
17/64	.2656	2-1/8	3-1/2	170-628	58.00
H	.2660	2-1/8	3-1/2	171-127	61.90
I	.2720	2-1/8	3-1/2	171-128	62.80
J	.2770	2-1/8	3-1/2	171-129	64.50
K	.2810	2-1/8	3-1/2	171-130	65.10
9/32	.2812	2-1/8	3-1/2	170-630	60.30
L	.2900	2-1/8	3-1/2	171-131	68.80
M	.2950	2-1/8	3-1/2	171-132	70.00
19/64	.2969	2-1/8	3-1/2	170-632	67.70
N	.3020	2-1/8	3-1/2	171-133	74.50
5/16	.3125	2-1/8	3-1/2	170-634	71.20
O	.3160	2-1/8	3-1/2	171-134	78.50
P	.3230	2-1/8	3-1/2	171-135	81.40
21/64	.3281	2-1/2	4	170-636	77.50
Q	.3320	2-1/2	4	171-136	84.40
R	.3390	2-1/2	4	171-137	88.20
11/32	.3438	2-1/2	4	170-638	84.80
S	.3480	2-1/2	4	171-138	94.10
T	.3580	2-1/2	4	171-139	97.20
23/64	.3594	2-1/2	4	170-640	94.80
U	.3680	2-3/4	4-1/4	171-140	101.90
3/8	.3750	2-3/4	4-1/4	170-642	100.50
V	.3770	2-3/4	4-1/4	171-141	112.90
W	.3860	2-7/8	4-1/2	171-142	121.60
25/64	.3906	2-7/8	4-1/2	170-644	117.60
X	.3970	2-7/8	4-1/2	171-143	132.80
Y	.4040	2-7/8	4-1/2	171-144	137.20
13/32	.4062	2-7/8	4-1/2	170-646	128.90
Z	.4130	2-7/8	4-1/2	171-145	143.40
27/64	.4219	2-7/8	4-1/2	170-648	140.00
7/16	.4375	2-7/8	4-1/2	170-650	146.70
29/64	.4531	3	4-3/4	170-652	169.90
15/32	.4688	3	4-3/4	170-654	176.90
31/64	.4844	3	4-3/4	170-656	182.10
1/2	.5000	3	4-3/4	170-658	182.10

Metric

Size	Decimal Equivalent	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
1.5	.0591	19	38	171-146	16.80
2.0	.0787	22	44	171-147	17.90
2.5	.0984	25	51	171-148	20.10
3.0	.1181	32	57	171-149	22.60
3.5	.1378	35	64	171-150	26.70
4.0	.1575	35	64	171-151	30.00
4.5	.1772	41	70	171-152	35.40
5.0	.1968	44	76	171-153	38.70
5.5	.2165	44	76	171-154	43.90
6.0	.2362	51	83	171-155	49.30
6.5	.2559	51	83	171-156	55.10
7.0	.2756	54	89	171-157	64.50
7.5	.2953	60	92	171-158	70.60
8.0	.3150	60	92	171-159	80.00
8.5	.3346	64	102	171-160	87.70
9.0	.3543	64	102	171-161	101.40
9.5	.3740	70	108	171-162	114.10
10.0	.3937	73	114	171-163	133.20
10.5	.4134	73	114	171-164	143.20
11.0	.4331	73	114	171-165	165.20
11.5	.4528	76	121	171-166	179.40
12.0	.4724	76	121	171-167	185.70

High Performance Parabolic Jobber Drills

Designed for deep hole drilling with extremely efficient chip evacuation, without the need for frequent drill withdrawal. A heavy web and parabolic flute shape provide increased stability enabling drilling of accurate straight holes up to 5 x D.





Split Point

* = Tap Drill sizes

Speeds & Feeds ☞ P. B82

Size (in.)	Size (mm)	Decimal Equivalent	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
60	1.02	0.0400	12	34	133-940	**3.90**
59	1.04	0.0410	12	34	133-941	**4.10**
58	1.07	0.0420	14	36	133-942	**4.50**
57	1.09	0.0430	14	36	133-943	**4.50**
56	1.18	0.0465	14	36	133-944	**4.10**
3/64*	1.19	0.0469	16	38	134-211	**4.10**
55	1.32	0.0520	16	38	133-945	**5.00**
54	1.40	0.0540	18	40	133-946	**4.80**
53*	1.51	0.0595	20	43	133-947	**5.40**
1/16	1.59	0.0625	20	43	134-458	**5.20**
52	1.61	0.0635	20	43	133-948	**5.00**
51	1.70	0.0670	20	43	133-949	**5.00**
50*	1.78	0.0700	22	46	133-950	**5.20**
49	1.85	0.0730	22	46	133-951	**5.20**
48	1.93	0.0760	24	49	133-952	**5.50**
5/64	1.98	0.0781	24	49	134-462	**5.40**
47*	1.99	0.0785	24	49	133-953	**5.50**
46	2.06	0.0810	24	49	133-954	**5.70**
45*	2.08	0.0820	24	49	133-955	**5.70**
44	2.18	0.0860	27	53	133-956	**6.00**
43*	2.26	0.0890	27	53	133-957	**5.90**
42*	2.37	0.0935	30	57	133-958	**6.40**
3/32	2.38	0.0938	30	57	134-467	**4.00**
41	2.44	0.0960	30	57	133-959	**6.40**
40	**2.50***	0.0980	30	57	133-960	**6.40**
39	2.53	0.0995	30	57	133-961	**6.60**
38*	2.58	0.1015	30	57	133-962	**6.60**
37*	2.64	0.1040	30	57	133-963	**6.80**
36*	2.71	0.1065	33	61	133-964	**6.50**
7/64	2.78	0.1094	33	61	134-472	**4.70**
35	2.79	0.1100	33	61	133-965	**5.70**
34	2.82	0.1110	33	61	133-966	**6.60**
33*	2.87	0.1130	33	61	133-967	**6.60**
32	2.95	0.1160	33	61	133-968	**5.40**
	3.00	0.1181	33	61	134-475	**10.30**
31	3.05	0.1200	36	65	133-969	**9.50**
	3.10	0.1220	36	65	134-476	**15.70**
1/8	3.17	0.1250	36	65	134-477	**7.90**
	3.20	0.1260	36	65	134-478	**15.90**
30	3.26	0.1285	36	65	133-970	**8.10**
	3.30*	0.1299	36	65	134-479	**15.90**
	3.40	0.1339	39	70	134-480	**16.20**
29*	3.57	0.1360	39	70	133-971	**10.30**
	3.50	0.1378	39	70	134-481	**16.20**
28	3.57	0.1405	39	70	133-972	**6.80**
9/64	3.57	0.1406	39	70	134-482	**5.80**
	3.60	0.1417	39	70	134-483	**16.20**
27	3.66	0.1440	39	70	133-973	**10.80**
	3.70	0.1457	39	70	134-484	**16.20**
26	3.73	0.1470	39	70	133-974	**10.80**
25*	3.80	0.1495	43	75	133-975	**8.10**
	3.80	0.1496	43	75	134-485	**16.70**
24	3.86	0.1520	43	75	133-976	**10.80**
	3.90	0.1535	43	75	134-486	**16.70**
23	3.91	0.1540	43	75	133-977	**10.90**
5/32	3.97	0.1562	43	75	134-487	**9.10**
22	3.99	0.1570	43	75	133-978	**10.90**
	4.00*	0.1575	43	75	134-488	**16.40**
21*	4.04	0.1590	43	75	133-979	**11.00**
20	4.09	0.1610	43	75	133-980	**11.00**
	4.10*	0.1614	43	75	134-489	**18.50**
	4.20*	0.1654	43	75	134-490	**18.50**
19	4.22	0.1660	43	75	133-981	**11.50**
	4.30	0.1693	47	80	134-491	**18.50**
18	4.31	0.1695	47	80	133-982	**12.90**
11/64	4.37	0.1719	47	80	134-492	**8.20**
17	4.39	0.1730	47	80	133-983	**11.50**
	4.40	0.1732	47	80	134-493	**18.70**
16*	4.50	0.1770	47	80	133-984	**11.50**
	4.50	0.1772	47	80	134-494	**18.70**
15	4.57	0.1800	47	80	133-985	**12.30**
	4.60*	0.1811	47	80	134-495	**18.80**
14*	4.62	0.1820	47	80	133-986	**12.30**
	4.70	0.1850	47	80	134-496	**18.90**
13	4.70	0.1850	47	80	133-987	**12.30**
3/16	4.76	0.1875	52	86	134-497	**7.90**
	4.80	0.1890	52	86	134-498	**19.60**
12	4.80	0.1890	52	86	133-988	**12.30**
11	4.85	0.1910	52	86	133-989	**12.30**
	4.90	0.1929	52	86	134-499	**19.70**
10	4.91	0.1935	52	86	133-990	**12.30**
9	4.97	0.1960	52	86	133-991	**12.30**
	5.00*	0.1969	52	86	134-500	**19.70**
8	5.05	0.1991	52	86	133-992	**13.40**
	5.10	0.2008	52	86	134-501	**19.80**
7*	5.10	0.2010	52	86	133-993	**10.40**
13/64	5.16	0.2031	52	86	134-502	**10.70**
6	5.18	0.2040	52	86	133-994	**14.20**
	5.20	0.2047	52	86	134-503	**20.10**
5	5.21	0.2055	52	86	133-995	**14.20**
	5.30	0.2087	52	86	134-504	**20.10**
4	5.30	0.2090	57	93	133-996	**15.50**
	5.40	0.2126	57	93	134-505	**20.10**
3*	5.41	0.2130	57	93	133-997	**15.40**
	5.50	0.2165	57	93	134-506	**20.40**
7/32	5.56	0.2188	57	93	134-507	**13.60**
	5.60	0.2205	57	93	134-508	**20.40**
2	5.61	0.2210	57	93	133-998	**15.50**
	5.70	0.2244	57	93	134-509	**20.20**
1	5.79	0.2280	57	93	133-999	**16.40**
	5.80	0.2283	57	93	134-510	**20.20**
	5.90	0.2323	57	93	134-511	**20.20**
A	5.94	0.2340	57	93	134-198	**16.40**
15/64	5.95	0.2344	57	93	134-512	**13.60**
	6.00*	0.2362	57	93	134-513	**20.40**
B	6.05	0.2380	63	101	134-199	**17.20**
	6.10	0.2402	63	101	134-514	**28.60**
C	6.15	0.2420	63	101	134-204	**17.20**
	6.20	0.2441	63	101	134-515	**28.60**
D	**6.25***	0.2460	63	101	134-843	**20.00**
	6.30	0.2480	63	101	134-516	**28.80**
1/4	6.35	0.2500	63	101	134-517	**13.20**
E	6.35	0.2500	63	101	134-844	**16.10**
	6.40	0.2520	63	101	134-518	**28.80**
	6.50	0.2559	63	101	134-519	**28.80**
F*	6.53	0.2570	63	101	134-845	**16.70**
	6.60	0.2598	63	101	134-520	**33.20**
G	6.63	0.2610	63	101	134-846	**15.30**
	6.70	0.2638	63	101	134-521	**33.20**
17/64	6.75	0.2656	69	109	134-522	**15.40**
H	6.76	0.2660	69	109	134-847	**15.80**
	6.80*	0.2677	69	109	134-523	**30.60**
	6.90	0.2717	69	109	134-524	**30.60**
I*	6.91	0.2720	69	109	134-848	**16.20**
	7.00*	0.2756	69	109	134-525	**30.60**
J	7.04	0.2770	69	109	134-849	**22.90**
	7.10	0.2795	69	109	134-526	**30.60**
K	7.14	0.2810	69	109	134-974	**20.40**
9/32	7.14	0.2812	69	109	134-527	**15.90**
	7.20	0.2835	69	109	134-528	**31.10**
	7.30	0.2874	69	109	134-529	**31.10**
L	7.37	0.2900	69	109	134-975	**22.80**
	7.40	0.2913	69	109	134-530	**31.10**
M	7.49	0.2950	69	109	134-976	**24.00**
	7.50	0.2953	69	109	134-531	**31.10**
19/64	7.54	0.2969	75	117	134-532	**21.50**
	7.60	0.2992	75	117	134-533	**32.20**
N	7.67	0.3020	75	117	134-977	**23.20**

High Performance Parabolic Jobber Drills - cont'd

Size (in.)	Size (mm)	Decimal Equivalent	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
	7.70	0.3031	75	117	134-534	**32.20**
	7.80*	0.3071	75	117	134-535	**32.20**
	7.90	0.3110	75	117	134-536	**32.20**
5/16*	7.94	0.3125	75	117	134-537	**20.40**
	8.00*	0.3150	75	117	134-538	**32.40**
O	8.03	0.3160	75	117	134-978	**25.30**
	8.10	0.3189	75	117	134-539	**39.10**
	8.20	0.3228	75	117	134-540	**39.20**
P	8.20	0.3230	75	117	134-979	**26.60**
	8.30	0.3268	75	117	134-541	**39.20**
21/64	8.33	0.3281	75	117	134-542	**21.00**
	8.40	0.3307	75	117	134-543	**39.70**
Q*	8.43	0.3320	75	117	134-980	**25.50**
	8.50*	0.3346	75	117	134-544	**32.70**
	8.60	0.3386	81	125	134-545	**40.60**
R	8.61	0.3390	81	125	134-981	**27.50**
	8.70	0.3425	81	125	134-546	**40.60**
11/32	8.73	0.3438	81	125	134-547	**22.70**
	8.80*	0.3465	81	125	134-548	**41.20**
S	8.84	0.3480	81	125	134-982	**27.80**
	8.90	0.3504	81	125	134-549	**41.20**
	9.00*	0.3543	81	125	134-550	**41.20**
T	9.09	0.3580	81	125	134-983	**29.10**
	9.10	0.3583	81	125	134-551	**41.30**
23/64	9.13	0.3594	81	125	134-552	**24.60**
	9.20	0.3622	81	125	134-553	**42.60**
	9.30	0.3661	81	125	134-554	**42.60**
U*	9.35	0.3680	81	125	134-984	**29.80**
	9.40	0.3701	81	125	134-555	**42.60**
	9.50*	0.3740	81	125	134-556	**42.60**
3/8	9.52	0.3750	87	133	134-557	**22.70**
V	9.56	0.3770	87	133	134-985	**32.00**
	9.60	0.3780	87	133	134-558	**51.50**
	9.70	0.3819	87	133	134-559	**51.50**
	9.80	0.3858	87	133	134-560	**51.50**
W	9.80	0.3860	87	133	134-986	**31.40**
	9.90	0.3898	87	133	134-561	**51.60**
25/64*	9.92	0.3906	87	133	134-562	**26.30**
	10.00	0.3937	87	133	134-563	**29.10**
X	10.08	0.3970	87	133	134-987	**35.10**
	10.20	0.4016	87	133	134-565	**52.70**
Y	10.26	0.4040	87	133	134-988	**36.50**
13/32	10.32	0.4063	87	133	134-567	**30.00**
Z	10.49	0.4130	87	133	134-989	**36.10**
	10.50*	0.4134	87	133	134-569	**53.80**
27/64*	10.72	0.4220	87	133	134-572	**28.50**
	10.80*	0.4252	87	133	134-573	**54.50**
	11.00	0.4331	94	142	134-575	**66.50**
7/16	11.11	0.4374	94	142	134-577	**32.30**
	11.50	0.4528	94	142	134-581	**67.80**
29/64*	11.51	0.4531	94	142	134-582	**37.30**
	11.80	0.4646	94	142	134-585	**69.00**
15/32	11.91	0.4689	101	151	134-587	**34.60**
	12.00	0.4724	101	151	134-588	**71.20**
	12.20	0.4803	101	151	134-590•	**71.90**
31/64*	12.30	0.4882	101	151	134-592	**42.90**
	12.50*	0.4961	101	151	134-594	**73.60**
1/2	12.70	0.5000	101	151	134-597	**32.50**
33/64*	13.09	0.5156	101	151	134-991	**48.00**
17/32*	13.49	0.5312	108	160	134-598	**43.00**
35/64	13.89	0.5469	108	160	134-992	**67.10**
9/16	14.28	0.5625	114	169	134-607	**62.70**
37/64*	14.68	0.5781	114	169	134-993	**81.90**
19/32	15.08	0.5938	120	178	134-610	**72.90**
39/64	15.47	0.6094	120	178	134-994	**89.00**
5/8	15.87	0.6250	120	178	134-612	**75.20**

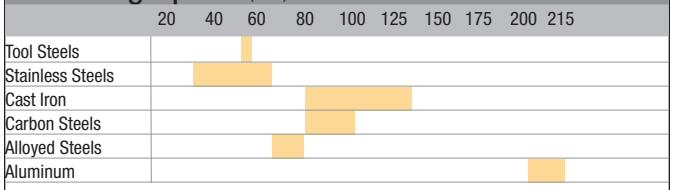
• Available only while quantities last

Cutting Conditions

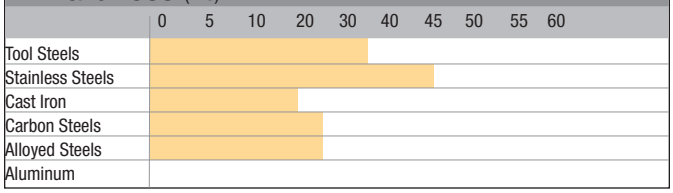
Materials

Main Group	Sub-Group	Condition	Hardness (HRc)	Cutting Speed (SFM)
Tool Steels	A2, A6, L7, 01, 02, 06, M1, M2 D2, P20	Annealed	<35	50-55
Stainless Steel	200 Series,	Annealed	<28	50-60
	300 Series,	Annealed	<28	30-60
	400 Series	Annealed	<29	55-65
	400 Series	Hardened	<45	50-60
Cast Iron	Soft, Hard, Malleable		<18	80-135
Carbon Steels	1020 thru 1060, 1090	Normalized	<22	80-100
Alloyed Steels	1435,4140,4615,5140	Normalized	<22	65-80
Aluminum	Alloys, Cast	-	-	200-215

Cutting Speed (sfm)



Hardness (hrc)



HSS TiAlN Tip Jobber Length Drills

A stronger self repairing coating leading to longer tool life compared to TiN coating. TiAlN Tip also allows increased speeds and feeds.



HSS | TiAlN Tip | 30° | 118° Split Point | JOBBERS LENGTH

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	.0400	1/2	1-3/8	127-189	**1.10**
59	.0410	1/2	1-3/8	127-188	**1.10**
58	.0420	9/16	1-7/16	127-187	**1.10**
57	.0430	9/16	1-7/16	127-186	**1.10**
56	.0465	11/16	1-1/2	127-185	**1.10**
55	.0520	3/4	1-5/8	127-184	**1.10**
54	.0540	3/4	1-5/8	127-183	**1.10**
53	.0595	13/16	1-3/4	127-182	**1.20**
1/16	.0625	13/16	1-3/4	127-001	**1.10**
52	.0635	13/16	1-3/4	127-181	**1.20**
51	.0670	7/8	1-13/16	127-180	**1.20**
50	.0700	7/8	1-13/16	127-179	**1.20**
49	.0730	7/8	1-13/16	127-178	**1.20**
48	.0760	1”	1-15/16	127-177	**1.20**
5/64	.0781	1”	1-15/16	127-002	**1.10**
47	.0785	1”	1-15/16	127-176	**1.30**
46	.0810	1”	1-15/16	127-175	**1.30**
45	.0820	1”	1-15/16	127-174	**1.30**
44	.0860	1-1/8	2-1/8	127-173	**1.30**
43	.0890	1-1/8	2-1/8	127-172	**1.30**
42	.0935	1-3/16	2-1/4	127-171	**1.80**
3/32	.0938	1-3/16	2-1/4	127-003	**1.20**
41	.0960	1-3/16	2-1/4	127-170	**1.80**
40	.0980	1-3/16	2-1/4	127-169	**1.80**
39	.0995	1-3/16	2-1/4	127-168	**1.80**
38	.1015	1-3/16	2-1/4	127-167	**1.80**
37	.1040	1-3/16	2-1/4	127-166	**1.80**
36	.1065	1-5/16	2-7/16	127-165	**1.80**
7/64	.1094	1-5/16	2-7/16	127-004	**1.70**
35	.1100	1-5/16	2-7/16	127-164	**2.00**
34	.1110	1-5/16	2-7/16	127-163	**2.00**
33	.1130	1-5/16	2-7/16	127-162	**2.00**
32	.1160	1-5/16	2-7/16	127-161	**2.00**
31	.1200	1-7/16	2-9/16	127-160	**2.00**
1/8	.1250	1-7/16	2-9/16	127-005	**1.80**
30	.1285	1-7/16	2-9/16	127-159	**2.00**
29	.1360	1-9/16	2-13/16	127-158	**2.00**
28	.1405	1-9/16	2-13/16	127-157	**2.00**
9/64	.1406	1-9/16	2-13/16	127-006	**2.00**
27	.1440	1-9/16	2-13/16	127-156	**2.00**
26	.1470	1-9/16	2-13/16	127-155	**2.00**
25	.1495	1-3/4	3”	127-154	**2.10**
24	.1520	1-3/4	3”	127-153	**2.10**
23	.1540	1-3/4	3”	127-152	**2.10**
5/32	.1562	1-3/4	3”	127-007	**2.10**
22	.1570	1-3/4	3”	127-151	**2.10**
21	.1590	1-3/4	3”	127-150	**2.10**
20	.1610	1-3/4	3”	127-149	**2.20**
19	.1660	1-3/4	3”	127-148	**2.20**
18	.1695	1-7/8	3-3/16	127-147	**2.20**
11/64	.1719	1-7/8	3-3/16	127-008	**2.20**
17	.1730	1-7/8	3-3/16	127-146	**2.30**
16	.1770	1-7/8	3-3/16	127-145	**2.30**
15	.1800	1-7/8	3-3/16	127-144	**2.30**
14	.1820	1-7/8	3-3/16	127-143	**2.30**
13	.1850	1-7/8	3-3/16	127-142	**2.40**
3/16	.1875	2-1/16	3-7/16	127-009	**2.30**
12	.1890	2-1/16	3-7/16	127-141	**2.40**
11	.1910	2-1/16	3-7/16	127-140	**2.40**
10	.1935	2-1/16	3-7/16	127-139	**2.50**
9	.1960	2-1/16	3-7/16	127-138	**2.50**
8	.1991	2-1/16	3-7/16	127-137	**2.70**
7	.2010	2-1/16	3-7/16	127-136	**2.80**
13/64	.2031	2-1/16	3-7/16	127-010	**2.70**

HSS TiAlN Tip Jobber Length Drills

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
6	.2040	2-1/16	3-7/16	127-135	**2.80**
5	.2055	2-1/16	3-7/16	127-134	**3.00**
4	.2090	2-1/4	3-11/16	127-133	**3.00**
3	.2130	2-1/4	3-11/16	127-132	**3.10**
7/32	.2188	2-1/4	3-11/16	127-011	**2.80**
2	.2210	2-1/4	3-11/16	127-131	**3.10**
1	.2280	2-1/4	3-11/16	127-130	**3.20**
A	.2340	2-1/4	3-11/16	127-250	**3.30**
15/64	.2344	2-1/4	3-11/16	127-012	**3.30**
B	.2380	2-1/2	4”	127-251	**3.40**
C	.2420	2-1/2	4”	127-252	**3.40**
D	.2460	2-1/2	4”	127-253	**3.50**
1/4	.2500	2-1/2	4”	127-013	**3.40**
E	.2500	2-1/2	4”	127-254	**3.60**
F	.2570	2-1/2	4”	127-255	**3.70**
G	.2610	2-1/2	4”	127-256	**3.90**
17/64	.2656	2-3/4	4-5/16	127-014	**3.80**
H	.2660	2-3/4	4-5/16	127-257	**4.00**
I	.2720	2-3/4	4-5/16	127-258	**4.10**
J	.2770	2-3/4	4-5/16	127-259	**4.40**
K	.2810	2-3/4	4-5/16	127-260	**4.40**
9/32	.2812	2-3/4	4-5/16	127-015	**4.10**
L	.2900	2-3/4	4-5/16	127-261	**4.50**
M	.2950	2-3/4	4-5/16	127-262	**5.00**
19/64	.2969	3”	4-5/8	127-016	**4.70**
N	.3020	3”	4-5/8	127-263	**5.20**
5/16	.3125	3”	4-5/8	127-017	**4.90**
O	.3160	3”	4-5/8	127-264	**5.30**
P	.3230	3”	4-5/8	127-265	**5.80**
21/64	.3281	3”	4-5/8	127-018	**5.50**
Q	.3320	3”	4-5/8	127-266	**5.90**
R	.3390	3-1/4	4-15/16	127-267	**6.50**
11/32	.3438	3-1/4	4-15/16	127-019	**6.20**
S	.3480	3-1/4	4-15/16	127-268	**6.60**
T	.3580	3-1/4	4-15/16	127-269	**7.20**
23/64	.3594	3-1/4	4-15/16	127-020	**6.70**
U	.3680	3-1/4	4-15/16	127-270	**7.30**
3/8	.3750	3-7/16	5-1/4	127-021	**6.80**
V	.3770	3-7/16	5-1/4	127-271	**7.50**
W	.3860	3-7/16	5-1/4	127-272	**7.90**
25/64	.3906	3-7/16	5-1/4	127-022	**7.70**
X	.3970	3-7/16	5-1/4	127-273	**8.40**
Y	.4040	3-7/16	5-1/4	127-274	**8.50**
13/32	.4062	3-7/16	5-1/4	127-023	**8.10**
Z	.4130	3-7/16	5-1/4	127-275	**9.20**
27/64	.4219	3-3/4	5-5/8	127-024	**8.80**
7/16	.4375	3-3/4	5-5/8	127-025	**9.50**
29/64	.4531	3-3/4	5-5/8	127-026	**10.40**
15/32	.4688	4”	6”	127-027	**10.90**
31/64	.4844	4”	6”	127-028	**11.70**
1/2	.5000	4”	6”	127-029	**12.10**

HSS TiAlN Tip Jobber Length Drill Sets

A stronger self repairing coating leading to longer tool life compared to TiN coating. TiAlN Tip also allows increased speeds and feeds.



HSS | TiAlN Tip | 30° | 118° Split Point | JOBBERS LENGTH

Description	Pieces Per Set	Code No.	Price $
1/16” - 1/2” x 64ths Fractional Set	29	127-050	**181.20**
#1 - #60 Wire Gauge Set	60	127-190	**158.80**
3-in-1 Combination Drill Set #1-60, A-Z, 1/16-1/2 x 64ths	115	127-280	**476.80**

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.



MADE IN USA

PREMIUM HSS | 30° | 135° Split Point | JOBBERS LENGTH

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	.0400	11/16	1-5/8	128-189	2.40
59	.0410	11/16	1-5/8	128-188	2.40
58	.0420	11/16	1-5/8	128-187	2.40
57	.0430	3/4	1-3/4	128-186	2.40
56	.0465	3/4	1-3/4	128-185	2.40
55	.0520	7/8	1-7/8	128-184	2.40
54	.0540	7/8	1-7/8	128-183	2.40
53	.0595	7/8	1-7/8	128-182	2.40
1/16	.0625	7/8	1-7/8	128-001	2.10
52	.0635	7/8	1-7/8	128-181	2.40
51	.0670	1	2	128-180	2.40
50	.0700	1	2	128-179	2.40
49	.0730	1	2	128-178	2.40
48	.0760	1	2	128-177	2.40
5/64	.0781	1	2	128-002	2.10
47	.0785	1	2	128-176	2.40
46	.0810	1-1/8	2-1/8	128-175	2.40
45	.0820	1-1/8	2-1/8	128-174	2.40
44	.0860	1-1/8	2-1/8	128-173	2.40
43	.0890	1-1/4	2-1/4	128-172	2.40
42	.0935	1-1/4	2-1/4	128-171	2.40
3/32	.0938	1-1/4	2-1/4	128-003	2.10
41	.0960	1-3/8	2-3/8	128-170	2.40
40	.0980	1-3/8	2-3/8	128-169	2.40
39	.0995	1-3/8	2-3/8	128-168	2.40
38	.1015	1-7/16	2-1/2	128-167	2.40
37	.1040	1-7/16	2-1/2	128-166	2.40
36	.1065	1-7/16	2-1/2	128-165	2.40
7/64	.1094	1-1/2	2-5/8	128-004	2.40
35	.1100	1-1/2	2-5/8	128-164	2.40
34	.1110	1-1/2	2-5/8	128-163	2.40
33	.1130	1-1/2	2-5/8	128-162	2.40
32	.1160	1-5/8	2-3/4	128-161	2.40
31	.1200	1-5/8	2-3/4	128-160	2.40
1/8	.1250	1-5/8	2-3/4	128-005	2.40
30	.1285	1-5/8	2-3/4	128-159	2.40
29	.1360	1-3/4	2-7/8	128-158	2.40
28	.1405	1-3/4	2-7/8	128-157	2.40
9/64	.1406	1-3/4	2-7/8	128-006	2.50
27	.1440	1-7/8	3	128-156	2.50
26	.1470	1-7/8	3	128-155	2.50
25	.1495	1-7/8	3	128-154	2.50
24	.1520	2	3-1/8	128-153	2.50
23	.1540	2	3-1/8	128-152	2.50
5/32	.1562	2	3-1/8	128-007	2.50
22	.1570	2	3-1/8	128-151	2.50
21	.1590	2-1/8	3-1/4	128-150	2.50
20	.1610	2-1/8	3-1/4	128-149	2.70
19	.1660	2-1/8	3-1/4	128-148	3.00
18	.1695	2-1/8	3-1/4	128-147	3.00
11/64	.1719	2-1/8	3-1/4	128-008	2.70
17	.1730	2-3/16	3-3/8	128-146	3.30
16	.1770	2-3/16	3-3/8	128-145	3.30
15	.1800	2-3/16	3-3/8	128-144	3.30
14	.1820	2-3/16	3-3/8	128-143	3.30
13	.1850	2-5/16	3-1/2	128-142	3.30
3/16	.1875	2-5/16	3-1/2	128-009	3.10
12	.1890	2-5/16	3-1/2	128-141	3.30
11	.1910	2-5/16	3-1/2	128-140	3.30
10	.1935	2-7/16	3-5/8	128-139	3.50
9	.1960	2-7/16	3-5/8	128-138	3.50
8	.1991	2-7/16	3-5/8	128-137	3.50
7	.2010	2-7/16	3-5/8	128-136	3.50
13/64	.2031	2-7/16	3-5/8	128-010	3.30

Premium HSS Jobber Length Drills Continued

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
6	.2040	2-1/2	3-3/4	128-135	3.90
5	.2055	2-1/2	3-3/4	128-134	3.90
4	.2090	2-1/2	3-3/4	128-133	4.00
3	.2130	2-1/2	3-3/4	128-132	4.00
7/32	.2188	2-1/2	3-3/4	128-011	3.60
2	.2210	2-5/8	3-7/8	128-131	4.10
1	.2280	2-5/8	3-7/8	128-130	4.10
A	.2340	2-5/8	3-7/8	128-250	4.10
15/64	.2344	2-5/8	3-7/8	128-012	4.00
B	.2380	2-3/4	4	128-251	4.30
C	.2420	2-3/4	4	128-252	4.30
D	.2460	2-3/4	4	128-253	4.40
1/4	.2500	2-3/4	4	128-013	4.10
E	.2500	2-3/4	4	128-254	4.40
F	.2570	2-7/8	4-1/8	128-255	5.90
G	.2610	2-7/8	4-1/8	128-256	6.00
17/64	.2656	2-7/8	4-1/8	128-014	5.20
H	.2660	2-7/8	4-1/8	128-257	6.00
I	.2720	2-7/8	4-1/8	128-258	6.30
J	.2770	2-7/8	4-1/8	128-259	6.40
K	.2810	2-15/16	4-1/4	128-260	6.50
9/32	.2812	2-15/16	4-1/4	128-015	5.20
L	.2900	2-15/16	4-1/4	128-261	6.80
M	.2950	3-1/16	4-3/8	128-262	7.30
19/64	.2969	3-1/16	4-3/8	128-016	6.00
N	.3020	3-1/16	4-3/8	128-263	7.50
5/16	.3125	3-3/16	4-1/2	128-017	6.40
O	.3160	3-3/16	4-1/2	128-264	7.90
P	.3230	3-5/16	4-5/8	128-265	8.50
21/64	.3281	3-5/16	4-5/8	128-018	7.20
Q	.3320	3-7/16	4-3/4	128-266	8.90
R	.3390	3-7/16	4-3/4	128-267	9.20
11/32	.3438	3-7/16	4-3/4	128-019	7.70
S	.3480	3-1/2	4-7/8	128-268	9.50
T	.3580	3-1/2	4-7/8	128-269	10.10
23/64	.3594	3-1/2	4-7/8	128-020	8.90
U	.3680	3-5/8	5	128-270	11.20
3/8	.3750	3-5/8	5	128-021	9.00
V	.3770	3-5/8	5	128-271	11.40
W	.3860	3-3/4	5-1/8	128-272	12.10
25/64	.3906	3-3/4	5-1/8	128-022	10.40
X	.3970	3-3/4	5-1/8	128-273	12.80
Y	.4040	3-7/8	5-1/4	128-274	13.50
13/32	.4062	3-7/8	5-1/4	128-023	10.50
Z	.4130	3-7/8	5-1/4	128-275	13.70
27/64	.4219	3-15/16	5-3/8	128-024	12.00
7/16	.4375	4-1/16	5-1/2	128-025	12.10
29/64	.4531	4-3/16	5-5/8	128-026	14.10
15/32	.4688	4-5/16	5-3/4	128-027	14.40
31/64	.4844	4-3/8	5-7/8	128-028	15.50
1/2	.5000	4-1/2	6	128-029	15.40

Premium HSS Jobber Length Drill Sets

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 | JOBBER LENGTH

Description	Pieces Per Set	Code No.	Price $
1/16 - 1/2 x 64ths Fractional Set	29	128-119	187.10
#1 - #60 Number Set	60	128-190	178.00
A - Z Letter Set	26	128-276	234.30
3 in 1 Fractional/Number/Letter	115	128-280	606.80

General Purpose HSS & Cobalt Jobber Drills - Fractional

- General Purpose
- 118° & 135° points
- High Speed Steel & Cobalt



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	.0156	3/16	3/4	117-995	**3.70**	-	-	-	-	117-985	**6.10**
1/32	.0312	1/2	1-3/8	117-996	**2.40**	-	-	-	-	117-986	**5.10**
3/64	.0469	3/4	1-3/4	117-997	**2.20**	-	-	-	-	117-987	**3.70**
1/16	.0625	7/8	1-7/8	118-001	**1.90**	118-030	**2.20**	118-090	**5.30**	118-060	**3.10**
5/64	.0781	1	2	118-002	**1.90**	118-031	**2.20**	118-091	**5.40**	118-061	**3.10**
3/32	.0938	1-1/4	2-1/4	118-003	**2.00**	118-032	**2.20**	118-092	**5.20**	118-062	**3.10**
7/64	.1094	1-1/2	2-5/8	118-004	**2.00**	118-033	**2.50**	118-093	**5.30**	118-063	**3.10**
1/8	.1250	1-5/8	2-3/4	118-005	**2.00**	118-034	**2.50**	118-094	**5.40**	118-064	**3.50**
9/64	.1406	1-3/4	2-7/8	118-006	**2.10**	118-035	**2.70**	118-095	**5.50**	118-065	**3.70**
5/32	.1562	2	3-1/8	118-007	**2.40**	118-036	**2.70**	118-096	**6.10**	118-066	**3.90**
11/64	.1719	2-1/8	3-1/4	118-008	**2.70**	118-037	**2.80**	118-097	**6.30**	118-067	**4.00**
3/16	.1875	2-5/16	3-1/2	118-009	**3.00**	118-038	**3.20**	118-098	**6.50**	118-068	**4.80**
13/64	.2031	2-7/16	3-5/8	118-010	**3.20**	118-039	**3.40**	118-099	**10.00**	118-069	**5.80**
7/32	.2188	2-1/2	3-3/4	118-011	**3.40**	118-040	**3.90**	118-100	**10.30**	118-070	**5.90**
15/64	.2344	2-5/8	3-7/8	118-012	**3.50**	118-041	**4.30**	118-101	**10.60**	118-071	**6.70**
1/4	.2500	2-3/4	4	118-013	**3.50**	118-042	**4.40**	118-102	**10.90**	118-072	**6.80**
17/64	.2656	2-7/8	4-1/8	118-014	**4.10**	118-043	**5.40**	118-103	**15.90**	118-073	**7.80**
9/32	.2812	2-15/16	4-1/4	118-015	**4.90**	118-044	**5.40**	118-104	**16.30**	118-074	**8.20**
19/64	.2969	3-1/16	4-3/8	118-016	**5.70**	118-045	**6.40**	118-105	**16.90**	118-075	**10.30**
5/16	.3125	3-3/16	4-1/2	118-017	**6.30**	118-046	**6.80**	118-106	**17.30**	118-076	**10.70**
21/64	.3281	3-5/16	4-5/8	118-018	**6.80**	118-047	**7.60**	118-107	**19.90**	118-077	**12.10**
11/32	.3438	3-7/16	4-3/4	118-019	**7.60**	118-048	**8.20**	118-108	**20.40**	118-078	**13.30**
23/64	.3594	3-1/2	4-7/8	118-020	**8.20**	118-049	**9.30**	118-109	**21.30**	118-079	**13.30**
3/8	.3750	3-5/8	5	118-021	**8.40**	118-050	**9.50**	118-110	**21.90**	118-080	**13.50**
25/64	.3906	3-3/4	5-1/8	118-022	**10.00**	118-051	**11.20**	118-111	**24.60**	118-081	**16.00**
13/32	.4062	3-7/8	5-1/4	118-023	**10.30**	118-052	**11.30**	118-112	**25.60**	118-082	**18.00**
27/64	.4219	3-15/16	5-3/8	118-024	**11.60**	118-053	**12.80**	118-113	**26.50**	118-083	**20.10**
7/16	.4375	4-1/16	5-1/2	118-025	**11.80**	118-054	**13.10**	118-114	**27.50**	118-084	**20.80**
29/64	.4531	4-3/16	5-5/8	118-026	**13.60**	118-055	**14.90**	118-115	**30.60**	118-085	**23.70**
15/32	.4688	4-5/16	5-3/4	118-027	**14.30**	118-056	**15.40**	118-116	**31.80**	118-086	**24.30**
31/64	.4844	4-3/8	5-7/8	118-028	**14.90**	118-057	**16.40**	118-117	**32.70**	118-087	**25.80**
1/2	.5000	4-1/2	6	118-029	**15.20**	118-058	**16.30**	118-118	**33.50**	118-088	**26.10**
33/64	.5156	4-13/16	6-5/8	117-970	**28.90**	-	-	-	-	117-988	**56.80**
17/32	.5312	4-13/16	6-5/8	117-971	**29.60**	-	-	-	-	117-989	**59.70**
35/64	.5469	4-13/16	6-5/8	117-972	**32.80**	-	-	-	-	117-990	**64.70**
9/16	.5625	4-13/16	6-5/8	117-973	**33.60**	-	-	-	-	117-991	**67.60**
37/64	.5781	4-13/16	6-5/8	117-974	**34.50**	-	-	-	-	117-992	**67.80**
19/32	.5938	5-3/16	7-1/8	117-975	**35.30**	-	-	-	-	117-993	**69.40**
39/64	.6094	5-3/16	7-1/8	117-976	**37.80**	-	-	-	-	117-994	**74.70**
5/8	.6250	5-3/16	7-1/8	117-977	**37.10**	-	-	-	-	117-998	**74.70**
41/64	.6406	5-3/16	7-1/8	117-978	**40.60**	-	-	-	-	117-999	**79.80**
21/32	.6562	5-3/16	7-1/8	117-979	**42.50**	-	-	-	-	117-983	**83.80**
43/64	.6719	5-5/8	7-5/8	117-980	**45.90**	-	-	-	-	117-984	**90.50**
11/16	.6875	5-5/8	7-5/8	117-981	**45.90**	-	-	-	-	117-969	**90.50**
3/4	.7500	5-5/8	7-5/8	117-982	**60.00**	-	-	-	-	-	-

General Purpose HSS Jobber Drills - Number

- General Purpose
- 118° & 135° points
- High Speed Steel



Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	General Purpose 118° Code No.	Price $	HD Split Point 135° Code No.	Price $
1	.2280	2-5/8	3-7/8	118-130	**3.70**	118-200	**4.60**
2	.2210	2-5/8	3-7/8	118-131	**3.70**	118-201	**4.60**
3	.2130	2-1/2	3-3/4	118-132	**3.60**	118-202	**4.30**
4	.2090	2-1/2	3-3/4	118-133	**3.60**	118-203	**4.30**
5	.2055	2-1/2	3-3/4	118-134	**3.60**	118-204	**4.10**
6	.2040	2-1/2	3-3/4	118-135	**3.60**	118-205	**4.10**
7	.2010	2-7/16	3-5/8	118-136	**3.30**	118-206	**3.60**
8	.1990	2-7/16	3-5/8	118-137	**3.30**	118-207	**3.60**
9	.1960	2-7/16	3-5/8	118-138	**3.30**	118-208	**3.60**
10	.1935	2-7/16	3-5/8	118-139	**3.30**	118-209	**3.60**
11	.1910	2-5/16	3-1/2	118-140	**3.10**	118-210	**3.50**
12	.1890	2-5/16	3-1/2	118-141	**3.10**	118-211	**3.50**
13	.1850	2-5/16	3-1/2	118-142	**3.10**	118-212	**3.50**
14	.1820	2-3/16	3-3/8	118-143	**3.10**	118-213	**3.50**
15	.1800	2-3/16	3-3/8	118-144	**3.10**	118-214	**3.50**
16	.1770	2-3/16	3-3/8	118-145	**3.10**	118-215	**3.50**
17	.1730	2-3/16	3-3/8	118-146	**3.10**	118-216	**3.50**
18	.1695	2-1/8	3-1/4	118-147	**2.50**	118-217	**3.10**
19	.1660	2-1/8	3-1/4	118-148	**2.50**	118-218	**3.10**
20	.1610	2-1/8	3-1/4	118-149	**2.50**	118-219	**3.00**
21	.1590	2-1/8	3-1/4	118-150	**2.20**	118-220	**2.70**
22	.1570	2	3-1/8	118-151	**2.20**	118-221	**2.70**
23	.1540	2	3-1/8	118-152	**2.20**	118-222	**2.70**
24	.1520	2	3-1/8	118-153	**2.20**	118-223	**2.70**
25	.1495	1-7/8	3	118-154	**2.20**	118-224	**2.70**
26	.1470	1-7/8	3	118-155	**2.20**	118-225	**2.70**
27	.1440	1-7/8	3	118-156	**2.20**	118-226	**2.70**
28	.1405	1-3/4	2-7/8	118-157	**2.10**	118-227	**2.40**
29	.1360	1-3/4	2-7/8	118-158	**2.10**	118-228	**2.40**
30	.1285	1-5/8	2-3/4	118-159	**2.10**	118-229	**2.40**
31	.1200	1-5/8	2-3/4	118-160	**2.10**	118-230	**2.40**
32	.1160	1-5/8	2-3/4	118-161	**2.10**	118-231	**2.40**
33	.1130	1-1/2	2-5/8	118-162	**2.10**	118-232	**2.40**
34	.1110	1-1/2	2-5/8	118-163	**2.10**	118-233	**2.40**
35	.1100	1-1/2	2-5/8	118-164	**2.10**	118-234	**2.40**
36	.1065	1-7/16	2-1/2	118-165	**2.10**	118-235	**2.40**
37	.1040	1-7/16	2-1/2	118-166	**2.10**	118-236	**2.40**
38	.1015	1-7/16	2-1/2	118-167	**2.10**	118-237	**2.40**
39	.0995	1-3/8	2-3/8	118-168	**2.10**	118-238	**2.40**
40	.0980	1-3/8	2-3/8	118-169	**2.10**	118-239	**2.40**
41	.0960	1-3/8	2-3/8	118-170	**2.10**	-	-
42	.0935	1-1/4	2-1/4	118-171	**2.10**	-	-
43	.0890	1-1/4	2-1/4	118-172	**2.10**	-	-
44	.0860	1-1/8	2-1/8	118-173	**2.10**	-	-
45	.0820	1-1/8	2-1/8	118-174	**2.10**	-	-
46	.0810	1-1/8	2-1/8	118-175	**2.10**	-	-
47	.0785	1	2	118-176	**2.10**	-	-
48	.0760	1	2	118-177	**2.10**	-	-
49	.0730	1	2	118-178	**2.10**	-	-
50	.0700	1	2	118-179	**2.10**	-	-
51	.0670	1	2	118-180	**2.10**	-	-
52	.0635	7/8	1-7/8	118-181	**2.10**	-	-
53	.0595	7/8	1-7/8	118-182	**2.10**	-	-
54	.0550	7/8	1-7/8	118-183	**2.10**	-	-
55	.0520	7/8	1-7/8	118-184	**2.10**	-	-
56	.0465	3/4	1-3/4	118-185	**2.10**	-	-
57	.0430	3/4	1-3/4	118-186	**2.10**	-	-
58	.0420	11/16	1-5/8	118-187	**2.10**	-	-
59	.0410	11/16	1-5/8	118-188	**2.10**	-	-
60	.0400	11/16	1-5/8	118-189	**2.10**	-	-

General Purpose HSS Jobber Drills - Number

- General Purpose
- 118° points
- High Speed Steel



Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
61	.0390	11/16	1-5/8	105-705	**2.10**
62	.0380	5/8	1-1/2	105-710	**2.10**
63	.0370	5/8	1-1/2	105-715	**2.10**
64	.0360	5/8	1-1/2	105-720	**2.10**
65	.0350	5/8	1-1/2	105-725	**2.10**
66	.0330	1/2	1-3/8	105-730	**2.10**
67	.0320	1/2	1-3/8	105-735	**2.10**
68	.0310	1/2	1-3/8	105-740	**2.20**
69	.0292	1/2	1-3/8	105-745	**2.50**
70	.0280	3/8	1-1/4	105-750	**2.50**
71	.0260	3/8	1-1/4	105-755	**2.50**
72	.0250	5/16	1-1/8	105-760	**2.50**
73	.0240	5/16	1-1/8	105-765	**2.50**
74	.0225	1/4	1	105-770	**2.50**
75	.0210	1/4	1	105-775	**2.80**
76	.0200	3/16	7/8	105-780	**2.80**
77	.0180	3/16	7/8	105-785	**2.80**
78	.0160	3/16	7/8	105-790	**2.80**
79	.0145	1/8	3/4	105-795	**2.80**
80	.0135	1/8	3/4	105-800	**2.80**

General Purpose HSS Jobber Drills - Letter A-Z

- General Purpose
- 118° & 135° points
- High Speed Steel



Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	General Purpose 118° Code No.	Price $	HD Split Point 135° Code No.	Price $
A	.234	2-5/8	3-7/8	118-250	**4.10**	118-280	**4.40**
B	.238	2-3/4	4	118-251	**4.30**	118-281	**4.70**
C	.242	2-3/4	4	118-252	**4.30**	118-282	**4.70**
D	.246	2-3/4	4	118-253	**4.30**	118-283	**4.80**
E	.250	2-3/4	4	118-254	**4.40**	118-284	**4.80**
F	.257	2-7/8	4-1/8	118-255	**6.00**	118-285	**5.80**
G	.261	2-7/8	4-1/8	118-256	**5.80**	118-286	**6.40**
H	.266	2-7/8	4-1/8	118-257	**5.80**	118-287	**6.40**
I	.272	2-7/8	4-1/8	118-258	**6.00**	118-288	**6.70**
J	.277	2-7/8	4-1/8	118-259	**6.30**	118-289	**6.80**
K	.281	2-15/16	4-1/4	118-260	**6.40**	118-290	**7.00**
L	.290	2-15/16	4-1/4	118-261	**6.70**	118-291	**7.30**
M	.295	3-1/16	4-3/8	118-262	**7.00**	118-292	**7.60**
N	.302	3-1/16	4-3/8	118-263	**7.20**	118-293	**7.90**
O	.316	3-3/16	4-1/2	118-264	**7.70**	118-294	**8.40**
P	.323	3-5/16	4-5/8	118-265	**8.20**	118-295	**9.10**
Q	.332	3-7/16	4-3/4	118-266	**8.50**	118-296	**9.30**
R	.339	3-7/16	4-3/4	118-267	**9.00**	118-297	**9.90**
S	.348	3-1/2	4-7/8	118-268	**9.30**	118-298	**10.30**
T	.358	3-1/2	4-7/8	118-269	**9.90**	118-299	**10.70**
U	.368	3-5/8	5	118-270	**10.60**	118-300	**11.80**
V	.377	3-5/8	5	118-271	**10.90**	118-301	**12.00**
W	.386	3-3/4	5-1/8	118-272	**11.80**	118-302	**12.90**
X	.397	3-3/4	5-1/8	118-273	**12.50**	118-303	**13.70**
Y	.404	3-7/8	5-1/4	118-274	**13.10**	118-304	**14.20**
Z	.413	3-7/8	5-1/4	118-275	**13.20**	118-305	**14.40**

Black/Gold Jobber Length Drills

- High Speed Steel
- 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	.0400	11/16	1-5/8	105-495	**1.80**
59	.0410	11/16	1-5/8	105-494	**1.80**
58	.0420	11/16	1-5/8	105-493	**1.80**
57	.0430	3/4	1-3/4	105-492	**1.80**
56	.0465	3/4	1-3/4	105-491	**1.80**
55	.0520	7/8	1-7/8	105-490	**1.80**
54	.0540	7/8	1-7/8	105-489	**1.80**
53	.0595	7/8	1-7/8	105-488	**1.80**
1/16	.0625	7/8	1-7/8	105-381	**0.60**
52	.0635	7/8	1-7/8	105-487	**1.80**
51	.0670	1"	2"	105-486	**1.80**
50	.0700	1"	2"	105-485	**1.80**
49	.0730	1"	2"	105-484	**1.80**
48	.0760	1"	2"	105-483	**1.80**
5/64	.0781	1"	2"	105-382	**0.60**
47	.0785	1"	2"	105-482	**1.80**
46	.0810	1-1/8	2-1/8	105-481	**1.80**
45	.0820	1-1/8	2-1/8	105-480	**1.80**
44	.0860	1-1/8	2-1/8	105-479	**1.80**
43	.0890	1-1/4	2-1/4	105-478	**1.80**
42	.0935	1-1/4	2-1/4	105-477	**1.80**
3/32	.0938	1-1/4	2-1/4	105-383	**0.70**
41	.0960	1-3/8	2-3/8	105-476	**1.80**
40	.0980	1-3/8	2-3/8	105-475	**1.80**
39	.0995	1-3/8	2-3/8	105-474	**1.80**
38	.1015	1-7/16	2-1/2	105-473	**1.80**
37	.1040	1-7/16	2-1/2	105-472	**1.80**
36	.1065	1-7/16	2-1/2	105-471	**1.80**
7/64	.1094	1-1/2	2-5/8	105-384	**0.70**
35	.1100	1-1/2	2-5/8	105-470	**1.80**
34	.1110	1-1/2	2-5/8	105-469	**2.00**
33	.1130	1-1/2	2-5/8	105-468	**2.00**
32	.1160	1-5/8	2-3/4	105-467	**2.00**
31	.1200	1-5/8	2-3/4	105-466	**2.00**
1/8	.1250	1-5/8	2-3/4	105-385	**0.90**
30	.1285	1-5/8	2-3/4	105-465	**2.00**
29	.1360	1-3/4	2-7/8	105-464	**2.00**
28	.1405	1-3/4	2-7/8	105-463	**2.00**
9/64	.1406	1-3/4	2-7/8	105-386	**0.90**
27	.1440	1-7/8	3"	105-462	**2.20**
26	.1470	1-7/8	3"	105-461	**2.20**
25	.1495	1-7/8	3"	105-460	**2.20**
24	.1520	2"	3-1/8	105-459	**2.20**
23	.1540	2"	3-1/8	105-458	**2.20**
5/32	.1562	2"	3-1/8	105-387	**1.00**
22	.1570	2"	3-1/8	105-457	**2.40**
21	.1590	2-1/8	3-1/4	105-456	**2.40**
20	.1610	2-1/8	3-1/4	105-455	**2.40**
19	.1660	2-1/8	3-1/4	105-454	**2.40**
18	.1695	2-1/8	3-1/4	105-453	**2.40**
11/64	.1719	2-1/8	3-1/4	105-388	**1.10**
17	.1730	2-3/16	3-3/8	105-452	**2.80**
16	.1770	2-3/16	3-3/8	105-451	**2.80**
15	.1800	2-3/16	3-3/8	105-450	**2.80**
14	.1820	2-3/16	3-3/8	105-449	**2.80**
13	.1850	2-5/16	3-1/2	105-448	**2.80**
3/16	.1875	2-5/16	3-1/2	105-389	**1.30**
12	.1890	2-5/16	3-1/2	105-447	**3.10**
11	.1910	2-5/16	3-1/2	105-446	**3.10**
10	.1935	2-7/16	3-5/8	105-445	**3.10**
9	.1960	2-7/16	3-5/8	105-444	**3.10**
8	.1991	2-7/16	3-5/8	105-443	**3.10**
7	.2010	2-7/16	3-5/8	105-442	**3.10**
13/64	.2031	2-7/16	3-5/8	105-390	**1.60**

Black/Gold Jobber Length Drills continued

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
6	.2040	2-1/2	3-3/4	105-441	**3.30**
5	.2055	2-1/2	3-3/4	105-440	**3.30**
4	.2090	2-1/2	3-3/4	105-439	**3.30**
3	.2130	2-1/2	3-3/4	105-438	**3.30**
7/32	.2188	2-1/2	3-3/4	105-391	**1.70**
2	.2210	2-5/8	3-7/8	105-437	**3.60**
1	.2280	2-5/8	3-7/8	105-436	**5.50**
A	.2340	2-5/8	3-7/8	105-410	**3.60**
15/64	.2344	2-5/8	3-7/8	105-392	**1.70**
B	.2380	2-3/4	4"	105-411	**4.40**
C	.2420	2-3/4	4"	105-412	**4.40**
D	.2460	2-3/4	4"	105-413	**4.40**
1/4	.2500	2-3/4	4"	105-393	**1.80**
E	.2500	2-3/4	4"	105-414	**4.40**
F	.2570	2-7/8	4-1/8	105-415	**4.90**
G	.2610	2-7/8	4-1/8	105-416	**4.90**
17/64	.2656	2-7/8	4-1/8	105-394	**2.20**
H	.2660	2-7/8	4-1/8	105-417	**4.90**
I	.2720	2-7/8	4-1/8	105-418	**5.50**
J	.2770	2-7/8	4-1/8	105-419	**5.50**
K	.2810	2-15/16	4-1/4	105-420	**5.50**
9/32	.2812	2-15/16	4-1/4	105-395	**2.40**
L	.2900	2-15/16	4-1/4	105-421	**5.50**
M	.2950	3-1/16	4-3/8	105-422	**6.00**
19/64	.2969	3-1/16	4-3/8	105-396	**2.50**
N	.3020	3-1/16	4-3/8	105-423	**6.00**
5/16	.3125	3-3/16	4-1/2	105-397	**2.70**
O	.3160	3-3/16	4-1/2	105-424	**6.80**
P	.3230	3-5/16	4-5/8	105-425	**7.70**
21/64	.3281	3-5/16	4-5/8	105-398	**3.10**
Q	.3320	3-7/16	4-3/4	105-426	**8.90**
R	.3390	3-7/16	4-3/4	105-427	**8.90**
11/32	.3438	3-7/16	4-3/4	105-399	**3.60**
S	.3480	3-1/2	4-7/8	105-428	**9.50**
T	.3580	3-1/2	4-7/8	105-429	**9.50**
23/64	.3594	3-1/2	4-7/8	105-400	**3.70**
U	.3680	3-5/8	5"	105-430	**10.30**
3/8	.3750	3-5/8	5"	105-401	**3.90**
V	.3770	3-5/8	5"	105-431	**10.30**
W	.3860	3-3/4	5-1/8	105-432	**12.00**
25/64	.3906	3-3/4	5-1/8	105-402	**4.10**
X	.3970	3-3/4	5-1/8	105-433	**12.00**
Y	.4040	3-7/8	5-1/4	105-434	**12.70**
13/32	.4062	3-7/8	5-1/4	105-403	**4.60**
Z	.4130	3-7/8	5-1/4	105-435	**12.70**
27/64	.4219	3-15/16	5-3/8	105-404	**5.20**
7/16	.4375	4-1/16	5-1/2	105-405	**5.40**
29/64	.4531	4-3/16	5-5/8	105-406	**5.50**
15/32	.4688	4-5/16	5-3/4	105-407	**6.00**
31/64	.4844	4-3/8	5-7/8	105-408	**6.70**
1/2	.5000	4-1/2	6"	105-409	**7.10**

Black/Gold Jobber Length Drill Set

- High Speed Steel
- Black/Gold finish extends tool life
- 135° split point penetrates faster and prevents bit "walk"





Description	Pieces Per Set	Code No.	Price $
1/16" - 1/2" x 64ths Fractional Set	29	105-380	**126.50**

QUALITY IMPORT

General Purpose HSS Jobber Drills

• 118° points



Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	.0156	3/16	3/4	105-105•	1.80
1/32	.0312	1/2	1-3/8	105-110•	1.80
3/64	.0469	3/4	1-3/4	105-115•	1.80
1/16	.0625	7/8	1-7/8	105-120•	1.60
5/64	.0781	1	2	105-125•	1.60
3/32	.0938	1-1/4	2-1/4	105-130•	1.60
7/64	.1094	1-1/2	2-5/8	105-135•	1.60
1/8	.1250	1-5/8	2-3/4	105-140•	1.70
9/64	.1406	1-3/4	2-7/8	105-145•	1.90
5/32	.1562	2	3-1/8	105-150•	2.20
11/64	.1719	2-1/8	3-1/4	105-155•	1.90
13/64	.2031	2-7/16	3-5/8	105-165•	2.20
7/32	.2188	2-1/2	3-3/4	105-170•	2.70
1/4	.2500	2-3/4	4	105-180•	2.80
17/64	.2656	2-7/8	4-1/8	105-185•	3.00
19/64	.2969	3-1/16	4-3/8	105-195•	3.70
23/64	.3594	3-1/2	4-7/8	105-215•	6.10
13/32	.4062	3-7/8	5-1/4	105-230•	7.20
27/64	.4219	3-15/16	5-3/8	105-235•	7.80
29/64	.4531	4-3/16	5-5/8	105-245•	8.10
15/32	.4688	4-5/16	5-3/4	105-250•	9.00
31/64	.4844	4-3/8	5-7/8	105-255•	9.70
1/2	.5000	4-1/2	6	105-260•	11.30
33/64	.5156	4-13/16	6-5/8	105-265•	16.60
17/32	.5312	4-13/16	6-5/8	105-270•	17.50
35/64	.5469	4-13/16	6-5/8	105-275•	18.70
9/16	.5625	4-13/16	6-5/8	105-280•	19.70
37/64	.5781	4-13/16	6-5/8	105-285•	19.80
19/32	.5938	5-3/16	7-1/8	105-290•	20.10
39/64	.6094	5-3/16	7-1/8	105-295•	22.30
5/8	.6250	5-3/16	7-1/8	105-300•	21.60
41/64	.6406	5-3/16	7-1/8	105-305•	23.20
21/32	.6562	5-3/16	7-1/8	105-310•	22.90
43/64	.6719	5-5/8	7-5/8	105-315•	26.80
11/16	.6875	5-5/8	7-5/8	105-320•	26.30
3/4	.7500	5-5/8	7-5/8	105-325•	31.10
25/32	.7812	5-7/8	8-1/8	105-330•	29.90

• Available only while quantities last

Roll Forged Jobber Drills



Size	Code No.	Price $
1/64	119-600•	1.20
1/32	119-602•	1.20
3/64	119-604•	1.20
1/16	119-606•	1.20
5/64	119-608•	1.20
3/32	119-610•	1.20
7/64	119-612•	1.20
1/8	119-614•	1.60
9/64	119-616•	1.60
5/32	119-618•	1.60
11/64	119-620•	1.70
3/16	119-622•	1.70
13/64	119-624•	1.80
7/32	119-626•	1.80
15/64	119-628•	1.80
1/4	119-630•	1.90

Size	Code No.	Price $
17/64	119-632•	1.90
9/32	119-634•	2.70
19/64	119-636•	3.10
5/16	119-638•	3.10
21/64	119-640•	3.70
11/32	119-642•	3.70
23/64	119-644•	4.10
3/8	119-646•	4.10
25/64	119-648•	4.10
13/32	119-650•	4.70
27/64	119-651•	4.70
7/16	119-654•	5.10
29/64	119-656•	5.20
15/32	119-658•	5.20
31/64	119-660•	5.20
1/2	119-662•	7.10

Set

Size	Code No.	Price $
115pc (1/16 - 1/2, A-Z, 1-60)	119-670•	158.50

• Available only while quantities last

Slow Spiral HSS Drills

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

• Bright finish
• 118° points
• High Speed Steel



Fractional Sizes

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	143-200	7.50
1/32	0.0312	1/2	1-3/8	143-201	4.90
3/64	0.0469	3/4	1-3/4	143-202	3.60
1/16	0.0625	7/8	1-7/8	143-203	3.40
5/64	0.0781	1	2	143-204	3.40
3/32	0.0938	1-1/4	2-1/4	143-205	3.30
7/64	0.1094	1-1/2	2-5/8	143-206	3.40
1/8	0.1250	1-5/8	2-3/4	143-207	3.30
9/64	0.1406	1-3/4	2-7/8	143-208	3.40
5/32	0.1562	2	3-1/8	143-209	4.00
11/64	0.1719	2-1/8	3-1/4	143-210	4.70
3/16	0.1875	2-5/16	3-1/2	143-211	4.60
13/64	0.2031	2-7/16	3-5/8	143-212	5.40
7/32	0.2188	2-1/2	3-3/4	143-213	6.00
15/64	0.2344	2-5/8	3-7/8	143-214	6.80
1/4	0.2500	2-3/4	4	143-215	6.40
17/64	0.2656	2-7/8	4-1/8	143-216	8.10
9/32	0.2812	2-15/16	4-1/4	143-217	8.50
19/64	0.2969	3-1/16	4-3/8	143-218	10.10
5/16	0.3125	3-3/16	4-1/2	143-219	10.50
21/64	0.3281	3-5/16	4-5/8	143-220	11.50
11/32	0.3438	3-7/16	4-3/4	143-221	12.60
23/64	0.3594	3-1/2	4-7/8	143-222	16.80
3/8	0.3750	3-5/8	5	143-223	14.90
25/64	0.3906	3-3/4	5-1/8	143-224	18.60
13/32	0.4062	3-7/8	5-1/4	143-225	17.30
27/64	0.4219	3-15/16	5-3/8	143-226	21.90
7/16	0.4375	4-1/16	5-1/2	143-227	19.90
29/64	0.4531	4-3/16	5-5/8	143-228	25.50
15/32	0.4688	4-5/16	5-3/4	143-229	24.40
31/64	0.4844	4-3/8	5-7/8	143-230	28.60
1/2	0.5000	4-1/2	6	143-231	25.30

Slow Spiral 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	143-232	**9.10**
B	0.2380	2-3/4	4	143-233	**9.10**
C	0.2420	2-3/4	4	143-234	**9.10**
D	0.2460	2-3/4	4	143-235	**9.10**
E	0.2500	2-3/4	4	143-236	**6.40**
F	0.2570	2-7/8	4-1/8	143-237	**9.10**
G	0.2610	2-7/8	4-1/8	143-238	**9.50**
H	0.2660	2-7/8	4-1/8	143-239	**12.70**
I	0.2720	2-7/8	4-1/8	143-240	**13.20**
J	0.2770	2-7/8	4-1/8	143-241	**13.20**
K	0.2810	2-15/16	4-1/4	143-242	**13.20**
L	0.2900	2-15/16	4-1/4	143-243	**13.20**
M	0.2950	3-1/16	4-3/8	143-244	**14.30**
N	0.3020	3-1/16	4-3/8	143-245	**14.30**
O	0.3160	3-3/16	4-1/2	143-246	**15.50**
P	0.3230	3-5/16	4-5/8	143-247	**15.50**
Q	0.3320	3-7/16	4-3/4	143-248	**15.50**
R	0.3390	3-7/16	4-3/4	143-249	**17.70**
S	0.3480	3-1/2	4-7/8	143-250	**18.60**
T	0.3580	3-1/2	4-7/8	143-251	**18.60**
U	0.3680	3-5/8	5	143-252	**18.60**
V	0.3770	3-5/8	5	143-253	**19.10**
W	0.3860	3-3/4	5-1/8	143-254	**22.80**
X	0.3970	3-3/4	5-1/8	143-255	**22.80**
Y	0.4040	3-7/8	5-1/4	143-256	**25.60**
Z	0.4130	3-7/8	5-1/4	143-257	**25.60**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	143-258	**7.50**
2	0.2210	2-5/8	3-7/8	143-259	**7.50**
3	0.2130	2-1/2	3-3/4	143-260	**7.20**
4	0.2090	2-1/2	3-3/4	143-261	**7.20**
5	0.2055	2-1/2	3-3/4	143-262	**7.20**
6	0.2040	2-1/2	3-3/4	143-263	**7.20**
7	0.2010	2-7/16	3-5/8	143-264	**6.10**
8	0.1990	2-7/16	3-5/8	143-265	**6.10**
9	0.1960	2-7/16	3-5/8	143-266	**6.10**
10	0.1935	2-7/16	3-5/8	143-267	**6.10**
11	0.1910	2-5/16	3-1/2	143-268	**5.80**
12	0.1890	2-5/16	3-1/2	143-269	**5.80**
13	0.1850	2-5/16	3-1/2	143-270	**5.40**
14	0.1820	2-3/16	3-3/8	143-271	**5.40**
15	0.1800	2-3/16	3-3/8	143-272	**5.40**
16	0.1770	2-3/16	3-3/8	143-273	**5.40**
17	0.1730	2-3/16	3-3/8	143-274	**5.40**
18	0.1695	2-1/8	3-1/4	143-275	**4.80**
19	0.1660	2-1/8	3-1/4	143-276	**4.80**
20	0.1610	2-1/8	3-1/4	143-277	**4.80**
21	0.1590	2-1/8	3-1/4	143-278	**4.70**
22	0.1570	2	3-1/8	143-279	**4.70**
23	0.1540	2	3-1/8	143-281	**4.70**
24	0.1520	2	3-1/8	143-282	**4.60**
25	0.1495	1-7/8	3	143-283	**4.60**
26	0.1470	1-7/8	3	143-284	**4.10**
27	0.1440	1-7/8	3	143-285	**4.10**
28	0.1405	1-3/4	2-7/8	143-286	**4.10**
29	0.1360	1-3/4	2-7/8	143-287	**3.60**
30	0.1285	1-5/8	2-3/4	143-288	**3.60**
31	0.1200	1-5/8	2-3/4	143-289	**3.60**
32	0.1160	1-5/8	2-3/4	143-290	**3.60**
33	0.1130	1-1/2	2-5/8	143-291	**3.60**
34	0.1110	1-1/2	2-5/8	143-292	**3.60**
35	0.1100	1-1/2	2-5/8	143-293	**3.60**
36	0.1065	1-7/16	2-1/2	143-294	**3.60**
37	0.1040	1-7/16	2-1/2	143-295	**3.60**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
38	0.1015	1-7/16	2-1/2	143-296	**3.60**
39	0.0995	1-3/8	2-3/8	143-297	**3.60**
40	0.0980	1-3/8	2-3/8	143-298	**3.60**
41	0.0960	1-3/8	2-3/8	143-299	**3.70**
42	0.0935	1-1/4	2-1/4	143-300	**3.70**
43	0.0890	1-1/4	2-1/4	143-301	**3.70**
44	0.0860	1-1/8	2-1/8	143-302	**3.70**
45	0.0820	1-1/8	2-1/8	143-303	**3.70**
46	0.0810	1-1/8	2-1/8	143-304	**3.70**
47	0.0785	1	2	143-305	**3.70**
48	0.0760	1	2	143-306	**3.70**
49	0.0730	1	2	143-307	**3.70**
50	0.0700	1	2	143-308	**3.70**
51	0.0670	1	2	143-309	**3.70**
52	0.0635	7/8	1-7/8	143-310	**3.70**
53	0.0595	7/8	1-7/8	143-311	**3.60**
54	0.0550	7/8	1-7/8	143-312	**3.60**
55	0.0520	7/8	1-7/8	143-313	**3.60**
56	0.0465	3/4	1-3/4	143-314	**3.60**
57	0.0430	3/4	1-3/4	143-315	**3.60**
58	0.0420	11/16	1-5/8	143-316	**3.60**
59	0.0410	11/16	1-5/8	143-317	**3.60**
60	0.0400	11/16	1-5/8	143-318	**3.60**
61	0.0390	11/16	1-5/8	143-319	**4.40**
62	0.0380	5/8	1-1/2	143-320	**4.40**
63	0.0370	5/8	1-1/2	143-321	**4.40**
64	0.0360	5/8	1-1/2	143-322	**4.40**
65	0.0350	5/8	1-1/2	143-323	**4.40**
66	0.0330	1/2	1-3/8	143-324	**4.40**
67	0.0320	1/2	1-3/8	143-325	**4.40**
68	0.0310	1/2	1-3/8	143-326	**4.40**
69	0.0292	1/2	1-3/8	143-327	**4.90**
70	0.0280	3/8	1-1/4	143-328	**4.90**
71	0.0260	3/8	1-1/4	143-329	**6.30**
72	0.0250	5/16	1-1/8	143-330	**6.30**
73	0.0240	5/16	1-1/8	143-331	**6.30**
74	0.0225	1/4	1	143-332	**6.30**
75	0.0210	1/4	1	143-333	**6.30**
76	0.0200	3/16	7/8	143-334	**6.30**
77	0.0180	3/16	7/8	143-335	**6.30**
78	0.0160	3/16	7/8	143-336	**6.30**
79	0.0145	1/8	3/4	143-337	**7.50**
80	0.0135	1/8	3/4	143-338	**7.50**

STM Premium

Fast Spiral HSS Drills

These drills are designed primarily for drilling in nonferrous 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 finish
- 118° points
- High Speed Steel



Fractional Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	117-700	4.90
1/32	0.0312	1/2	1-3/8	117-701	3.50
3/64	0.0469	3/4	1-3/4	117-702	3.10
1/16	0.0625	7/8	1-7/8	117-703	3.00
5/64	0.0781	1	2	117-704	3.10
3/32	0.0938	1-1/4	2-1/4	117-705	3.10
7/64	0.1094	1-1/2	2-5/8	117-706	3.00
1/8	0.1250	1-5/8	2-3/4	117-707	3.00
9/64	0.1406	1-3/4	2-7/8	117-708	3.00
5/32	0.1562	2	3-1/8	117-709	3.20
11/64	0.1719	2-1/8	3-1/4	117-710	3.70
3/16	0.1875	2-5/16	3-1/2	117-711	4.10
13/64	0.2031	2-7/16	3-5/8	117-712	4.70
7/32	0.2188	2-1/2	3-3/4	117-713	5.20
15/64	0.2344	2-5/8	3-7/8	117-714	5.80
1/4	0.2500	2-3/4	4	117-715	5.50
17/64	0.2656	2-7/8	4-1/8	117-716	7.30
9/32	0.2812	2-15/16	4-1/4	117-717	7.30
19/64	0.2969	3-1/16	4-3/8	117-718	8.40
5/16	0.3125	3-3/16	4-1/2	117-719	8.80
21/64	0.3281	3-5/16	4-5/8	117-720	10.00
11/32	0.3438	3-7/16	4-3/4	117-721	10.60
23/64	0.3594	3-1/2	4-7/8	117-722	13.20
3/8	0.3750	3-5/8	5	117-723	12.80
25/64	0.3906	3-3/4	5-1/8	117-724	15.30
13/32	0.4062	3-7/8	5-1/4	117-725	14.80
27/64	0.4219	3-15/16	5-3/8	117-726	17.60
7/16	0.4375	4-1/16	5-1/2	117-727	17.40
29/64	0.4531	4-3/16	5-5/8	117-728	21.70
15/32	0.4688	4-5/16	5-3/4	117-729	22.40
31/64	0.4844	4-3/8	5-7/8	117-730	21.50
1/2	0.5000	4-1/2	6	117-731	20.80

Letter Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
A	0.2340	2-5/8	3-7/8	117-732	6.40
B	0.2380	2-3/4	4	117-733	6.30
C	0.2420	2-3/4	4	117-734	5.80
D	0.2460	2-3/4	4	117-735	5.80
E	0.2500	2-3/4	4	117-736	5.50
F	0.2570	2-7/8	4-1/8	117-737	6.70
G	0.2610	2-7/8	4-1/8	117-738	7.10
H	0.2660	2-7/8	4-1/8	117-739	7.90
I	0.2720	2-7/8	4-1/8	117-740	7.00
J	0.2770	2-7/8	4-1/8	117-741	7.90
K	0.2810	2-15/16	4-1/4	117-742	10.00
L	0.2900	2-15/16	4-1/4	117-743	8.50
M	0.2950	3-1/16	4-3/8	117-744	9.30
N	0.3020	3-1/16	4-3/8	117-745	8.40
O	0.3160	3-3/16	4-1/2	117-746	9.20
P	0.3230	3-5/16	4-5/8	117-747	9.50
Q	0.3320	3-7/16	4-3/4	117-748	9.50
R	0.3390	3-7/16	4-3/4	117-749	10.00
S	0.3480	3-1/2	4-7/8	117-750	10.90
T	0.3580	3-1/2	4-7/8	117-751	12.70
U	0.3680	3-5/8	5	117-752	12.70
V	0.3770	3-5/8	5	117-753	13.30
W	0.3860	3-3/4	5-1/8	117-754	13.60
X	0.3970	3-3/4	5-1/8	117-755	15.50
Y	0.4040	3-7/8	5-1/4	117-756	18.00
Z	0.4130	3-7/8	5-1/4	117-757	18.60

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	117-758	5.70
2	0.2210	2-5/8	3-7/8	117-759	5.80
3	0.2130	2-1/2	3-3/4	117-760	5.50
4	0.2090	2-1/2	3-3/4	117-761	5.50
5	0.2055	2-1/2	3-3/4	117-762	5.50
6	0.2040	2-1/2	3-3/4	117-763	5.50
7	0.2010	2-7/16	3-5/8	117-764	4.60
8	0.1990	2-7/16	3-5/8	117-765	4.70
9	0.1960	2-7/16	3-5/8	117-766	4.60
10	0.1935	2-7/16	3-5/8	117-767	4.60
11	0.1910	2-5/16	3-1/2	117-768	4.30
12	0.1890	2-5/16	3-1/2	117-769	4.60
13	0.1850	2-5/16	3-1/2	117-770	4.30
14	0.1820	2-3/16	3-3/8	117-771	4.30
15	0.1800	2-3/16	3-3/8	117-772	4.10
16	0.1770	2-3/16	3-3/8	117-773	4.10
17	0.1730	2-3/16	3-3/8	117-774	4.30
18	0.1695	2-1/8	3-1/4	117-775	3.70
19	0.1660	2-1/8	3-1/4	117-776	3.60
20	0.1610	2-1/8	3-1/4	117-777	3.60
21	0.1590	2-1/8	3-1/4	117-778	3.40
22	0.1570	2	3-1/8	117-779	3.50
23	0.1540	2	3-1/8	117-780	3.30
24	0.1520	2	3-1/8	117-781	3.20
25	0.1495	1-7/8	3	117-782	3.20
26	0.1470	1-7/8	3	117-783	3.20
27	0.1440	1-7/8	3	117-784	3.20
28	0.1405	1-3/4	2-7/8	117-785	3.10
29	0.1360	1-3/4	2-7/8	117-786	3.00
30	0.1285	1-5/8	2-3/4	117-787	3.00
31	0.1200	1-5/8	2-3/4	117-788	3.10
32	0.1160	1-5/8	2-3/4	117-789	3.10
33	0.1130	1-1/2	2-5/8	117-790	3.10
34	0.1110	1-1/2	2-5/8	117-791	3.10
35	0.1100	1-1/2	2-5/8	117-792	3.10
36	0.1065	1-7/16	2-1/2	117-793	3.10
37	0.1040	1-7/16	2-1/2	117-794	3.10
38	0.1015	1-7/16	2-1/2	117-795	3.10
39	0.0995	1-3/8	2-3/8	117-796	3.10
40	0.0980	1-3/8	2-3/8	117-797	3.00
41	0.0960	1-3/8	2-3/8	117-798	3.20
42	0.0935	1-1/4	2-1/4	117-799	3.20
43	0.0890	1-1/4	2-1/4	117-800	3.10
44	0.0860	1-1/8	2-1/8	117-801	3.10
45	0.0820	1-1/8	2-1/8	117-802	3.10
46	0.0810	1-1/8	2-1/8	117-803	3.10
47	0.0785	1	2	117-804	3.20
48	0.0760	1	2	117-805	3.10
49	0.0730	1	2	117-806	3.20
50	0.0700	1	2	117-807	3.10
51	0.0670	1	2	117-808	3.10
52	0.0635	7/8	1-7/8	117-809	3.10
53	0.0595	7/8	1-7/8	117-810	3.10
54	0.0550	7/8	1-7/8	117-811	3.10
55	0.0520	7/8	1-7/8	117-812	3.00
56	0.0465	3/4	1-3/4	117-813	3.10
57	0.0430	3/4	1-3/4	117-814	3.20
58	0.0420	11/16	1-5/8	117-815	3.20
59	0.0410	11/16	1-5/8	117-816	3.20
60	0.0400	11/16	1-5/8	117-817	3.20
61	0.0390	11/16	1-5/8	117-818	3.50
62	0.0380	5/8	1-1/2	117-819	3.50
63	0.0370	5/8	1-1/2	117-820	3.50
64	0.0360	5/8	1-1/2	117-821	3.50
65	0.0350	5/8	1-1/2	117-822	3.40
66	0.0330	1/2	1-3/8	117-823	3.50
67	0.0320	1/2	1-3/8	117-824	3.40
68	0.0310	1/2	1-3/8	117-825	3.40
69	0.0292	1/2	1-3/8	117-826	3.70
70	0.0280	3/8	1-1/4	117-827	3.70
71	0.0260	3/8	1-1/4	117-828	4.80
72	0.0250	5/16	1-1/8	117-829	4.60
73	0.0240	5/16	1-1/8	117-830	4.60
74	0.0225	1/4	1	117-831	4.60
75	0.0210	1/4	1	117-832	4.60
76	0.0200	3/16	7/8	117-833	4.60
77	0.0180	3/16	7/8	117-834	4.60
78	0.0160	3/16	7/8	117-835	4.60
79	0.0145	1/8	3/4	117-836	5.30
80	0.0135	1/8	3/4	117-837	5.30

STM Premium

General Purpose Jobber Drills - Metric

- General purpose
- High Speed Steel
- 118° Point
- Heavy duty
- Super Cobalt
- 135° Point



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	143-340	**12.10**	—	
0.16	0.0063	3/64	3/4	143-341	**12.10**	—	
0.17	0.0067	1/16	3/4	143-342	**11.20**	—	
0.18	0.0071	1/16	3/4	143-343	**11.20**	—	
0.19	0.0075	1/16	3/4	143-344	**8.80**	—	
0.20	0.0079	1/16	3/4	143-345	**8.80**	—	
0.22	0.0087	1/16	3/4	143-346	**8.80**	—	
0.25	0.0098	5/64	3/4	143-347	**7.00**	—	
0.26	0.0102	5/64	3/4	143-348	**7.00**	—	
0.27	0.0106	5/64	3/4	143-349	**6.30**	—	
0.28	0.0110	5/64	3/4	143-350	**6.30**	—	
0.29	0.0114	5/64	3/4	143-351	**6.30**	—	
0.30	0.0118	3/32	3/4	144-001	**6.00**	—	
0.32	0.0126	3/32	3/4	144-002	**5.40**	—	
0.35	0.0138	1/8	3/4	144-003	**2.00**	—	
0.38	0.0150	3/16	3/4	144-004	**4.00**	—	
0.40	0.0158	3/16	7/8	144-005	**4.00**	—	
0.42	0.0165	3/16	7/8	144-006	**4.00**	—	
0.44	0.0173	3/16	7/8	143-352	**4.00**	—	
0.45	0.0177	3/16	7/8	144-007	**4.00**	—	
0.48	0.0189	3/16	7/8	144-008	**4.00**	—	
0.50	0.0197	3/16	7/8	144-009	**4.00**	—	
0.52	0.0204	3/16	7/8	144-010	**4.00**	—	
0.55	0.0217	1/4	1	144-011	**4.00**	—	
0.58	0.0228	5/16	1-1/8	144-012	**4.00**	—	
0.60	0.0236	5/16	1-1/8	144-013	**4.00**	—	
0.62	0.0244	5/16	1-1/8	144-014	**4.00**	—	
0.65	0.0256	3/8	1-1/4	144-015	**4.00**	—	
0.68	0.0267	3/8	1-1/4	144-016	**3.30**	—	
0.70	0.0276	3/8	1-1/4	144-017	**3.30**	—	
0.72	0.0283	3/8	1-1/4	144-018	**3.10**	—	
0.75	0.0296	1/2	1-3/8	144-019	**3.00**	—	
0.78	0.0308	1/2	1-3/8	144-020	**3.00**	—	
0.80	0.0315	1/2	1-3/8	144-021	**2.70**	—	
0.82	0.0322	1/2	1-3/8	144-022	**2.50**	—	
0.85	0.0335	5/8	1-1/2	144-023	**2.70**	—	
0.88	0.0346	5/8	1-1/2	144-024	**2.70**	—	
0.90	0.0355	5/8	1-1/2	144-025	**2.70**	—	
0.92	0.0362	5/8	1-1/2	144-026	**2.70**	—	
0.95	0.0374	5/8	1-1/2	144-027	**2.70**	—	
1.00	0.0394	11/16	1-5/8	144-029	**2.40**	143-354	**4.30**
1.05	0.0413	11/16	1-5/8	144-030	**2.80**	—	
1.10	0.0433	3/4	1-3/4	144-031	**2.50**	143-355	**4.70**
1.15	0.0453	3/4	1-3/4	144-032	**2.70**	143-356	**4.70**
1.20	0.0472	7/8	1-7/8	144-033	**2.70**	143-357	**4.60**
1.25	0.0492	7/8	1-7/8	144-034	**2.70**	—	
1.30	0.0512	7/8	1-7/8	144-035	**2.70**	—	
1.35	0.0531	7/8	1-7/8	144-036	**2.80**	—	
1.40	0.0551	7/8	1-7/8	144-037	**2.70**	—	
1.45	0.0571	7/8	1-7/8	144-037A	**2.80**	143-358	**4.60**
1.50	0.0591	7/8	1-7/8	144-038	**2.50**	143-359	**4.10**
1.55	0.0610	7/8	1-7/8	144-039	**2.80**	—	
1.60	0.0630	7/8	1-7/8	144-040	**2.70**	—	
1.65	0.0650	1	2	144-041	**2.80**	143-360	**4.60**
1.70	0.0669	1	2	144-042	**2.70**	—	
1.75	0.0689	1	2	144-043	**2.80**	—	
1.80	0.0709	1	2	144-044	**2.70**	143-361	**4.60**
1.85	0.0728	1	2	144-045	**3.30**	143-362	**4.60**
1.90	0.0748	1	2	144-045A	**2.70**	143-363	**4.60**
1.95	0.0768	1	2	144-045B	**2.80**	143-364	**4.60**
2.00	0.0787	1	2-1/8	144-046	**2.40**	143-365	**4.00**
2.05	0.0807	1-1/8	2-1/8	144-047	**3.50**	—	
2.10	0.0827	1-1/8	2-1/8	144-048	**2.70**	143-366	**4.60**
2.15	0.0846	1-1/8	2-1/8	144-049	**2.80**	143-367	**4.60**

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 $
2.20	0.0866	1-1/4	2-1/4	144-050	**2.70**	143-368	**4.60**
2.25	0.0886	1-1/4	2-1/4	144-051	**2.80**	—	
2.30	0.0906	1-1/4	2-1/4	144-052	**2.70**	—	
2.35	0.0925	1-1/4	2-1/4	144-053	**2.80**	143-369	**4.60**
2.40	0.0945	1-3/8	2-3/8	144-054	**2.80**	143-370	**4.70**
2.45	0.0965	1-3/8	2-3/8	144-055	**3.50**	—	
2.50	0.0984	1-3/8	2-3/8	144-056	**2.50**	143-371	**4.10**
2.55	0.1003	1-3/8	2-3/8	144-057	**2.50**	—	
2.60	0.1024	1-7/16	2-1/2	144-058	**2.80**	143-372	**4.70**
2.65	0.1043	1-7/16	2-1/2	144-059	**2.80**	—	
2.70	0.1063	1-7/16	2-1/2	144-060	**2.80**	143-373	**4.70**
2.75	0.1083	1-1/2	2-5/8	144-061	**3.00**	—	
2.80	0.1102	1-1/2	2-5/8	144-062	**3.50**	143-374	**4.70**
2.85	0.1122	1-1/2	2-5/8	144-063	**3.00**	—	
2.90	0.1142	1-5/8	2-3/4	144-064	**3.00**	143-375	**5.50**
2.95	0.1161	1-5/8	2-3/4	144-065	**3.00**	—	
3.00	0.1181	1-5/8	2-3/4	144-066	**2.50**	143-376	**5.50**
3.10	0.1220	1-5/8	2-3/4	144-067	**3.00**	143-377	**4.90**
3.15	0.1240	1-5/8	2-3/4	144-068	**3.00**	—	
3.20	0.1260	1-5/8	2-3/4	144-069	**2.80**	143-378	**5.50**
3.25	0.1280	1-5/8	2-3/4	143-353	**3.00**	—	
3.30	0.1299	1-3/4	2-7/8	144-070	**2.80**	143-379	**5.20**
3.40	0.1339	1-3/4	2-7/8	144-071	**3.00**	143-380	**5.10**
3.50	0.1378	1-3/4	2-7/8	144-072	**2.80**	143-381	**5.40**
3.55	0.1397	1-3/4	2-7/8	144-073	**2.80**	—	
3.60	0.1417	1-7/8	3	144-074	**3.20**	143-382	**4.90**
3.70	0.1457	1-7/8	3	144-075	**3.20**	—	
3.75	0.1476	1-7/8	3	144-076	**3.70**	—	
3.80	0.1496	1-7/8	3	144-077	**3.70**	143-383	**6.30**
3.90	0.1535	2	3-1/8	144-078	**4.40**	—	
4.00	0.1575	2-1/8	3-1/4	144-079	**3.10**	143-389	**6.10**
4.10	0.1614	2-1/8	3-1/4	144-080	**3.30**	—	
4.20	0.1654	2-1/8	3-1/4	144-081	**3.10**	143-390	**6.50**
4.25	0.1673	2-1/8	3-1/4	143-384	**3.90**	—	
4.30	0.1693	2-1/8	3-1/4	144-082	**3.30**	—	
4.40	0.1732	2-3/16	3-3/8	144-083	**3.60**	143-391	**6.50**
4.50	0.1772	2-3/16	3-3/8	144-084	**3.30**	143-392	**7.30**
4.60	0.1811	2-3/16	3-3/8	144-085	**3.60**	143-393	**6.40**
4.70	0.1850	2-5/16	3-1/2	144-086	**4.70**	—	
4.75	0.1870	2-5/16	3-1/2	143-385	**4.70**	—	
4.80	0.1890	2-5/16	3-1/2	144-087	**3.90**	143-394	**7.50**
4.90	0.1929	2-7/16	3-5/8	144-088	**4.00**	—	
5.00	0.1968	2-7/16	3-5/8	144-089	**3.60**	143-395	**8.80**
5.10	0.2008	2-7/16	3-5/8	144-090	**4.00**	—	
5.20	0.2047	2-1/2	3-3/4	144-091	**4.40**	143-396	**8.90**
5.25	0.2067	2-1/2	3-3/4	144-092	**4.70**	—	
5.30	0.2087	2-1/2	3-3/4	144-093	**4.40**	143-397	**9.70**
5.40	0.2126	2-1/2	3-3/4	144-094	**4.40**	—	
5.50	0.2165	2-1/2	3-3/4	144-095	**4.00**	143-398	**9.50**
5.60	0.2205	2-5/8	3-7/8	144-096	**4.80**	143-399	**8.40**
5.70	0.2244	2-5/8	3-7/8	144-097	**4.80**	143-400	**10.10**
5.75	0.2264	2-5/8	3-7/8	144-098	**5.10**	—	
5.80	0.2283	2-5/8	3-7/8	144-099	**4.80**	143-401	**10.40**
5.90	0.2323	2-5/8	3-7/8	144-100	**5.80**	—	
6.00	0.2362	2-3/4	4	144-101	**4.70**	143-402	**10.10**
6.10	0.2402	2-3/4	4	144-102	**5.20**	—	
6.20	0.2441	2-3/4	4	144-103	**4.70**	—	
6.25	0.2461	2-3/4	4	144-104	**4.00**	—	
6.30	0.2480	2-3/4	4	144-105	**4.70**	—	
6.40	0.2520	2-7/8	4-1/8	144-106	**5.50**	143-403	**10.00**
6.50	0.2559	2-7/8	4-1/8	144-107	**5.40**	143-404	**11.40**
6.60	0.2598	2-7/8	4-1/8	144-108	**6.00**	—	
6.70	0.2638	2-7/8	4-1/8	144-109	**5.50**	—	
6.75	0.2657	2-7/8	4-1/8	143-386	**6.40**	—	
6.80	0.2677	2-7/8	4-1/8	144-110	**5.80**	—	
6.90	0.2717	2-7/8	4-1/8	144-111	**7.50**	—	
7.00	0.2756	2-7/8	4-1/8	144-112	**5.70**	143-405	**12.80**
7.10	0.2795	2-15/16	4-1/4	144-113	**7.50**	—	
7.20	0.2835	2-15/16	4-1/4	144-114	**6.50**	—	
7.25	0.2854	2-15/16	4-1/4	144-115	**7.50**	—	
7.30	0.2874	2-15/16	4-1/4	144-116	**7.20**	—	
7.40	0.2913	3-1/16	4-3/8	144-117	**7.20**	—	
7.50	0.2953	3-1/16	4-3/8	144-118	**6.50**	143-406	**15.60**
7.60	0.2992	3-1/16	4-3/8	144-119	**7.90**	—	
7.70	0.3031	3-3/16	4-1/2	144-120	**8.10**	143-407	**16.40**
7.75	0.3051	3-3/16	4-1/2	143-387	**8.90**	—	
7.80	0.3071	3-3/16	4-1/2	144-121	**8.10**	143-408	**16.80**

General Purpose Jobber Drills - Metric cont'd

- General purpose
- High Speed Steel
- 118° Point
- Heavy duty
- Super Cobalt
- 135° Point



Size (mm)	Decimal Equivalent (in.)	Flute Length	Overall Length	HSS 118° Point Code No.	Price $	Cobalt 135° Point Code No.	Price $
7.90	0.3110	3-3/16	4-1/2	144-122	**8.10**	143-409	**16.40**
8.00	0.3150	3-3/16	4-1/2	144-123	**7.80**	143-410	**16.40**
8.10	0.3189	3-5/16	4-5/8	144-123A	**9.00**	143-411	**16.10**
8.20	0.3228	3-5/16	4-5/8	144-124	**9.00**	—	
8.25	0.3248	3-5/16	4-5/8	144-125	**9.10**	—	
8.30	0.3268	3-5/16	4-5/8	144-126	**9.40**	—	
8.40	0.3307	3-7/16	4-3/4	144-127	**10.00**	—	
8.50	0.3346	3-7/16	4-3/4	144-128	**8.80**	143-412	**17.60**
8.60	0.3386	3-7/16	4-3/4	144-129	**10.00**	143-413	**19.90**
8.70	0.3425	3-7/16	4-3/4	144-130	**10.00**	—	
8.75	0.3445	3-1/2	4-7/8	143-388	**11.50**	—	
8.80	0.3465	3-1/2	4-7/8	144-131	**11.30**	—	
8.90	0.3504	3-1/2	4-7/8	144-132	**11.30**	—	
9.00	0.3543	3-1/2	4-7/8	144-133	**9.70**	143-414	**20.10**
9.10	0.3583	3-1/2	4-7/8	144-134	**11.30**	—	
9.20	0.3622	3-5/8	5	144-135	**11.60**	—	
9.25	0.3642	3-5/8	5	144-136	**9.20**	—	
9.30	0.3661	3-5/8	5	144-137	**11.60**	—	
9.40	0.3701	3-5/8	5	144-138	**11.60**	—	
9.50	0.3740	3-5/8	5	144-139	**10.40**	143-415	**20.80**
9.60	0.3780	3-3/4	5-1/8	144-140	**13.10**	—	
9.70	0.3819	3-3/4	5-1/8	144-141	**13.10**	—	
9.75	0.3839	3-3/4	5-1/8	143-615	**13.30**	—	
9.80	0.3858	3-3/4	5-1/8	144-142	**13.10**	143-416	**26.10**
9.90	0.3898	3-3/4	5-1/8	144-142A	**13.10**	—	
10.00	0.3937	3-3/4	5-1/8	144-143	**11.70**	143-417	**23.90**
10.10	0.3976	3-7/8	5-1/4	144-144	**11.20**	—	
10.20	0.4016	3-7/8	5-1/4	144-145	**12.60**	—	
10.25	0.4035	3-7/8	5-1/4	144-146	**11.20**	—	
10.30	0.4055	3-7/8	5-1/4	144-147	**11.20**	—	
10.40	0.4094	3-15/16	5-3/8	144-148	**12.60**	—	
10.50	0.4134	3-15/16	5-3/8	144-149	**13.10**	143-418	**26.40**
10.60	0.4173	3-15/16	5-3/8	144-150	**12.60**	—	
10.70	0.4213	3-15/16	5-1/2	144-151	**12.60**	—	
10.80	0.4252	4-1/16	5-1/2	144-152	**15.70**	—	
10.90	0.4370	4-1/16	5-1/2	144-153	**12.60**	—	
11.00	0.4331	4-1/16	5-1/2	144-154	**13.50**	143-419	**27.00**
11.10	0.4370	4-1/16	5-1/2	144-155	**12.60**	—	
11.20	0.4409	4-3/16	5-5/8	144-156	**17.50**	—	
11.25	0.4429	4-3/16	5-5/8	143-616	**18.10**	—	
11.30	0.4449	4-3/16	5-5/8	144-157	**14.20**	—	
11.40	0.4488	4-3/16	5-5/8	144-158	**14.20**	—	
11.50	0.4528	4-3/16	5-5/8	144-159	**15.20**	143-420	**32.40**
11.60	0.4567	4-3/16	5-5/8	144-160	**15.30**	—	
11.70	0.4606	4-3/16	5-5/8	144-161	**15.30**	—	
11.80	0.4646	4-3/8	5-7/8	144-162	**18.60**	—	
11.90	0.4685	4-3/8	5-7/8	144-163	**15.30**	—	
12.00	0.4724	4-3/8	5-7/8	144-164	**16.70**	143-421	**33.90**
12.10	0.4764	4-3/8	5-7/8	144-165	**15.70**	—	
12.20	0.4803	4-3/8	5-7/8	144-166	**19.60**	—	
12.25	0.4823	4-3/8	5-7/8	144-167	**16.70**	—	
12.30	0.4843	4-1/2	5-7/8	144-168	**15.70**	—	
12.40	0.4882	4-1/2	6	144-169	**15.70**	—	
12.50	0.4921	4-1/2	6	144-170	**16.90**	143-422	**34.60**
12.60	0.4961	4-1/2	6	144-171	**15.70**	—	
12.70	0.5000	4-1/2	6	144-172	**17.70**	—	
12.75	0.5020	4-1/2	6	143-617	**29.30**	—	
12.80	0.5039	4-1/2	6	144-173	**17.70**	—	
12.90	0.5070	4-1/2	6	144-174	**17.70**	—	
13.00	0.5118	4-1/2	6	144-175	**29.50**	—	
13.10	0.5157	4-1/2	6	144-176	**23.40**	—	
13.20	0.5197	4-1/2	6	144-177	**23.40**	—	
13.30	0.5236	4-1/2	6	144-178	**23.40**	—	
13.40	0.5376	4-13/16	6-5/8	144-179	**23.40**	—	
13.50	0.5315	4-13/16	6-5/8	144-180	**37.50**	—	

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 $
13.60	0.5354	4-13/16	6-5/8	144-190	**23.40**	—	
13.70	0.5394	4-13/16	6-5/8	144-191	**23.40**	—	
13.75	0.5413	4-13/16	6-5/8	144-192	**23.40**	—	
13.80	0.5433	4-13/16	6-5/8	144-193	**37.50**	—	
13.90	0.5472	4-13/16	6-5/8	144-194	**25.90**	—	
14.00	0.5512	4-13/16	6-5/8	144-195	**35.10**	—	
14.25	0.5610	4-13/16	6-5/8	144-196	**25.90**	—	
14.50	0.5709	4-13/16	6-5/8	143-618	**38.70**	—	
14.75	0.5709	5-3/16	7-1/8	144-197	**32.40**	—	
15.00	0.5906	5-3/16	7-1/8	144-197A	**38.70**	—	
15.25	0.6004	5-3/16	7-1/8	144-197B	**48.60**	—	
15.50	0.6102	5-3/16	7-1/8	144-198	**52.10**	—	
15.75	0.6201	5-5/16	7-1/8	144-199	**32.40**	—	
16.00	0.6299	5-3/16	7-1/8	144-200	**52.10**	—	
16.25	0.6398	5-3/16	7-1/8	144-201	**47.20**	—	
16.50	0.6490	5-3/16	7-1/8	144-202	**52.10**	—	
16.75	0.6594	5-3/16	7-1/8	144-203	**55.20**	—	
17.00	0.6693	5-5/8	7-5/8	144-204	**52.30**	—	
17.25	0.6791	5-5/8	7-5/8	144-205	**52.30**	—	
17.50	0.6890	5-5/8	7-5/8	144-206	**52.30**	—	
17.75	0.6988	5-5/8	7-5/8	144-207	**51.10**	—	
18.00	0.7087	5-5/8	7-5/8	144-208	**41.50**	—	
18.25	0.7185	5-5/8	7-5/8	144-209	**43.50**	—	
18.50	0.7283	5-5/8	7-5/8	144-210	**43.50**	—	
18.75	0.7382	5-5/8	7-5/8	144-211	**43.50**	—	
19.00	0.7480	5-5/8	7-5/8	144-212	**43.50**	—	
19.25	0.7579	5-5/8	7-5/8	144-213	**48.00**	—	
19.50	0.7677	5-5/8	7-5/8	144-214	**48.00**	—	
19.75	0.7776	5-5/8	7-5/8	144-215	**48.00**	—	
20.00	0.7874	5-5/8	7-5/8	144-216	**48.00**	—	

Left Hand HSS Drills

- 118° points
- High Speed Steel



Fractional Sizes

Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/64	0.0156	3/16	3/4	143-425	**14.80**
1/32	0.0312	1/2	1-3/8	143-426	**9.00**
3/64	0.0469	3/4	1-3/4	143-427	**6.00**
1/16	0.0625	7/8	1-7/8	143-428	**6.00**
5/64	0.0781	1	2	143-429	**6.00**
3/32	0.0938	1-1/4	2-1/4	143-430	**6.30**
7/64	0.1094	1-1/2	2-5/8	143-431	**6.50**
1/8	0.1250	1-5/8	2-3/4	143-432	**6.50**
9/64	0.1406	1-3/4	2-7/8	143-433	**6.70**
5/32	0.1562	2	3-1/8	143-434	**7.50**
11/64	0.1719	2-1/8	3-1/4	143-435	**8.80**
3/16	0.1875	2-5/16	3-1/2	143-436	**9.30**
13/64	0.2031	2-7/16	3-5/8	143-437	**9.50**
7/32	0.2188	2-1/2	3-3/4	143-438	**9.30**
15/64	0.2344	2-5/8	3-7/8	143-439	**13.20**
1/4	0.2500	2-3/4	4	143-440	**12.80**
17/64	0.2656	2-7/8	4-1/8	143-441	**14.00**
9/32	0.2812	2-15/16	4-1/4	143-442	**14.00**
19/64	0.2969	3-1/16	4-3/8	143-443	**15.70**
5/16	0.3125	3-3/16	4-1/2	143-444	**16.20**
21/64	0.3281	3-5/16	4-5/8	143-445	**18.30**
11/32	0.3438	3-7/16	4-3/4	143-446	**19.90**
23/64	0.3594	3-1/2	4-7/8	143-447	**24.00**
3/8	0.3750	3-5/8	5	143-448	**24.30**
25/64	0.3906	3-3/4	5-1/8	143-449	**27.50**
13/32	0.4062	3-7/8	5-1/4	143-450	**27.50**
27/64	0.4219	3-15/16	5-3/8	143-451	**32.30**
7/16	0.4375	4-1/16	5-1/2	143-452	**32.50**
29/64	0.4531	4-3/16	5-5/8	143-453	**38.20**
15/32	0.4688	4-5/16	5-3/4	143-454	**39.20**
31/64	0.4844	4-3/8	5-7/8	143-455	**43.10**
1/2	0.5000	4-1/2	6	143-456	**41.60**

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	143-457	**16.00**
B	0.2380	2-3/4	4	143-458	**16.00**
C	0.2420	2-3/4	4	143-459	**16.00**
D	0.2460	2-3/4	4	143-460	**16.00**
E	0.2500	2-3/4	4	143-461	**14.00**
F	0.2570	2-7/8	4-1/8	143-462	**17.10**
G	0.2610	2-7/8	4-1/8	143-463	**17.10**
H	0.2660	2-7/8	4-1/8	143-464	**17.10**
I	0.2720	2-7/8	4-1/8	143-465	**17.10**
J	0.2770	2-7/8	4-1/8	143-466	**17.10**
K	0.2810	2-15/16	4-1/4	143-467	**17.10**
L	0.2900	2-15/16	4-1/4	143-468	**17.10**
M	0.2950	3-1/16	4-3/8	143-469	**19.50**
N	0.3020	3-1/16	4-3/8	143-470	**19.90**
0	0.3160	3-3/16	4-1/2	143-471	**22.30**
P	0.3230	3-5/16	4-5/8	143-472	**24.50**
Q	0.3320	3-7/16	4-3/4	143-473	**25.20**
R	0.3390	3-7/16	4-3/4	143-474	**25.20**
S	0.3480	3-1/2	4-7/8	143-475	**29.50**
T	0.3580	3-1/2	4-7/8	143-476	**29.70**
U	0.3680	3-5/8	5	143-477	**31.10**
V	0.3770	3-5/8	5	143-478	**33.70**
W	0.3860	3-3/4	5-1/8	143-479	**34.50**
X	0.3970	3-3/4	5-1/8	143-480	**34.50**
Y	0.4040	3-7/8	5-1/4	143-481	**36.00**
Z	0.4130	3-7/8	5-1/4	143-482	**39.50**

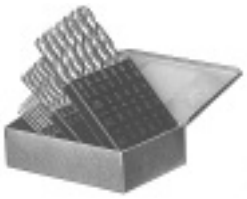
Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	143-483	**12.90**
2	0.2210	2-5/8	3-7/8	143-484	**12.90**
3	0.2130	2-1/2	3-3/4	143-485	**12.10**
4	0.2090	2-1/2	3-3/4	143-486	**12.10**
5	0.2055	2-1/2	3-3/4	143-487	**12.10**
6	0.2040	2-1/2	3-3/4	143-488	**12.10**
7	0.2010	2-7/16	3-5/8	143-489	**10.30**
8	0.1990	2-7/16	3-5/8	143-490	**10.30**
9	0.1960	2-7/16	3-5/8	143-491	**10.30**
10	0.1935	2-7/16	3-5/8	143-492	**10.30**
11	0.1910	2-5/16	3-1/2	143-493	**9.90**
12	0.1890	2-5/16	3-1/2	143-494	**9.90**
13	0.1850	2-5/16	3-1/2	143-495	**9.20**
14	0.1820	2-3/16	3-3/8	143-496	**9.20**
15	0.1800	2-3/16	3-3/8	143-497	**9.20**
16	0.1770	2-3/16	3-3/8	143-498	**9.20**
17	0.1730	2-3/16	3-3/8	143-499	**9.20**
18	0.1695	2-1/8	3-1/4	143-500	**8.00**
19	0.1660	2-1/8	3-1/4	143-501	**8.00**
20	0.1610	2-1/8	3-1/4	143-502	**8.00**
21	0.1590	2-1/8	3-1/4	143-503	**7.70**
22	0.1570	2	3-1/8	143-504	**7.70**
23	0.1540	2	3-1/8	143-505	**7.50**
24	0.1520	2	3-1/8	143-506	**7.50**
25	0.1495	1-7/8	3	143-507	**7.10**
26	0.1470	1-7/8	3	143-508	**7.10**
27	0.1440	1-7/8	3	143-509	**7.10**
28	0.1405	1-3/4	2-7/8	143-510	**6.30**
29	0.1360	1-3/4	2-7/8	143-511	**6.30**
30	0.1285	1-5/8	2-3/4	143-512	**6.30**
31	0.1200	1-5/8	2-3/4	143-513	**6.30**
32	0.1160	1-5/8	2-3/4	143-514	**6.30**
33	0.1130	1-1/2	2-5/8	143-515	**6.30**
34	0.1110	1-1/2	2-5/8	143-516	**6.30**
35	0.1100	1-1/2	2-5/8	143-517	**6.30**
36	0.1065	1-7/16	2-1/2	143-518	**6.30**
37	0.1040	1-7/16	2-1/2	143-519	**6.30**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
38	0.1015	1-7/16	2-1/2	143-520	**6.30**
39	0.0995	1-3/8	2-3/8	143-521	**6.30**
40	0.0980	1-3/8	2-3/8	143-522	**6.30**
41	0.0960	1-3/8	2-3/8	143-523	**6.30**
42	0.0935	1-1/4	2-1/4	143-524	**6.30**
43	0.0890	1-1/4	2-1/4	143-525	**6.30**
44	0.0860	1-1/8	2-1/8	143-526	**6.30**
45	0.0820	1-1/8	2-1/8	143-527	**6.30**
46	0.0810	1-1/8	2-1/8	143-528	**6.30**
47	0.0785	1	2	143-529	**6.30**
48	0.0760	1	2	143-530	**6.30**
49	0.0730	1	2	143-531	**6.30**
50	0.0700	1	2	143-532	**6.30**
51	0.0670	1	2	143-533	**6.40**
52	0.0635	7/8	1-7/8	143-534	**6.40**
53	0.0595	7/8	1-7/8	143-535	**6.40**
54	0.0550	7/8	1-7/8	143-536	**6.40**
55	0.0520	7/8	1-7/8	143-537	**6.40**
56	0.0465	3/4	1-3/4	143-538	**6.40**
57	0.0430	3/4	1-3/4	143-539	**6.40**
58	0.0420	11/16	1-5/8	143-540	**6.40**
59	0.0410	11/16	1-5/8	143-541	**6.40**
60	0.0400	11/16	1-5/8	143-543	**6.40**
61	0.0390	11/16	1-5/8	143-544	**6.80**
62	0.0380	5/8	1-1/2	143-545	**13.50**
63	0.0370	5/8	1-1/2	143-546	**13.50**
64	0.0360	5/8	1-1/2	143-547	**13.50**
65	0.0350	5/8	1-1/2	143-548	**13.50**
66	0.0330	1/2	1-3/8	143-549	**13.50**
67	0.0320	1/2	1-3/8	143-550	**13.50**
68	0.0310	1/2	1-3/8	143-551	**13.50**
69	0.0292	1/2	1-3/8	143-552	**14.30**
70	0.0280	3/8	1-1/4	143-553	**14.30**
71	0.0260	3/8	1-1/4	143-554	**14.30**
72	0.0250	5/16	1-1/8	143-555	**14.30**
73	0.0240	5/16	1-1/8	143-556	**14.30**
74	0.0225	1/4	1	143-557	**14.30**
75	0.0210	1/4	1	143-558	**14.30**
76	0.0200	3/16	7/8	143-559	**14.30**
77	0.0180	3/16	7/8	143-560	**14.30**
78	0.0160	3/16	7/8	143-561	**14.30**
79	0.0145	1/8	3/4	143-562	**16.70**
80	0.0135	1/8	3/4	143-563	**16.70**

Jobber Length Straight Shank Twist Drill Sets



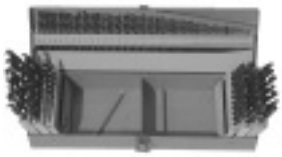
1/16 to 1/2 by 64th
Folding Metal Case Included
29 Piece Set



Number Sizes 1 thru 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

Sowa Premium

No. pcs.	HSS Code No.	HSS Price $	TiAlN Tip Code No.	TiAlN Tip Price $
29 - 1/16-1/2	128-119	**187.10**	127-050	**181.20**
60 - #1-60	128-190	**178.00**	127-190	**158.80**
26 - A-Z	128-276	**234.30**		
115 - 3 in 1	128-280	**606.80**	127-280	**476.80**

US Made

No. pcs.	HSS	Price $	Cobalt	Price $	TIN Coated	Price $
29 - 1/16-1/2	118-119	**172.60**	118-121	**308.50**	118-122	**377.70**
60 - #1-60	118-124	**143.60**				
20 - #61-80						
26 - A-Z	118-125	**180.50**				
115 - 3 in 1	118-123	**507.30**				

Quality Import

No. pcs.	HSS	Price $	Forged	Price $	TIN Coated	Price $	Black/ Gold	Price $
29 - 1/16-1/2					105-370	**104.40**	105-380	**126.50**
60 - #1-60								
20 - #61-80	105-830	**10.40**						
26 - A-Z								
115 - 3 in 1			119-670	**158.50**				

• Available only while supplies last.



High Performance Parabolic Stub Drills

A very rigid drill for high performance metal removal at speeds of up to 30% above normal high-speed steel. Suitable for use in rigid machine set-ups at high feed rates, where depth of hole does not exceed 3 x D.





Split Point

* = Tap Drill sizes

Speeds & Feeds ☞ P. B82

Size (in.)	Size (mm)	Decimal Equivalent	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
60	1.02	0.0400	6	26	134-750	**3.90**
59	1.04	0.0410	6	26	134-751	**3.80**
58	1.07	0.0420	7	28	134-759	**4.10**
57	1.09	0.0430	7	28	134-760	**4.50**
56	1.18	0.0465	8	30	134-761	**4.70**
3/64*	1.19	0.0469	8	30	134-309	**4.70**
55	1.32	0.0520	8	30	134-762	**5.30**
54	1.40	0.0540	9	32	134-763	**4.10**
53*	1.51	0.0595	10	34	134-764	**4.50**
1/16	1.59	0.0625	10	34	134-591	**4.40**
52	1.61	0.0635	10	34	134-765	**4.50**
51	1.70	0.0670	10	34	134-766	**5.10**
50*	1.78	0.0700	11	36	134-767	**4.50**
49	1.85	0.0730	11	36	134-768	**4.50**
48	1.93	0.0760	12	38	134-769	**4.10**
5/64	1.98	0.0781	12	38	134-596	**4.50**
47*	1.99	0.0785	12	38	134-770	**4.50**
46	2.06	0.0810	12	38	134-771	**4.10**
45*	2.08	0.0820	12	38	134-772	**4.50**
44	2.18	0.0860	13	40	134-773	**4.50**
43*	2.26	0.0890	13	40	134-774	**4.50**
42*	2.37	0.0935	14	43	134-775	**4.50**
3/32	2.38	0.0938	14	43	134-623	**3.70**
41	2.44	0.0960	14	43	134-776	**4.80**
40	**2.50***	0.0980	14	43	134-777	**4.80**
39	2.53	0.0995	14	43	134-778	**5.30**
38*	2.58	0.1015	14	43	134-779	**5.30**
37*	2.64	0.1040	14	43	134-780	**5.30**
36*	2.71	0.1065	16	46	134-781	**4.90**
7/64	2.78	0.1094	16	46	134-628	**4.00**
35	2.79	0.1100	16	46	134-782	**4.90**
34	2.82	0.1110	16	46	134-783	**4.90**
33*	2.87	0.1130	16	46	134-784	**4.90**
32	2.95	0.1160	16	46	134-785	**5.40**
	3.00	0.1181	16	46	134-631	**9.40**
31	3.05	0.1200	18	49	134-786	**7.90**
	3.10	0.1220	18	49	134-632	**9.40**
1/8	3.17	0.1250	18	49	134-633	**9.50**
	3.20	0.1260	18	49	134-634	**9.50**
30	3.26	0.1285	18	49	134-787	**8.40**
	3.30*	0.1299	18	49	134-635	**9.50**
	3.40	0.1339	20	52	134-636	**10.10**
29*	3.45	0.1360	18	49	134-788	**9.30**
	3.50	0.1378	20	52	134-637	**10.10**
28	3.57	0.1405	20	52	134-789	**9.30**
9/64	3.57	0.1406	20	52	134-638	**12.90**
	3.60	0.1417	20	52	134-639	**12.90**
27	3.66	0.1440	20	52	134-790	**9.50**
	3.70	0.1457	20	52	134-640	**12.90**
26	3.73	0.1470	20	52	134-791	**9.90**
25*	3.80	0.1495	22	55	134-792	**7.30**
	3.80	0.1496	22	55	134-641	**12.90**
24	3.86	0.1520	22	55	134-793	**9.80**
	3.90	0.1535	22	55	134-642	**12.00**
23	3.91	0.1540	22	55	134-794	**9.90**
5/32	3.97	0.1562	22	55	134-643	**13.20**
22	3.99	0.1570	22	55	134-795	**9.90**
	4.00*	0.1575	22	55	134-644	**13.20**
21*	4.04	0.1590	22	55	134-796	**7.50**
20	4.09	0.1610	22	55	134-797	**10.00**
	4.10*	0.1614	22	55	134-645	**14.50**
	4.20*	0.1654	22	55	134-646	**14.50**
19	4.22	0.1660	22	55	134-798	**10.40**
	4.30	0.1693	24	58	134-647	**14.50**
18	4.31	0.1695	24	58	134-799	**10.40**
11/64	4.37	0.1719	24	58	134-648	**14.70**
17	4.39	0.1730	24	58	134-800	**10.40**
	4.40	0.1732	24	58	134-649	**14.70**
16*	4.50	0.1770	24	58	134-801	**10.40**
	4.50	0.1772	24	58	134-650	**14.70**
15	4.57	0.1800	24	58	134-802	**10.60**
	4.60*	0.1811	24	58	134-651	**14.90**
14*	4.62	0.1820	24	58	134-803	**10.80**
13	4.70	0.1850	24	58	134-804	**10.80**
	4.70	0.1850	24	58	134-652	**14.90**
3/16	4.76	0.1875	26	62	134-653	**15.20**
12	4.80	0.1890	26	62	134-805	**10.80**
	4.80	0.1890	26	62	134-654	**15.20**
11	4.85	0.1910	26	62	134-806	**10.80**
	4.90	0.1929	26	62	134-655	**15.20**
10	4.91	0.1935	26	62	134-807	**10.80**
9	4.97	0.1960	26	62	134-808	**10.80**
	5.00*	0.1969	26	62	134-656	**15.20**
8	5.05	0.1991	26	62	134-809	**12.50**
7*	5.10	0.2010	26	62	134-810	**8.70**
	5.10	0.2008	26	62	134-657	**14.20**
13/64	5.16	0.2031	26	62	134-658	**15.60**
6	5.18	0.2040	26	62	134-811	**12.50**
	5.20	0.2047	26	62	134-659	**15.60**
5	5.21	0.2055	26	62	134-812	**8.70**
4	5.30	0.2090	28	66	134-813	**12.50**
	5.30	0.2087	26	62	134-660	**15.60**
	5.40	0.2126	28	66	134-661	**15.20**
3*	5.41	0.2130	28	66	134-814	**12.50**
	5.50	0.2165	28	66	134-662	**15.60**
7/32	5.56	0.2188	28	66	134-663	**15.20**
	5.60	0.2205	28	66	134-664	**15.90**
2	5.61	0.2210	28	66	134-815	**12.90**
	5.70	0.2244	28	66	134-665	**15.90**
1	5.79	0.2280	28	66	134-816	**12.90**
	5.80	0.2283	28	66	134-666	**15.90**
	5.90	0.2323	28	66	134-667	**15.90**
A	5.94	0.2340	28	66	134-817	**14.20**
15/64	5.95	0.2344	28	66	134-668	**15.40**
	6.00*	0.2362	28	66	134-669	**15.40**
B	6.05	0.2380	31	70	134-818	**14.80**
	6.10	0.2402	32	70	134-670	**21.20**
C	6.15	0.2420	31	70	134-819	**14.70**
	6.20	0.2441	32	70	134-671	**21.30**
D	**6.25***	0.2460	31	70	134-820	**14.70**
	6.30	0.2480	32	70	134-672	**21.30**
E	6.35	0.2500	31	70	134-821	**11.80**
1/4	6.35	0.2500	32	70	134-673	**21.10**
	6.40	0.2520	32	70	134-674	**21.10**
	6.50	0.2559	32	70	134-675	**21.50**
F*	6.53	0.2570	31	70	134-822	**15.30**
	6.60	0.2598	32	70	134-676	**22.20**
G	6.63	0.2610	31	70	134-823	**15.30**
	6.70	0.2638	32	70	134-677	**22.20**
17/64	6.75	0.2656	34	74	134-678	**22.80**
H	6.76	0.2660	34	74	134-824	**15.70**
	6.80*	0.2677	34	74	134-679	**22.80**
	6.90	0.2717	34	74	134-680	**22.80**
I*	6.91	0.2720	34	74	134-825	**16.10**
	7.00*	0.2756	34	74	134-681	**22.80**
J	7.04	0.2770	34	74	134-826	**16.90**
	7.10	0.2795	34	74	134-682	**22.80**
9/32	7.14	0.2812	34	74	134-683	**23.40**
K	7.14	0.2810	34	74	134-827	**17.50**
	7.20	0.2835	34	74	134-684	**23.40**
	7.30	0.2874	34	74	134-685	**23.40**
L	7.37	0.2900	34	74	134-828	**18.00**
	7.40	0.2913	34	74	134-686	**23.40**
M	7.49	0.2950	34	74	134-829	**18.00**
	7.50	0.2953	34	74	134-687	**23.40**
19/64	7.54	0.2969	37	79	134-688	**23.40**
	7.60	0.2992	37	79	134-689	**24.10**

High Performance Parabolic Stub Drills - cont'd

Size (in.)	Size (mm)	Decimal Equivalent	Flute Length (mm)	Overall Length (mm)	Code No.	Price $
N	7.67	0.3020	37	79	134-830	**18.20**
	7.70	0.3031	37	79	134-690	**24.10**
	7.80*	0.3071	37	79	134-691	**24.10**
	7.90	0.3110	37	79	134-692	**24.10**
5/16*	7.94	0.3125	37	79	134-693	**23.50**
	8.00*	0.3150	37	79	134-694	**23.50**
O	8.03	0.3160	37	79	134-831	**19.80**
	8.10	0.3189	37	79	134-695	**28.80**
P	8.20	0.3230	37	79	134-832	**19.80**
	8.20	0.3228	37	79	134-696	**28.80**
	8.30	0.3268	37	79	134-697	**28.80**
21/64	8.33	0.3281	37	79	134-698	**28.80**
	8.40	0.3307	37	79	134-699	**29.20**
Q*	8.43	0.3320	37	79	134-833	**19.80**
	8.50*	0.3346	37	79	134-700	**29.30**
	8.60	0.3386	40	84	134-701	**29.70**
R	8.61	0.3390	40	84	134-834	**21.20**
	8.70	0.3425	40	84	134-702	**29.70**
11/32	8.73	0.3438	40	84	134-703	**29.70**
	8.80*	0.3465	40	84	134-704	**30.30**
S	8.84	0.3480	40	84	134-835	**21.20**
	8.90	0.3504	40	84	134-705	**30.30**
	9.00*	0.3543	40	84	134-706	**30.30**
T	9.09	0.3580	40	84	134-836	**21.90**
	9.10	0.3583	40	84	134-707	**30.30**
23/64	9.13	0.3594	40	84	134-708	**30.30**
	9.20	0.3622	40	84	134-709	**31.00**
	9.30	0.3661	40	84	134-710	**31.00**
U*	9.35	0.3680	40	84	134-837	**22.60**
	9.40	0.3701	40	84	134-711	**31.00**
	9.50*	0.3740	40	84	134-712	**31.00**
3/8	9.52	0.3750	43	89	134-713	**31.00**
V	9.56	0.3770	43	89	134-838	**24.10**
	9.60	0.3780	43	89	134-714	**33.90**
	9.70	0.3819	43	89	134-715	**33.90**
W	9.80	0.3860	43	89	134-839	**23.90**
	9.80	0.3858	43	89	134-716	**33.90**
	9.90	0.3898	43	89	134-717	**34.00**
25/64	9.92	0.3906	43	89	134-718	**34.00**
	10.00	0.3937	43	89	134-719	**33.30**
X	10.08	0.3970	43	89	134-840	**26.30**
	10.10	0.3976	43	89	134-720	**34.00**
	10.20	0.4016	43	89	134-721	**34.80**
Y	10.26	0.4040	43	89	134-841	**28.00**
13/32	10.32	0.4063	43	89	134-723	**34.90**
Z	10.49	0.4130	43	89	134-842	**27.70**
	10.50*	0.4134	43	89	134-725	**35.30**
27/64*	10.72	0.4220	43	89	134-728	**35.30**
	10.80*	0.4252	47	95	134-729	**36.70**
	11.00	0.4331	47	95	134-731	**36.70**
7/16	11.11	0.4374	47	95	134-733	**47.10**
	11.50	0.4528	47	95	134-737	**48.50**
29/64*	11.51	0.4531	47	95	134-738	**48.50**
	11.80	0.4646	47	95	134-741	**49.00**
15/32	11.91	0.4689	51	102	134-743	**51.50**
	12.00	0.4724	51	102	134-744	**50.40**
	12.20	0.4803	51	102	134-746•	**51.90**
31/64*	12.30	0.4882	51	102	134-747	**51.90**
	12.50*	0.4961	51	102	134-749•	**52.90**
1/2	12.70	0.5000	51	102	134-752	**52.70**
33/64*	13.09	0.5156	51	102	134-756	**49.00**
17/32*	13.49	0.5312	54	107	134-757	**49.00**
35/64	13.89	0.5469	54	107	134-758	**49.70**

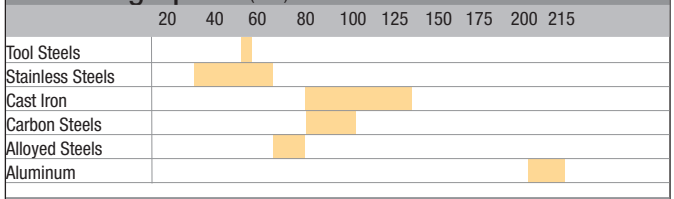
• Available only while quantities last

Cutting Conditions

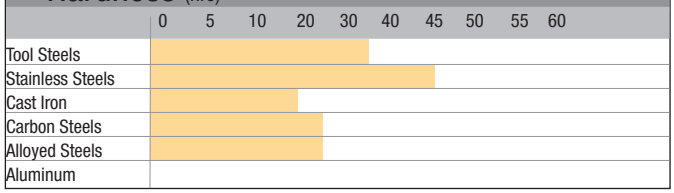
Materials

Main Group	Sub-Group	Condition	Hardness (HRc)	Cutting Speed (SFM)
Tool Steels	A2, A6, L7, 01, 02, 06, M1, M2 D2, P20	Annealed	<35	50-55
Stainless Steel	200 Series,	Annealed	<28	50-60
	300 Series,	Annealed	<28	30-60
	400 Series	Annealed	<29	55-65
	400 Series	Hardened	<45	50-60
Cast Iron	Soft, Hard, Malleable		<18	80-135
Carbon Steels	1020 thru 1060, 1090	Normalized	<22	80-100
Alloyed Steels	1435,4140,4615,5140	Normalized	<22	65-80
Aluminum	Alloys, Cast	-	-	200-215

Cutting Speed (sfm)



Hardness (hrc)

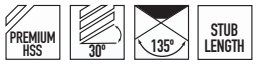


Premium HSS Stub Drills

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.

MADE IN USA





Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
60	.0400	1/2	1-3/8	128-399	2.40
59	.0410	1/2	1-3/8	128-398	2.40
58	.0420	1/2	1-3/8	128-397	2.40
57	.0430	1/2	1-3/8	128-396	2.40
56	.0465	1/2	1-3/8	128-395	2.40
55	.0520	5/8	1-5/8	128-394	2.40
54	.0540	5/8	1-5/8	128-393	2.40
53	.0595	5/8	1-5/8	128-392	2.40
1/16	.0625	5/8	1-5/8	128-310	2.40
52	.0635	11-16	1-11/16	128-391	2.40
51	.0670	11-16	1-11/16	128-390	2.40
50	.0700	11/16	1-11/16	128-389	2.40
49	.0730	11/16	1-11/16	128-388	2.40
48	.0760	11/16	1-11/16	128-387	2.40
5/64	.0781	11/16	1-11/16	128-311	2.40
47	.0785	11/16	1-11/16	128-386	2.40
46	.0810	3/4	1-3/4	128-385	2.40
45	.0820	3/4	1-3/4	128-384	2.40
44	.0860	3/4	1-3/4	128-383	2.40
43	.0890	3/4	1-3/4	128-382	2.40
42	.0935	3/4	1-3/4	128-381	2.40
3/32	.0938	3/4	1-3/4	128-312	2.40
41	.0960	13/16	1-13/16	128-380	2.40
40	.0980	13/16	1-13/16	128-379	2.10
39	.0995	13/16	1-13/16	128-378	2.10
38	.1015	13/16	1-13/16	128-377	2.10
37	.1040	13/16	1-13/16	128-376	2.10
36	.1065	13/16	1-13/16	128-375	2.10
7/64	.1094	13/16	1-13/16	128-313	2.40
35	.1100	7/8	1-7/8	128-374	2.10
34	.1110	7/8	1-7/8	128-373	2.10
33	.1130	7/8	1-7/8	128-372	2.10
32	.1160	7/8	1-7/8	128-371	2.10
31	.1200	7/8	1-7/8	128-370	2.10
1/8	.1250	7/8	1-7/8	128-314	2.40
30	.1285	15/16	1-15/16	128-369	2.10
29	.1360	15/16	1-15/16	128-368	2.10
28	.1405	15/16	1-15/16	128-367	2.10
9/64	.1406	15/16	1-15/16	128-315	2.70
27	.1440	1	2-1/16	128-366	2.40
26	.1470	1	2-1/16	128-365	2.40
25	.1495	1	2-1/16	128-364	2.40
24	.1520	1	2-1/16	128-363	2.40
23	.1540	1	2-1/16	128-362	2.40
5/32	.1562	1	2-1/16	128-316	2.70
22	.1570	1-1/16	2-1/8	128-361	2.40
21	.1590	1-1/16	2-1/8	128-360	2.40
20	.1610	1-1/16	2-1/8	128-359	2.50
19	.1660	1-1/16	2-1/8	128-358	2.50
18	.1695	1-1/16	2-1/8	128-357	2.50
11/64	.1719	1-1/16	2-1/8	128-317	3.00
17	.1730	1-1/8	2-3/16	128-356	3.00
16	.1770	1-1/8	2-3/16	128-355	3.00
15	.1800	1-1/8	2-3/16	128-354	3.00
14	.1820	1-1/8	2-3/16	128-353	3.00
13	.1850	1-1/8	2-3/16	128-352	3.00
3/16	.1875	1-1/8	2-3/16	128-318	3.20
12	.1890	1-3/16	2-1/4	128-351	3.00
11	.1910	1-3/16	2-1/4	128-350	3.00
10	.1935	1-3/16	2-1/4	128-349	3.00
9	.1960	1-3/16	2-1/4	128-348	3.00
8	.1991	1-3/16	2-1/4	128-347	3.00
7	.2010	1-3/16	2-1/4	128-346	3.00
13/64	.2031	1-3/16	2-1/4	128-319	3.50
6	.2040	1-1/4	2-3/8	128-345	3.50
5	.2055	1-1/4	2-3/8	128-344	3.50
4	.2090	1-1/4	2-3/8	128-343	3.50
3	.2130	1-1/4	2-3/8	128-342	3.50
7/32	.2188	1-1/4	2-3/8	128-320	3.50
2	.2210	1-5/16	2-7/16	128-341	3.70
1	.2280	1-5/16	2-7/16	128-340	3.70
A	.2340	1-5/16	2-7/16	128-410	3.50
15/64	.2344	1-5/16	2-7/16	128-321	3.60
B	.2380	1-3/8	2-1/2	128-411	3.50
C	.2420	1-3/8	2-1/2	128-412	3.50
D	.2460	1-3/8	2-1/2	128-413	3.60
1/4	.2500	1-3/8	2-1/2	128-322	3.70
E	.2500	1-3/8	2-1/2	128-414	3.60
F	.2570	1-7/16	2-5/8	128-415	4.70
G	.2610	1-7/16	2-5/8	128-416	4.90
17/64	.2656	1-7/16	2-5/8	128-323	4.80
H	.2660	1-1/2	2-11/16	128-417	5.10
I	.2720	1-1/2	2-11/16	128-418	5.20
J	.2770	1-1/2	2-11/16	128-419	5.20
K	.2810	1-1/2	2-11/16	128-420	5.30
9/32	.2812	1-1/2	2-11/16	128-324	5.10
L	.2900	1-9/16	2-3/4	128-421	5.40
M	.2950	1-9/16	2-3/4	128-422	5.50
19/64	.2969	1-9/16	2-3/4	128-325	5.40
N	.3020	1-5/8	2-13/16	128-423	5.80
5/16	.3125	1-5/8	2-13/16	128-326	5.70
O	.3160	1-11/16	2-15/16	128-424	6.50
P	.3230	1-11/16	2-15/16	128-425	6.70
21/64	.3281	1-11/16	2-15/16	128-327	6.40
Q	.3320	1-11/16	2-15/16	128-426	7.00
R	.3390	1-11/16	2-15/16	128-427	7.10
11/32	.3438	1-11/16	2-15/16	128-328	6.40
S	.3480	1-3/4	3-1/16	128-428	7.50
T	.3580	1-3/4	3-1/16	128-429	7.60
23/64	.3594	1-3/4	3-1/16	128-329	7.20
U	.3680	1-13/16	3-1/8	128-430	8.00
3/8	.3750	1-13/16	3-1/8	128-330	7.30
V	.3770	1-7/8	3-1/4	128-431	8.80
W	.3860	1-7/8	3-1/4	128-432	9.00
25/64	.3906	1-7/8	3-1/4	128-331	8.20
X	.3970	1-15/16	3-5/16	128-434	9.50
Y	.4040	1-15/16	3-5/16	128-435	9.70
13/32	.4062	1-15/16	3-5/16	128-332	9.00
Z	.4130	2	3-3/8	128-436	10.10
27/64	.4219	2	3-3/8	128-333	9.30
7/16	.4375	2-1/16	3-7/16	128-334	9.90
29/64	.4531	2-1/8	3-9/16	128-335	11.20
15/32	.4688	2-1/8	3-5/8	128-336	12.00
31/64	.4844	2-3/16	3-11/16	128-337	12.50
1/2	.5000	2-1/4	3-3/4	128-338	12.80

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	.0625	5/8	1-5/8	118-310	2.20
5/64	.0781	11/16	1-11/16	118-311	2.20
3/32	.0938	3/4	1-3/4	118-312	2.20
7/64	.1094	13/16	1-13/16	118-313	2.20
1/8	.1250	7/8	1-7/8	118-314	2.20
9/64	.1406	15/16	1-15/16	118-315	2.50
5/32	.1562	1	2-1/16	118-316	2.70
11/64	.1719	1-1/16	2-1/8	118-317	3.00
3/16	.1875	1-1/8	2-3/16	118-318	3.10
13/64	.2031	1-3/16	2-1/4	118-319	3.40
7/32	.2188	1-1/4	2-3/8	118-320	3.40
15/64	.2344	1-5/16	2-7/16	118-321	3.50
1/4	.2500	1-3/8	2-1/2	118-322	3.60

Stub Drills HSS - cont'd

- 135° heavy duty split point



Size (in.)	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
17/64	.2656	1-7/16	2-5/8	118-323	**4.60**
9/32	.2812	1-1/2	2-11/16	118-324	**4.80**
19/64	.2969	1-9/16	2-3/4	118-325	**5.20**
5/16	.3125	1-5/8	2-13/16	118-326	**5.40**
21/64	.3281	1-11/16	2-15/16	118-327	**6.00**
11/32	.3438	1-11/16	3	118-328	**6.10**
23/64	.3594	1-3/4	3-1/16	118-329	**7.00**
3/8	.3750	1-13/16	3-1/8	118-330	**7.10**
25/64	.3906	1-7/8	3-1/4	118-331	**7.90**
13/32	.4062	1-15/16	3-5/16	118-332	**8.50**
27/64	.4219	2	3-3/8	118-333	**9.10**
7/16	.4375	2-1/16	3-7/16	118-334	**9.40**
29/64	.4531	2-1/8	3-9/16	118-335	**10.50**
15/32	.4688	2-1/8	3-5/8	118-336	**11.60**
31/64	.4844	2-3/16	3-11/16	118-337	**11.90**
1/2	.5000	2-1/4	3-3/4	118-338	**12.30**

Wire Gauge Sizes

Size	Decimal Equivalent	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	.2280	1-5/16	2-7/16	118-340	**4.00**
2	.2210	1-5/16	2-7/16	118-341	**4.00**
3	.2130	1-1/4	2-3/8	118-342	**3.60**
4	.2090	1-1/4	2-3/8	118-343	**3.60**
5	.2055	1-1/4	2-3/8	118-344	**3.60**
6	.2040	1-1/4	2-3/8	118-345	**3.60**
7	.2010	1-3/16	2-1/4	118-346	**3.20**
8	.1990	1-3/16	2-1/4	118-347	**3.20**
9	.1960	1-3/16	2-1/4	118-348	**3.20**
10	.1935	1-3/16	2-1/4	118-349	**3.20**
11	.1910	1-3/16	2-1/4	118-350	**3.20**
12	.1890	1-3/16	2-1/4	118-351	**3.20**
13	.1850	1-1/8	2-3/16	118-352	**3.20**
14	.1820	1-1/8	2-3/16	118-353	**3.20**
15	.1800	1-1/8	2-3/16	118-354	**3.20**
16	.1770	1-1/8	2-3/16	118-355	**3.20**
17	.1730	1-1/8	2-3/16	118-356	**3.20**
18	.1695	1-1/16	2-1/8	118-357	**2.70**
19	.1660	1-1/16	2-1/8	118-358	**2.70**
20	.1610	1-1/16	2-1/8	118-359	**2.70**
21	.1590	1-1/16	2-1/8	118-360	**2.70**
22	.1570	1-1/16	2-1/8	118-361	**2.70**
23	.1540	1	2-1/16	118-362	**2.70**
24	.1520	1	2-1/16	118-363	**2.70**
25	.1495	1	2-1/16	118-364	**2.70**
26	.1470	1	2-1/16	118-365	**2.70**
27	.1440	1	2-1/16	118-366	**2.70**
28	.1405	15/16	1-15/16	118-367	**2.40**
29	.1360	15/16	1-15/16	118-368	**2.40**
30	.1285	15/16	1-15/16	118-369	**2.40**
31	.1200	7/8	1-7/8	118-370	**2.40**
32	.1160	7/8	1-7/8	118-371	**2.40**
33	.1130	7/8	1-7/8	118-372	**2.40**
34	.1110	7/8	1-7/8	118-373	**2.40**
35	.1100	7/8	1-7/8	118-374	**2.40**
36	.1065	13/16	1-13/16	118-375	**2.40**
37	.1040	13/16	1-13/16	118-376	**2.40**
38	.1015	13/16	1-13/16	118-377	**2.40**
39	.0995	13/16	1-13/16	118-378	**2.40**
40	.0980	13/16	1-13/16	118-379	**2.40**

STM Premium

Prentice Drills

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

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



Size (in.)	Decimal Equiv.	General Purpose HSS Code No.	Price $	General Purpose HSS With 3 Flats Code No.	Price $	HSCO Cobalt Code No.	Price $
33/64	.5156	118-400	**25.60**	118-457	**28.30**	118-501	**66.30**
17/32	.5312	118-401	**24.90**	118-458	**27.50**	118-502	**66.30**
35/64	.5469	118-402	**27.10**	118-459	**30.00**	118-503	**68.40**
9/16	.5625	118-403	**26.50**	118-460	**29.30**	118-504	**68.40**
37/64	.5781	118-404	**29.20**	118-461	**32.30**	118-505	**73.20**
19/32	.5937	118-405	**28.40**	118-462	**31.30**	118-506	**73.20**
39/64	.6094	118-406	**30.70**	118-463	**33.70**	118-507	**77.70**
5/8	.6250	118-407	**29.70**	118-464	**33.00**	118-508	**77.70**
41/64	.6406	118-408	**32.70**	118-465	**36.00**	118-509	**87.30**
21/32	.6562	118-409	**31.80**	118-466	**35.10**	118-510	**87.30**
43/64	.6719	118-410	**33.90**	118-467	**37.50**	118-511	**92.20**
11/16	.6875	118-411	**33.10**	118-468	**36.50**	118-512	**92.20**
45/64	.7031	118-412	**34.40**	118-469	**37.90**	118-513	**98.50**
23/32	.7187	118-413	**33.40**	118-470	**37.00**	118-514	**98.50**
47/64	.7344	118-414	**37.30**	118-471	**41.40**	118-515	**98.50**
3/4	.7500	118-415	**36.40**	118-472	**40.10**	118-516	**98.50**
49/64	.7656	118-416	**39.90**	118-473	**44.10**	118-517	**111.30**
25/32	.7812	118-417	**38.80**	118-474	**43.00**	118-518	**111.30**
51/64	.7969	118-418	**46.70**	118-475	**51.60**	118-519	**116.40**
13/16	.8125	118-419	**40.80**	118-476	**45.00**	118-520	**116.40**
53/64	.8281	118-420	**48.30**	118-477	**53.50**	118-521	**126.80**
27/32	.8437	118-421	**42.10**	118-478	**46.40**	118-522	**126.80**
55/64	.8594	118-422	**50.10**	118-479	**55.50**	118-523	**126.80**
7/8	.8750	118-423	**43.70**	118-480	**48.30**	118-524	**125.40**
57/64	.8906	118-424	**52.40**	118-481	**58.00**	118-525	**133.50**
29/32	.9062	118-425	**45.60**	118-482	**50.30**	118-526	**133.50**
59/64	.9219	118-426	**56.10**	118-483	**62.00**	118-527	**133.50**
15/16	.9375	118-427	**48.70**	118-484	**54.00**	118-528	**133.50**
61/64	.9531	118-428	**59.20**	118-485	**65.40**	118-529	**149.10**
31/32	.9687	118-429	**51.60**	118-486	**57.00**	118-530	**149.10**
63/64	.9844	118-430	**65.80**	118-487	**72.90**	118-531	**162.00**
1	1.0000	118-431	**62.10**	118-488	**67.90**	118-532	**162.00**
1-1/32	1.0312	118-432	**69.90**	118-489	**77.40**	118-534	**207.20**
1-1/16	1.0625	118-433	**67.30**	118-490	**74.50**	118-536	**223.70**
1-3/32	1.0937	118-434	**74.50**	118-491	**82.40**	118-538	**239.10**
1-1/8	1.1250	118-435	**76.40**	118-492	**84.50**	118-540	**254.40**
1-5/32	1.1562	118-436	**79.50**	118-493	**87.90**	118-542	**266.80**
1-3/16	1.1875	118-437	**83.90**	118-494	**92.80**	118-544	**279.00**
1-7/32	1.2187	118-438	**93.90**	118-495	**103.70**	118-546	**294.00**
1-1/4	1.2500	118-439	**93.00**	118-496	**102.80**	118-548	**309.00**
1-9/32	1.2812	-		-		118-550	**436.20**
1-5/16	1.3125	118-441	**115.60**	118-497	**127.10**	118-552	**436.20**
1-11/32	1.3438	-		-		118-554	**442.50**
1-3/8	1.3750	118-443	**132.10**	118-498	**146.10**	118-556	**442.50**
1-13/32	1.4062	-		-		118-558	**478.20**
1-7/16	1.4375	118-445	**145.30**	118-499	**160.60**	118-560	**478.20**
1-15/32	1.4688	-		-		118-562	**487.70**
1-1/2	1.5000	118-447	**159.90**	118-500	**176.80**	118-564	**487.70**

QUALITY IMPORT

Prentice Drills HSS

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



Size (in.)	Decimal Equivalent (in.)	STM HSS Code No.	Price $
33/64	.5156	107-500	**9.30**
17/32	.5312	107-502	**9.30**
35/64	.5469	107-504	**9.30**
9/16	.5625	107-506	**9.90**
37/64	.5781	107-508	**9.90**
19/32	.5937	107-510	**9.90**
39/64	.6094	107-512	**10.70**
5/8	.6250	107-514	**11.50**
41/64	.6406	107-516	**12.30**
21/32	.6562	107-518	**11.60**
43/64	.6719	107-520	**12.30**
11/16	.6875	107-522	**12.50**
45/64	.7031	107-524	**12.90**
23/32	.7187	107-526	**13.20**
47/64	.7344	107-528	**13.90**
3/4	.7500	107-530	**14.80**
49/64	.7656	107-532	**14.20**
25/32	.7812	107-534	**14.20**
51/64	.7969	107-536	**14.80**
13/16	.8125	107-538	**14.90**
53/64	.8281	107-540	**17.70**
27/32	.8437	107-542	**17.70**
55/64	.8594	107-544	**17.70**
7/8	.8750	107-546	**19.60**
57/64	.8906	107-548	**19.90**
29/32	.9062	107-550	**19.90**
59/64	.9219	107-552	**20.80**
15/16	.9375	107-554	**21.30**
61/64	.9531	107-556	**21.70**
31/32	.9687	107-558	**22.50**
63/64	.9844	107-560	**23.50**
1	1.0000	107-562	**23.20**
1-1/64	1.0156	107-564	**23.20**
1-1/32	1.0312	107-566	**28.00**
1-3/64	1.0469	107-568	**28.10**
1-1/16	1.0625	107-570	**28.60**
1-5/64	1.0781	107-572	**28.50**
1-3/32	1.0937	107-574	**28.50**
1-7/64	1.1094	107-576	**31.00**
1-1/8	1.1250	107-578	**31.00**
1-9/64	1.1406	107-580	**33.10**
1-5/32	1.1562	107-582	**33.10**
1-11/64	1.1719	107-584	**33.10**
1-3/16	1.1875	107-586	**39.50**
1-13/64	1.2031	107-588	**39.50**
1-7/32	1.2187	107-590	**42.80**
1-15/64	1.2344	107-592	**42.80**
1-1/4	1.2500	107-594	**42.80**
1-17/64	1.2656	107-596	**42.80**
1-9/32	1.2812	107-598	**47.20**
1-19/64	1.2969	107-600	**47.20**
1-5/16	1.3125	107-602	**54.10**
1-21/64	1.3281	107-604	**54.10**
1-11/32	1.3437	107-606	**60.30**
1-23/64	1.3594	107-608	**71.80**
1-3/8	1.3750	107-610	**63.60**
1-25/64	1.3906	107-612	**66.30**
1-13/32	1.4062	107-614	**66.30**
1-27/64	1.4219	107-616	**67.00**
1-7/16	1.4375	107-618	**69.00**
1-29/64	1.4531	107-620	**69.90**
1-15/32	1.4687	107-622	**74.70**
1-31/64	1.4844	107-624	**74.70**
1-1/2	1.5000	107-626	**74.70**

STM Premium

Taper Length Drills

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



Fractional Sizes

Size (in.)	Decimal Equiv. (in.)	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt 135° Split Point Code No.	Price $
1/64	.0156	5/16	1-1/2	116-792	**11.80**	-	-
1/32	.0312	3/4	2	116-793	**9.40**	-	-
3/64	.0469	1-1/8	2-1/4	116-794	**4.60**	115-001	**10.50**
1/16	.0625	1-3/4	3	116-795	**4.80**	115-002	**10.90**
5/64	.0781	2	3-3/4	116-796	**4.90**	115-003	**12.70**
3/32	.0938	2-1/4	4-1/4	116-797	**6.50**	115-004	**14.80**
7/64	.1094	2-1/2	4-5/8	116-798	**8.00**	115-005	**18.80**
1/8	.1250	2-3/4	5-1/8	116-799	**8.20**	115-006	**18.80**
9/64	.1406	3	5-3/8	116-800	**11.20**	115-007	**22.80**
5/32	.1562	3	5-3/8	116-801	**10.00**	115-008	**22.80**
11/64	.1719	3-3/8	5-3/4	116-802	**11.80**	115-009	**22.80**
3/16	.1875	3-3/8	5-3/4	116-803	**10.00**	115-010	**22.80**
13/64	.2031	3-5/8	6	116-804	**13.50**	115-011	**26.40**
7/32	.2188	3-5/8	6	116-805	**14.30**	115-012	**26.40**
15/64	.2344	3-3/4	6-1/8	116-806	**14.30**	115-013	**27.50**
1/4	.2500	3-3/4	6-1/8	116-807	**11.80**	115-014	**26.20**
17/64	.2656	3-7/8	6-1/4	116-808	**14.80**	115-015	**34.00**
9/32	.2812	3-7/8	6-1/4	116-809	**14.30**	115-016	**32.30**
19/64	.2969	4	6-3/8	116-810	**16.20**	115-017	**34.00**
5/16	.3125	4	6-3/8	116-811	**14.30**	115-018	**32.30**
21/64	.3281	4-1/8	6-1/2	116-812	**16.60**	115-019	**39.10**
11/32	.3438	4-1/8	6-1/2	116-813	**16.20**	115-020	**37.70**
23/64	.3594	4-1/4	6-3/4	116-814	**18.90**	115-021	**46.20**
3/8	.3750	4-1/4	6-3/4	116-815	**18.90**	115-022	**42.80**
25/64	.3906	4-3/8	7	116-816	**20.00**	115-023	**47.90**
13/32	.4062	4-3/8	7	116-817	**19.90**	115-024	**46.20**
27/64	.4219	4-5/8	7-1/4	116-818	**21.60**	115-025	**51.90**
7/16	.4375	4-5/8	7-1/4	116-819	**22.10**	115-026	**50.00**
29/64	.4531	4-3/4	7-1/2	116-820	**24.40**	115-027	**58.80**
15/32	.4688	4-3/4	7-1/2	116-821	**25.90**	115-028	**59.70**
31/64	.4844	4-3/4	7-3/4	116-822	**28.20**	115-029	**64.90**
1/2	.5000	4-3/4	7-3/4	116-823	**26.90**	115-030	**61.60**
33/64	.5156	4-3/4	8	116-824	**40.90**	115-031	**84.90**
17/32	.5312	4-3/4	8	116-825	**39.70**	115-032	**82.10**
35/64	.5469	4-7/8	8-1/4	116-826	**45.40**	115-033	**91.90**
9/16	.5625	4-7/8	8-1/4	116-827	**41.90**	115-034	**88.40**
37/64	.5781	4-7/8	8-3/4	116-828	**48.80**	115-035	**107.20**
19/32	.5938	4-7/8	8-3/4	116-829	**48.80**	115-036	**103.20**
39/64	.6094	4-7/8	8-3/4	116-830	**51.50**	115-037	**107.20**
5/8	.6250	4-7/8	8-3/4	116-831	**48.80**	115-038	**103.20**
41/64	.6406	5-1/8	9	116-832	**58.00**	115-039	**120.30**
21/32	.6562	5-1/8	9	116-833	**56.10**	115-040	**113.90**
43/64	.6719	5-3/8	9-1/4	116-834	**65.50**	115-041	**138.10**
11/16	.6875	5-3/8	9-1/4	116-835	**63.10**	115-042	**133.20**
45/64	.7031	5-5/8	9-1/2	116-836	**70.00**	115-043	**151.10**
23/32	.7188	5-5/8	9-1/2	116-837	**69.00**	115-044	**145.70**
47/64	.7344	5-7/8	9-3/4	116-838	**76.70**	115-045	**160.00**
3/4	.7500	5-7/8	9-3/4	116-839	**73.00**	115-046	**154.30**
49/64	.7656	6	9-7/8	116-840	**80.40**	115-047	**188.20**
25/32	.7812	6	9-7/8	116-841	**80.40**	115-048	**181.60**
51/64	.7969	6-1/8	10	116-842	**86.50**	115-049	**206.20**
13/16	.8125	6-1/8	10	116-843	**85.20**	115-050	**195.00**
53/64	.8281	6-1/8	10	116-844	**89.60**	115-051	**209.40**
27/32	.8438	6-1/8	10	116-845	**89.60**	115-052	**202.00**
55/64	.8594	6-1/8	10	116-846	**94.30**	115-053	**220.00**
7/8	.8750	6-1/8	10	116-847	**93.20**	115-054	**212.30**
57/64	.8906	6-1/8	10	116-848	**98.00**	115-055	**233.60**
29/32	.9062	6-1/8	10	116-849	**98.00**	115-056	**221.10**
59/64	.9219	6-1/8	10-3/4	116-850	**107.50**	115-057	**254.00**
15/16	.9375	6-1/8	10-3/4	116-851	**106.80**	115-058	**240.50**
61/64	.9531	6-3/8	11	116-852	**117.70**	115-059	**280.30**
31/32	.9688	6-3/8	11	116-853	**117.70**	115-060	**265.50**
63/64	.9844	6-3/8	11	116-854	**123.90**	115-061	**286.90**
1	1.0000	6-3/8	11	116-855	**122.50**	115-062	**276.60**

Taper Length Drills

- High Speed Steel
- Super Cobalt
- General purpose
- 118° point



Wire Gauge Sizes

Size	Decimal Equiv.	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt Code No.	Price $
1	.2280	3-3/4	6-1/8	115-065	**15.30**	115-145	**30.30**
2	.2210	3-3/4	6-1/8	115-066	**15.30**	115-146	**30.30**
3	.2130	3-5/8	6	115-067	**14.80**	115-147	**30.30**
4	.2090	3-5/8	6	115-068	**14.80**	115-148	**30.30**
5	.2055	3-5/8	6	115-069	**14.80**	115-149	**30.30**
6	.2040	3-5/8	6	115-070	**14.80**	115-150	**30.30**
7	.2010	3-5/8	6	115-071	**14.80**	115-151	**30.30**
8	.1990	3-5/8	6	115-072	**14.80**	115-152	**30.30**
9	.1960	3-5/8	6	115-073	**14.80**	115-153	**30.30**
10	.1935	3-5/8	6	115-074	**14.80**	115-154	**30.30**
11	.1910	3-5/8	6	115-075	**14.80**	115-155	**30.30**
12	.1890	3-5/8	6	115-076	**14.80**	115-156	**30.30**
13	.1850	3-3/8	5-3/4	115-077	**13.50**	115-157	**27.50**
14	.1820	3-3/8	5-3/4	115-078	**13.50**	115-158	**27.50**
15	.1800	3-3/8	5-3/4	115-079	**13.50**	115-159	**27.50**
16	.1770	3-3/8	5-3/4	115-080	**13.50**	115-160	**27.50**
17	.1730	3-3/8	5-3/4	115-081	**13.50**	115-161	**27.50**
18	.1695	3-3/8	5-3/4	115-082	**13.50**	115-162	**27.50**
19	.1660	3-3/8	5-3/4	115-083	**13.50**	115-163	**27.50**
20	.1610	3-3/8	5-3/4	115-084	**13.50**	115-164	**27.50**
21	.1590	3-3/8	5-3/4	115-085	**13.50**	115-165	**27.50**
22	.1570	3-3/8	5-3/4	115-086	**13.50**	115-166	**27.50**
23	.1540	3	5-3/8	115-087	**13.50**	115-167	**27.50**
24	.1520	3	5-3/8	115-088	**13.50**	115-168	**27.50**
25	.1495	3	5-3/8	115-089	**13.50**	115-169	**27.50**
26	.1470	3	5-3/8	115-090	**13.50**	115-170	**27.50**
27	.1440	3	5-3/8	115-091	**13.50**	115-171	**27.50**
28	.1405	3	5-3/8	115-092	**13.50**	115-172	**24.50**
29	.1360	3	5-3/8	115-093	**13.50**	115-173	**24.50**
30	.1285	3	5-3/8	115-094	**13.50**	115-174	**24.50**
31	.1200	2-3/4	5-1/8	115-095	**13.30**	115-175	**22.70**
32	.1160	2-3/4	5-1/8	115-096	**13.30**	115-176	**22.70**
33	.1130	2-3/4	5-1/8	115-097	**13.30**	115-177	**22.70**
34	.1110	2-3/4	5-1/8	115-098	**13.30**	115-178	**22.70**
35	.1100	2-3/4	5-1/8	115-099	**13.30**	115-179	**22.70**
36	.1065	2-1/2	4-5/8	115-100	**10.00**	115-180	**22.20**
37	.1040	2-1/2	4-5/8	115-101	**10.00**	115-181	**22.20**
38	.1015	2-1/2	4-5/8	115-102	**10.00**	115-182	**22.20**
39	.0995	2-1/2	4-5/8	115-103	**8.80**	115-183	**22.20**
40	.0980	2-1/2	4-5/8	115-104	**8.80**	115-184	**22.20**
41	.0960	2-1/2	4-5/8	115-105	**8.80**		
42	.0935	2-1/4	4-1/4	115-106	**7.50**		
43	.0890	2-1/4	4-1/4	115-107	**7.50**		
44	.0860	2-1/4	4-1/4	115-108	**7.50**		
45	.0820	2-1/4	4-1/4	115-109	**7.50**		
46	.0810	2-1/4	4-1/4	115-110	**7.50**		
47	.0785	2-1/4	4-1/4	115-111	**7.50**		
48	.0760	2	3-3/4	115-112	**6.10**		
49	.0730	2	3-3/4	115-113	**6.10**		
50	.0700	2	3-3/4	115-114	**6.10**		
51	0.0670	2	3-3/4	115-115	**6.10**		
52	0.0635	2	3-3/4	115-116	**6.10**		
53	0.0595	1-3/4	3	115-117	**6.10**		
54	0.0550	1-3/4	3	115-118	**6.10**		
55	0.0520	1-3/4	3	115-119	**6.10**		
56	0.0465	1-1/8	2-1/4	115-120	**6.10**		
57	0.0430	1-1/8	2-1/4	115-121	**6.10**		
58	0.0420	1-1/8	2-1/4	115-122	**6.10**		
59	0.0410	1-1/8	2-1/4	115-123	**6.10**		
60	0.0400	1-1/8	2-1/4	115-124	**6.10**		
61	0.0390	1-1/8	2-1/4	115-125	**6.00**		
62	0.0380	3/4	2	115-126	**7.50**		
63	0.0370	3/4	2	115-127	**7.50**		
64	0.0360	3/4	2.	115-128	**7.50**		

Taper Length Drills cont'd

Size	Decimal Equiv.	Flute Length	Overall Length	HSS Code No.	Price $	Cobalt Code No.	Price $
65	0.0350	3/4	2	115-129	**7.50**		
66	0.0330	3/4	2	115-130	**7.50**		
67	0.0320	3/4	2	115-131	**7.50**		
68	0.0310	3/4	2	115-132	**7.50**		
69	0.0292	3/4	2	115-133	**7.50**		
70	0.0280	3/4	2	115-134	**7.80**		
71	0.0260	3/4	2	115-135	**7.80**		
72	0.0250	5/16	1-1/2	115-136	**7.80**		
73	0.0240	5/16	1-1/2	115-137	**7.80**		
74	0.0225	5/16	1-1/2	115-138	**7.80**		
75	0.0210	5/16	1-1/2	115-139	**7.80**		
76	0.0200	5/16	1-1/2	115-140	**9.30**		
77	0.0180	5/16	1-1/2	115-141	**9.40**		
78	0.0160	5/16	1-1/2	115-142	**9.40**		
79	0.0145	5/16	1-1/2	115-143	**9.40**		
80	0.0135	5/16	1-1/2	115-144	**9.40**		

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	115-185	**17.10**	117-842	**34.40**
B	0.2380	3-3/4	6-1/8	115-186	**17.10**	117-843	**34.40**
C	0.2420	3-3/4	6-1/8	115-187	**17.10**	117-844	**34.40**
D	0.2460	3-3/4	6-1/8	115-188	**17.30**	117-845	**34.40**
E	0.2500	3-3/4	6-1/8	115-189	**11.40**	117-846	**26.40**
F	0.2570	3-7/8	6-1/4	115-190	**18.00**	117-847	**40.80**
G	0.2610	3-7/8	6-1/4	115-191	**18.70**	117-848	**40.80**
H	0.2660	3-7/8	6-1/4	115-192	**19.50**	117-849	**40.80**
I	0.2720	3-7/8	6-1/4	115-193	**19.50**	117-850	**40.80**
J	0.2770	3-7/6	6-1/4	115-194	**19.50**	117-851	**40.80**
K	0.2810	3-7/8	6-1/4	115-195	**19.50**	117-852	**40.80**
L	0.2900	4	6-3/8	115-196	**20.90**	117-853	**40.80**
M	0.2950	4	6-3/8	115-197	**20.90**	117-854	**40.80**
N	0.3020	4	6-3/8	115-198	**21.20**	117-855	**40.80**
O	0.3160	4-1/8	6-1/2	115-199	**21.20**	117-856	**44.70**
P	0.3230	4-1/8	6-1/2	115-200	**21.20**	117-857	**44.70**
Q	0.3320	4-1/8	6-1/2	115-201	**21.20**	117-858	**44.70**
R	0.3390	4-1/8	6-1/2	115-202	**22.40**	117-859	**44.70**
S	0.3480	4-1/4	6-3/4	115-203	**22.40**	117-860	**55.10**
T	0.3580	4-1/4	6-3/4	115-204	**22.40**	117-861	**55.10**
U	0.3680	4-1/4	6-3/4	115-205	**23.50**	117-862	**55.10**
V	0.3770	4-3/8	7	115-206	**23.50**	117-863	**56.90**
W	0.3860	4-3/8	7	115-207	**23.50**	117-864	**56.90**
X	0.3970	4-3/8	7	115-208	**24.10**	117-865	**56.90**
Y	0.4040	4-3/8	7	115-209	**24.10**	117-866	**56.90**
Z	0.4130	4-5/8	7-1/4	115-210	**25.00**	117-867	**61.20**

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	115-211	**5.10**
1.05	0.0413	1-1/8	2-1/4	115-212	**5.70**
1.10	0.0433	1-1/8	2-1/4	115-213	**5.40**
1.15	0.0453	1-1/8	2-1/4	115-214	**5.70**
1.20	0.0472	1-3/4	3	115-215	**5.90**
1.25	0.0492	1-3/4	3	115-216	**5.90**
1.30	0.0512	1-3/4	3	115-217	**5.90**
1.35	0.0531	1-3/4	3	115-218	**6.10**
1.40	0.0551	1-3/4	3	115-219	**5.90**
1.45	0.0571	1-3/4	3	115-220	**6.10**
1.50	0.0591	1-3/4	3	115-221	**5.40**
1.55	0.0610	1-3/4	3	115-222	**6.30**
1.60	0.0630	2	3-3/4	115-223	**6.80**
1.65	0.0650	2	3-3/4	115-224	**7.10**
1.70	0.0669	2	3-3/4	115-225	**6.80**
1.75	0.0689	2	3-3/4	115-226	**7.10**
1.80	0.0709	2	3-3/4	115-227	**6.80**
1.85	0.0728	2	3-3/4	115-228	**7.10**
1.90	0.0748	2	3-3/4	115-229	**6.80**
1.95	0.0768	2	3-3/4	115-230	**7.10**
2.00	0.0787	2-1/4	4-1/4	115-231	**7.30**
2.05	0.0807	2-1/4	4-1/4	115-232	**8.40**

Taper Length Drills - cont'd

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	115-233	**8.10**
2.15	0.0846	2-1/4	4-1/4	115-234	**8.40**
2.20	0.0866	2-1/4	4-1/4	115-235	**8.10**
2.25	0.0886	2-1/4	4-1/4	115-236	**8.40**
2.30	0.0906	2-1/4	4-1/4	115-237	**8.10**
2.35	0.0925	2-1/4	4-1/4	115-238	**8.40**
2.40	0.0945	2-1/2	4-5/8	115-239	**10.10**
2.45	0.0965	2-1/2	4-5/8	115-240	**10.50**
2.50	0.0984	2-1/2	4-5/8	115-241	**9.10**
2.60	0.1024	2-1/2	4-5/8	115-242	**10.10**
2.70	0.1063	2-1/2	4-5/8	115-243	**10.10**
2.80	0.1102	2-3/4	5-1/8	115-244	**10.50**
2.90	0.1142	2-3/4	5-1/8	115-245	**10.50**
3.00	0.1181	2-3/4	5-1/8	115-246	**9.30**
3.10	0.1220	2-3/4	5-1/8	115-247	**10.50**
3.20	0.1260	3	5-3/8	115-248	**11.40**
3.30	0.1299	3	5-3/8	115-249	**11.40**
3.40	0.1339	3	5-3/8	115-250	**12.00**
3.50	0.1378	3	5-3/8	115-251	**11.40**
3.60	0.1417	3	5-3/8	115-252	**12.60**
3.70	0.1457	3	5-3/8	115-253	**12.60**
3.80	0.1496	3	5-3/8	115-254	**12.60**
3.90	0.1535	3	5-3/8	115-255	**12.60**
4.00	0.1575	3-3/8	5-3/4	115-256	**11.40**
4.10	0.1614	3-3/8	5-3/4	115-257	**12.60**
4.20	0.1654	3-3/8	5-3/4	115-258	**11.40**
4.30	0.1693	3-3/8	5-3/4	115-259	**12.70**
4.40	0.1732	3-3/8	5-3/4	115-260	**12.70**
4.50	0.1772	3-3/8	5-3/4	115-261	**11.40**
4.60	0.1811	3-3/8	5-3/4	115-262	**12.60**
4.70	0.1850	3-3/8	5-3/4	115-263	**12.60**
4.80	0.1890	3-5/8	6	115-264	**14.10**
4.90	0.1929	3-5/8	6	115-265	**14.70**
5.00	0.1968	3-5/8	6	115-266	**13.20**
5.10	0.2008	3-5/8	6	115-267	**14.70**
5.20	0.2047	3-5/8	6	115-268	**14.70**
5.30	0.2087	3-5/8	6	115-269	**14.70**
5.40	0.2126	3-5/8	6	115-270	**14.70**
5.50	0.2165	3-5/8	6	115-271	**13.20**
5.60	0.2205	3-3/4	6-1/8	115-272	**14.70**
5.70	0.2244	3-3/4	6-1/8	115-273	**14.70**
5.80	0.2283	3-3/4	6-1/8	115-274	**14.70**
5.90	0.2323	3-3/4	6-1/8	115-275	**17.30**
6.00	0.2362	3-3/4	6-1/8	115-276	**14.10**
6.10	0.2402	3-3/4	6-1/8	115-277	**16.70**
6.20	0.2441	3-3/4	6-1/8	115-278	**13.50**
6.30	0.2480	3-3/4	6-1/8	115-279	**14.30**
6.40	0.2520	3-7/8	6-1/4	115-280	**16.40**
6.50	0.2559	3-7/8	6-1/4	115-281	**16.10**
6.80	0.2677	3-7/8	6-1/4	115-282	**16.40**
7.00	0.2756	3-7/8	6-1/4	115-283	**16.10**
7.20	0.2835	4	6-3/8	115-284	**16.60**
7.50	0.2953	4	6-3/8	115-285	**16.60**
7.80	0.3071	4	6-3/8	115-286	**18.10**
8.00	0.3150	4-1/8	6-1/2	115-287	**18.60**
8.20	0.3228	4-1/8	6-1/2	115-288	**20.80**
8.50	0.3346	4-1/8	6-1/2	115-289	**18.60**
8.80	0.3465	4-1/4	6-3/4	115-290	**24.40**
9.00	0.3543	4-1/4	6-3/4	115-291	**21.90**
9.20	0.3622	4-1/4	6-3/4	115-292	**24.40**
9.50	0.3740	4-1/4	6-3/4	115-293	**22.40**
9.80	0.3858	4-3/8	7	115-294	**25.30**
10.00	0.3937	4-3/8	7	115-295	**22.80**
10.20	0.4016	4-3/8	7	115-296	**23.40**
10.50	0.4134	4-5/8	7-1/4	115-297	**24.60**
10.80	0.4252	4-5/8	7-1/4	115-298	**28.00**
11.00	0.4331	4-5/8	7-1/4	115-299	**25.00**
11.20	0.4409	4-3/4	7-1/2	115-300	**31.00**
11.50	0.4528	4-3/4	7-1/2	115-301	**27.90**
11.80	0.4646	4-3/4	7-1/2	115-302	**33.00**
12.00	0.4724	4-3/4	7-3/4	115-303	**30.80**
12.20	0.4803	4-3/4	7-3/4	115-304	**34.40**
12.50	0.4921	4-3/4	7-3/4	115-305	**30.80**
12.80	0.5039	4-3/4	8	115-306	**46.40**

Taper Length Drills - Metric HSS cont'd

Size (mm)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
13.00	0.5118	4-3/4	8	115-307	**43.50**
13.20	0.5197	4-3/4	8	115-308	**47.30**
13.50	0.5315	4-3/4	8	115-309	**48.70**
13.80	0.5433	4-7/8	8-1/4	115-310	**49.70**
14.00	0.5512	4-7/8	8-1/4	115-311	**45.60**
14.25	0.5610	4-7/8	8-1/4	115-312	**49.70**
14.50	0.5709	4-7/8	8-3/4	115-313	**57.00**
14.75	0.5807	4-7/8	8-3/4	115-314	**58.10**
15.00	0.5906	4-7/8	8-3/4	115-315	**57.00**
15.25	0.6004	4-7/8	8-3/4	115-316	**60.00**
15.50	0.6102	4-7/8	8-3/4	115-317	**58.90**
15.75	0.6201	4-7/8	8-3/4	115-318	**60.00**
16.00	0.6299	5-1/8	9	115-319	**67.20**
16.25	0.6938	5-1/8	9	115-320	**68.50**
16.50	0.6496	5-1/8	9	115-321	**67.20**
16.75	0.6594	5-3/8	9-1/4	115-322	**80.20**
17.00	0.6693	5-3/8	9-1/4	115-323	**78.90**
17.25	0.6791	5-3/8	9-1/4	115-324	**81.40**
17.50	0.6890	5-5/8	9-1/2	115-325	**84.10**
17.75	0.6988	5-5/8	9-1/2	115-326	**84.10**
18.00	0.7087	5-5/8	9-1/2	115-327	**84.10**
18.50	0.7283	5-7/8	9-3/4	115-328	**96.30**
19.00	0.7480	5-7/8	9-3/4	115-329	**92.30**
19.20	0.7559	6	9-7/8	115-330	**67.30**
19.50	0.7677	6	9-7/8	115-331	**97.90**
20.00	0.7874	6-1/8	10	115-332	**105.20**
20.50	0.8071	6-1/8	10	115-333	**111.60**
21.00	0.8268	6-1/8	10	115-334	**113.60**
21.50	0.8465	6-1/8	10	115-335	**121.60**
22.00	0.8661	6-1/8	10	115-336	**114.30**
22.50	0.8858	6-1/8	10	115-337	**124.30**
23.00	0.9055	6-1/8	10	115-338	**124.30**
23.50	0.9252	6-1/8	10-3/4	115-339	**137.60**
24.00	0.9449	6-3/8	11	115-340	**149.20**
24.50	0.9646	6-3/8	11	115-341	**151.90**
25.00	0.9843	6-3/8	11	115-342	**150.00**
25.50	1.0039	6-1/2	11-1/8	115-343	**189.30**
26.00	1.0236	6-1/2	11-1/8	115-344	**186.00**
26.50	1.0433	6-5/8	11-1/4	115-345	**196.00**
27.00	1.0630	6-5/8	11-1/4	115-346	**206.30**
27.50	1.0827	6-7/8	11-1/2	115-347	**209.90**
28.00	1.1024	7-1/8	11-3/4	115-348	**214.10**
28.50	1.1220	7-1/8	11-3/4	115-349	**218.00**
29.00	1.1417	7-1/4	11-7/8	115-350	**232.90**
29.50	1.1614	7-3/8	12	115-351	**255.50**
30.00	1.1811	7-3/8	12	115-352	**250.80**
30.50	1.2008	7-1/2	12-1/8	115-353	**265.80**
31.00	1.2205	7-7/8	12-1/2	115-354	**271.10**
31.50	1.2402	7-7/8	12-1/2	115-355	**276.30**
32.00	1.2598	8-1/2	14-1/8	115-356	**317.70**
32.50	1.2795	8-1/2	14-1/8	115-357	**317.70**
33.00	1.2992	8-5/8	14-1/4	115-358	**329.60**
33.50	1.3189	8-3/4	14-3/8	115-359	**338.80**
34.00	1.3386	8-3/4	14-3/8	115-360	**338.80**
34.50	1.3583	8-7/8	14-1/2	115-361	**353.10**
35.00	1.3780	9	14-5/8	115-362	**371.90**
35.50	1.3976	9	14-5/8	115-363	**371.90**
36.00	1.4173	9-1/8	14-3/4	115-364	**383.60**
36.50	1.4370	9-1/8	14-3/4	115-365	**383.60**
37.00	1.4567	9-1/4	14-7/8	115-366	**416.90**
37.50	1.4764	9-3/8	15	115-367	**426.60**
38.00	1.4961	9-3/8	15	115-368	**426.60**

Aircraft Extension Drills

- High Speed Steel and Cobalt
- Split Point
- Sizes smaller than 1/16" are not split point
- 6" overall Length
- 12" overall length



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	117-300	**13.90**	117-405	**22.90**	117-521	**18.70**	-	-
59	0.0410	11/16	117-301	**14.50**	117-406	**22.90**	-	-	-	-
58	0.0420	11/16	117-302	**14.50**	117-407	**23.90**	-	-	-	-
57	0.0430	3/4	117-303	**14.30**	117-408	**20.40**	-	-	-	-
56	0.0465	3/4	117-304	**11.90**	117-409	**20.40**	117-522	**18.70**	-	-
3/64	0.0469	3/4	117-305	**12.50**	117-410	**22.70**	-	-	-	-
55	0.0520	7/8	117-306	**11.90**	117-411	**20.40**	115-605	**18.10**	-	-
54	0.0550	7/8	117-307	**11.90**	117-412	**20.40**	-	-	-	-
53	0.0595	7/8	117-308	**11.90**	117-413	**20.40**	117-523	**18.70**	-	-
1/16	0.0625	7/8	117-309	**6.40**	117-414	**18.40**	117-524	**8.50**	117-582	**24.90**
52	0.0635	7/8	117-310	**6.40**	117-415	**20.10**	115-608	**8.20**	115-683	**24.90**
51	0.0670	1	117-311	**6.40**	117-416	**20.10**	115-609	**8.20**	115-684	**24.90**
50	0.0700	1	117-312	**6.40**	117-417	**21.70**	117-525	**8.80**	117-583	**24.90**
49	0.0730	1	117-313	**6.40**	117-418	**21.70**	115-611	**8.10**	115-686	**24.90**
48	0.0760	1	117-314	**6.10**	117-419	**21.70**	115-612	**8.10**	115-687	**24.90**
5/64	0.0781	1	117-315	**6.10**	117-420	**18.40**	117-526	**9.00**	117-584	**24.90**
47	0.0785	1	117-316	**6.40**	117-421	**21.70**	115-614	**8.50**	115-689	**25.80**
46	0.0810	1-1/8	117-317	**6.40**	117-422	**21.70**	115-615	**8.50**	115-690	**24.90**
45	0.0820	1-1/8	117-318	**6.40**	117-423	**21.70**	115-616	**8.50**	115-691	**24.90**
44	0.0860	1-1/8	117-319	**6.40**	117-424	**21.70**	117-527	**9.00**	115-692	**24.90**
43	0.0890	1-1/4	117-320	**6.40**	117-425	**21.70**	117-528	**9.00**	115-693	**24.90**
42	0.0935	1-1/4	117-321	**5.10**	117-426	**16.80**	115-619	**7.10**	115-694	**24.90**
3/32	0.0938	1-1/4	117-322	**4.90**	117-427	**18.40**	117-529	**6.80**	117-585	**21.30**
41	0.0960	1-3/8	117-323	**5.10**	117-428	**16.60**	117-530	**7.20**	115-696	**24.90**
40	0.0980	1-3/8	117-324	**4.90**	117-429	**16.60**	117-531	**7.00**	117-586	**24.00**
39	0.0995	1-3/8	117-325	**5.50**	117-430	**16.60**	115-623	**7.50**	115-698	**24.00**
38	0.1015	1-7/16	117-326	**5.50**	117-431	**16.60**	115-624	**7.50**	115-699	**24.00**
37	0.1040	1-7/16	117-327	**5.50**	117-432	**16.60**	115-625	**7.70**	115-700	**24.00**
36	0.1065	1-7/16	117-328	**5.50**	117-433	**16.60**	117-532	**7.70**	115-701	**24.00**
7/64	0.1094	1-1/2	117-329	**5.50**	117-434	**14.40**	117-533	**7.80**	117-587	**21.90**
35	0.1100	1-1/2	117-330	**5.50**	117-435	**16.60**	117-534	**7.70**	115-703	**24.00**
34	0.1110	1-1/2	117-331	**5.30**	117-436	**16.60**	117-535	**7.70**	115-704	**24.00**
33	0.1130	1-1/2	117-332	**5.50**	117-437	**16.60**	117-536	**7.70**	115-705	**24.00**
32	0.1160	1-5/8	117-333	**5.50**	117-438	**16.60**	117-537	**7.70**	115-706	**24.00**
31	0.1200	1-5/8	117-334	**5.30**	117-439	**16.60**	117-538	**7.70**	115-707	**24.00**
1/8	0.1250	1-5/8	117-335	**5.20**	117-440	**14.10**	117-539	**7.30**	117-588	**22.30**
30	0.1285	1-5/8	117-336	**5.30**	117-441	**16.60**	117-540	**7.50**	117-589	**23.10**
29	0.1360	1-3/4	117-337	**6.70**	117-442	**16.60**	117-541	**9.10**	115-710	**24.10**
28	0.1405	1-3/4	117-338	**6.70**	117-443	**16.60**	117-542	**9.30**	115-711	**24.90**
9/64	0.1406	1-3/4	117-339	**6.10**	117-444	**14.10**	117-543	**8.50**	117-590	**24.90**
27	0.1440	1-7/8	117-340	**6.70**	117-445	**16.60**	117-544	**9.30**	115-713	**24.90**
26	0.1470	1-7/8	117-341	**6.70**	117-446	**16.60**	117-545	**9.30**	115-714	**22.70**
25	0.1495	1-7/8	117-342	**6.70**	117-447	**16.60**	117-546	**9.10**	115-715	**22.70**
24	0.1520	2	117-343	**6.70**	117-448	**16.60**	117-547	**9.30**	115-716	**22.70**
23	0.1540	2	117-344	**6.70**	117-449	**16.60**	117-548	**9.30**	115-717	**22.70**
5/32	0.1562	2	117-345	**6.40**	117-450	**14.10**	117-549	**8.40**	117-591	**22.70**
22	0.1570	2	117-346	**6.70**	117-451	**16.60**	117-550	**9.30**	115-719	**23.10**
21	0.1590	2-1/8	117-347	**6.70**	117-452	**16.60**	117-551	**9.10**	117-592	**23.10**
20	0.1610	2-1/8	117-348	**6.40**	117-453	**16.60**	117-552	**9.10**	117-593	**23.10**
19	0.1660	2-1/8	117-349	**7.30**	117-454	**18.10**	117-553	**10.40**	117-594	**26.30**
18	0.1695	2-1/8	117-350	**7.30**	117-455	**18.10**	117-554	**10.40**	115-723	**23.90**
11/64	0.1719	2-1/8	117-351	**7.00**	117-456	**16.00**	117-555	**9.30**	117-595	**24.60**
17	0.1730	2-3/16	117-352	**7.30**	117-457	**18.10**	117-556	**10.40**	115-725	**23.90**
16	0.1770	2-3/16	117-353	**7.30**	117-458	**18.10**	117-557	**10.40**	115-726	**26.30**
15	0.1800	2-3/16	117-354	**7.30**	117-459	**18.10**	117-558	**10.40**	115-727	**23.90**
14	0.1820	2-3/16	117-355	**7.10**	117-460	**18.10**	117-559	**10.40**	115-728	**23.90**
13	0.1850	2-5/16	117-356	**7.30**	117-461	**18.10**	117-560	**10.40**	115-729	**23.90**
3/16	0.1875	2-5/16	117-357	**6.70**	117-462	**16.00**	117-561	**9.20**	117-596	**24.00**
12	0.1890	2-5/16	117-358	**7.30**	117-463	**18.10**	117-562	**10.40**	115-731	**23.90**
11	0.1910	2-5/16	117-359	**7.30**	117-464	**18.10**	117-563	**10.40**	115-732	**25.10**
10	0.1935	2-7/16	117-360	**7.90**	117-465	**18.10**	117-564	**10.70**	117-597	**25.10**
9	0.1960	2-7/16	117-361	**8.40**	117-466	**18.10**	117-565	**11.90**	115-734	**26.20**
8	0.1990	2-7/16	117-362	**8.50**	117-467	**20.00**	117-566	**11.90**	115-735	**26.70**
7	0.2010	2-7/16	117-363	**8.20**	117-468	**20.00**	117-567	**12.50**	115-736	**26.70**
13/64	0.2031	2-7/16	117-364	**8.40**	117-469	**18.40**	117-568	**11.60**	117-598	**31.30**
6	0.2040	2-1/2	117-365	**8.50**	117-470	**20.00**	117-569	**12.50**	115-738	**31.30**
5	0.2055	2-1/2	117-366	**8.50**	117-471	**20.00**	117-570	**12.50**	115-739	**31.30**

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	117-367	**8.50**	117-472	**20.00**	117-571	**12.50**	115-740	**31.30**
3	0.2130	2-1/2	117-368	**8.50**	117-473	**20.00**	117-572	**11.90**	115-741	**31.30**
7/32	0.2188	2-1/2	117-369	**8.20**	117-474	**18.40**	117-573	**11.50**	117-599	**28.30**
2	0.2210	2-5/8	117-370	**9.70**	117-475	**20.00**	117-574	**13.60**	115-743	**31.70**
1	0.2280	2-5/8	117-371	**9.70**	117-476	**21.70**	117-575	**13.20**	117-600	**31.70**
A	0.2340	2-5/8	117-372	**12.90**	117-477	**25.20**				
15/64	0.2344	2-5/8	117-373	**8.90**	117-478	**20.00**	117-576	**12.90**	117-601	**32.50**
B	0.2380	2-3/4	117-374	**12.90**	117-479	**25.20**				
C	0.2420	2-3/4	117-375	**12.90**	117-480	**25.20**	117-577	**20.50**		
D	0.2460	2-3/4	117-376	**12.90**	117-481	**25.20**	117-578	**20.50**		
1/4	0.2500	2-3/4	117-377	**8.90**	117-482	**19.50**	117-579	**14.30**	117-602	**28.90**
E	0.2500	2-3/4	117-378	**8.90**	117-483	**19.50**	117-580	**14.70**	117-603	**28.90**
F	0.2570	2-7/8	117-379	**13.70**	117-484	**29.90**	117-581	**40.80**		
G	0.2610	2-7/8	117-380	**21.70**	117-485	**30.00**				
17/64	0.2656	2-7/8	117-381	**18.80**	117-486	**23.80**	115-676	**32.00**	115-748	**44.30**
H	0.2660	2-7/8	117-382	**23.40**	117-487	**30.00**				
I	0.2720	2-7/8	117-383	**23.40**	117-488	**30.00**				
J	0.2770	2-7/8	117-384	**23.40**	117-489	**30.00**				
K	0.2810	2-5/16	117-385	**22.60**	117-490	**30.00**	115-677	**37.70**		
9/32	0.2812	2-5/16	117-386	**19.70**	117-491	**24.40**	115-678	**11.60**	117-604	**52.20**
L	0.2900	2-5/16	117-387	**26.40**	117-492	**31.80**				
M	0.2950	3-1/16	117-388	**26.40**	117-493	**31.80**				
19/64	0.2969	3-1/16	117-389	**22.90**	117-494	**28.60**	115-679	**39.90**	117-605	**52.20**
N	0.3020	3-1/16	117-390	**29.60**	117-495	**34.60**				
5/16	0.3125	3-3/16	117-391	**24.10**	117-496	**31.60**	115-680	**43.10**	117-606	**56.40**
O	0.3160	3-3/16	117-392	**31.00**	117-497	**37.00**				
P	0.3230	3-5/16	115-463	**29.90**	117-498	**37.00**				
21/64	0.3281	3-5/16	117-393	**26.20**	117-499	**33.50**			115-752	**54.60**
Q	0.3320	3-7/16	115-465	**30.30**	117-500	**38.80**				
R	0.3390	3-7/16	115-466	**30.30**	117-501	**40.30**				
11/32	0.3438	3-7/16	117-394	**25.90**	117-502	**33.50**			117-607	**69.20**
S	0.3480	3-1/2	115-468	**33.30**	117-503	**42.30**				
T	0.3580	3-1/2	115-469	**33.30**	117-504	**42.30**				
23/64	0.3594	3-1/2	117-395	**30.00**	117-505	**37.20**	115-681	**52.20**	117-608	**70.30**
U	0.3680	3-5/8	115-471	**35.20**	117-506	**42.30**				
3/8	0.3750	3-5/8	117-396	**30.70**	117-507	**38.50**			117-609	**70.30**
V	0.3770	3-5/8	115-473	**37.10**	117-508	**44.90**				
W	0.3860	3-3/4	115-474	**37.10**	117-509	**44.90**				
25/64	0.3906	3-3/4	117-397	**34.30**	117-510	**42.30**				
X	0.3970	3-3/4	115-476	**37.10**	117-511	**47.40**			115-756	**80.40**
Y	0.4040	3-7/8	115-477	**37.10**	117-512	**47.40**				
13/32	0.4062	3-7/8	117-398	**33.00**	117-513	**40.90**			117-610	**74.80**
Z	0.4130	3-7/8	115-479	**39.70**	117-514	**50.00**				
27/64	0.4219	3-15/16	117-399	**36.60**	117-515	**45.20**				
7/16	0.4375	4-1/16	117-400	**37.10**	117-516	**45.20**			117-611	**86.50**
29/64	0.4531	4-3/16	117-401	**39.10**	117-517	**50.10**			115-759	**90.30**
15/32	0.4688	4-5/16	117-402	**41.90**	117-518	**51.90**			115-760	**90.30**
31/64	0.4844	4-3/8	117-403	**42.00**	117-519	**53.80**			115-761	**93.10**
1/2	0.5000	4-1/2	117-404	**44.20**	117-520	**54.60**			117-612	**93.10**

6" Extra Length Drills HSS

- 4" flute length
- Fractional sizes



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/16	.0625	116-888	16.80
5/64	.0781	116-889	18.70
3/32	.0938	116-890	14.30
7/64	.1094	116-891	15.60
1/8	.1250	116-892	15.60
9/64	.1406	116-893	19.80
5/32	.1562	116-894	19.80
11/64	.1719	116-895	22.30
3/16	.1875	116-896	22.30

8" Extra Length Drills HSS

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



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/16	.0625	116-887	14.10
3/32	.0938	116-897	22.20
7/64	.1094	116-898	22.20
1/8	.1250	116-899	22.90
9/64	.1406	116-900	23.40
5/32	.1562	116-901	23.40
11/64	.1719	116-902	24.30
3/16	.1875	116-903	24.30
13/64	.2031	116-904	24.80
7/32	.2188	116-905	24.80
15/64	.2344	116-906	24.80
1/4	.2500	116-907	25.50
17/64	.2656	116-908	28.50
9/32	.2812	116-909	28.50
19/64	.2969	116-910	29.50
5/16	.3125	116-911	29.70
21/64	.3281	116-912	30.60
11/32	.3438	116-913	31.00
23/64	.3594	116-914	34.30
3/8	.3750	116-915	35.10
25/64	.3906	116-916	37.90
13/32	.4062	116-917	37.90
27/64	.4219	116-918	40.20
7/16	.4219	116-919	40.20
29/64	.4531	116-920	46.20
15/32	.4688	116-923	46.20
1/2	.5000	116-924	47.50

9" Extra Length Drills HSS

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



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
27/64	.4219	116-978	41.50
7/16	.4375	116-921	41.50
29/64	.4531	116-922	47.60
31/64	.4844	116-980	49.10
1/2	.5000	116-982	48.70

10" Extra Length Drills HSS

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



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/8	.1250	116-983	24.60
9/64	.1406	116-926	24.60
5/32	.1562	116-927	24.60
11/64	.1719	116-928	25.80
3/16	.1875	116-929	25.80
13/64	.2031	116-930	25.80
7/32	.2188	116-931	25.80
15/64	.2344	116-932	25.80
1/4	.2500	116-933	27.00
17/64	.2344	116-934	30.50
9/32	.2812	116-935	30.50
19/64	.2969	116-936	29.10
5/16	.3125	116-937	31.70
21/64	.3281	116-938	41.80
11/32	.3438	116-939	33.00
23/64	.3594	116-940	36.00
3/8	.3750	116-941	37.00
25/64	.3906	116-942	40.60
13/32	.4062	116-943	40.60
27/64	.4219	116-944	42.50
7/16	.4375	116-945	42.50
29/64	.4531	116-946	49.00
15/32	.4688	116-947	49.00
31/64	.4844	116-948	50.40
1/2	.5000	116-949	50.20

12" Extra Length Drills HSS

- 9" flute length
- Fractional sizes



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
7/64	.1094	116-984	33.90
1/8	.1250	116-950	27.90
9/64	.1406	116-951	28.90
5/32	.1562	116-952	28.90
11/64	.1719	116-953	31.00
3/16	.1875	116-954	31.00
13/64	.2031	116-955	31.00
7/32	.2188	116-956	33.10
15/64	.2344	116-957	33.10
1/4	.2500	116-958	33.10
17/64	.2656	116-959	34.50
9/32	.2812	116-960	34.50
19/64	.2969	116-961	37.60
5/16	.3125	116-962	37.60
21/64	.3281	116-963	40.90
11/32	.3438	116-964	40.90
23/64	.3594	116-965	43.70
3/8	.3750	116-966	43.70
25/64	.3906	116-967	48.00
13/32	.4062	116-968	48.00
27/64	.4219	116-969	50.10
7/16	.4375	116-970	50.10
29/64	.4531	116-971	59.20
15/32	.4688	116-972	59.20
31/64	.4844	116-973	62.50
1/2	.5000	116-974	62.50
33/64	.5156	116-985	78.70
17/32	.5312	116-976	81.10
35/64	.5469	116-986	92.40
9/16	.5625	116-987	92.40
37/64	.5781	116-988	98.40
19/32	.5938	116-989	98.40
39/64	.6094	116-981	91.20
5/8	.6250	116-990	103.60
41/64	.6406	116-991	126.10
21/32	.6562	116-992	126.10
43/64	.6719	116-993	134.40
11/16	.6875	116-994	136.00
45/64	.7031	116-995	140.90
23/32	.7188	116-996	140.90
3/4	.7500	116-997	152.30
25/32	.7812	116-998	167.10
13/16	.8125	116-999	179.90
7/8	.8750	117-000	216.00

18" Extra Length Drills HSS

- 12" flute length
- Fractional sizes



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
3/16	.1875	117-027	**62.80**
13/64	.2031	117-028	**62.80**
7/32	.2188	117-029	**64.50**
15/64	.2344	117-030	**64.50**
1/4	.2500	117-031	**62.80**
17/64	.2656	117-032	**68.50**
9/32	.2812	117-033	**68.50**
19/64	.2969	117-034	**72.60**
5/16	.3125	117-035	**72.60**
21/64	.3281	117-036	**74.10**
11/32	.3438	117-037	**74.10**
23/64	.3594	117-038	**75.60**
3/8	.3750	117-039	**75.60**
25/64	.3906	117-040	**79.60**
13/32	.4062	117-041	**79.60**
27/64	.4219	117-043	**84.10**
7/16	.4375	117-045	**84.10**
29/64	.4531	117-046	**98.00**
15/32	.4688	117-047	**98.00**
31/64	.4844	117-048	**102.10**
1/2	.5000	117-049	**102.10**
17/32	.5312	117-051	**153.90**
35/64	.5469	117-052	**154.70**
9/16	.5625	117-053	**161.40**
19/32	.5938	117-054	**168.70**
5/8	.625	117-055	**176.80**
21/32	.6562	117-056	**184.00**
11/16	.6875	117-057	**211.90**
23/32	.7031	117-059	**216.40**
3/4	.7500	117-060	**228.10**
25/32	.7812	117-061	**233.20**
13/16	.8125	117-062	**247.90**
7/8	.8750	117-064	**269.70**
1	1.000	117-065	**312.90**

24" Extra Length Drills HSS

- 18" flute length
- Fractional sizes



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
3/8	.3750	117-066	**115.90**
7/16	.4375	117-067	**129.00**
1/2	.5000	117-068	**156.60**
9/16	.5625	117-069	**238.90**
5/8	.625	117-070	**261.60**
3/4	.7500	117-071	**337.80**
7/8	.8750	117-072	**399.40**
1	1.000	117-073	**463.50**

48" Extra Length Drills HSS

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



Size (in.)	Decimal Equiv.	HSS Code No.	Price $
1/4	.2500	117-074	**115.10**
5/16	.3125	117-075	**125.10**
3/8	.3750	117-076	**141.60**
1/2	.5000	117-078	**170.00**

Taper Shank Drills HSS

- High Speed Steel
- General purpose
- 118º point



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	114-000	**28.50**
5/64	0.0781	1-3/8	4-3/4	1	114-001	**28.50**
1/8	0.1250	1-7/8	5-1/8	1	114-002	**23.90**
9/64	0.1406	2-1/8	5-3/8	1	114-003	**25.00**
5/32	0.1562	2-1/8	5-3/8	1	114-004	**24.00**
11/64	0.1719	2-1/2	5-3/4	1	114-005	**25.00**
3/16	0.1875	2-1/2	5-3/4	1	114-006	**16.60**
13/64	0.2031	2-3/4	6	1	114-007	**18.60**
7/32	0.2188	2-3/4	6	1	114-008	**18.00**
15/64	0.2344	2-7/8	6-1/8	1	114-009	**21.30**
1/4	0.2500	2-7/8	6-1/8	1	114-010	**18.50**
17/64	0.2656	3	6-1/4	1	114-011	**20.50**
9/32	0.2812	3	6-1/4	1	114-012	**19.80**
19/64	0.2969	3-1/8	6-3/8	1	114-013	**25.30**
5/16	0.3125	3-1/8	6-3/8	1	114-014	**19.80**
21/64	0.3281	3-1/4	6-1/2	1	114-015	**27.90**
11/32	0.3438	3-1/4	6-1/2	1	114-016	**29.10**
23/64	0.3594	3-1/2	6-3/4	1	114-017	**32.30**
3/8	0.3750	3-1/2	6-3/4	1	114-018	**30.80**
25/64	0.3906	3-5/8	7	1	114-019	**33.40**
13/32	0.4062	3-5/8	7	1	114-020	**31.00**
27/64	0.4219	3-7/8	7-1/4	1	114-022	**35.50**
7/16	0.4375	3-7/8	7-1/4	1	114-023	**34.40**
29/64	0.4531	4-1/8	7-1/2	1	114-024	**39.10**
15/32	0.4688	4-1/8	7-1/2	1	114-025	**39.30**
31/64	0.4844	4-3/8	8-1/4	2	114-026	**44.20**
1/2	0.5000	4-3/8	8-1/4	2	114-027	**40.10**
33/64	0.5156	4-5/8	8-1/2	2	114-028	**48.10**
17/32	0.5312	4-5/8	8-1/2	2	114-029	**45.00**
35/64	0.5469	4-7/8	8-3/4	2	114-030	**52.40**
9/16	0.5625	4-7/8	8-3/4	2	114-031	**48.80**
37/64	0.5781	4-7/8	8-3/4	2	114-032	**55.60**
19/32	0.5938	4-7/8	8-3/4	2	114-033	**52.60**
39/64	0.6094	4-7/8	8-3/4	2	114-034	**58.20**
5/8	0.6250	4-7/8	8-3/4	2	114-035	**53.60**
41/64	0.6406	5-1/8	9	2	114-036	**64.10**
21/32	0.6562	5-1/8	9	2	114-037	**59.60**
43/64	0.6719	5-3/8	9-1/4	2	114-038	**68.70**
11/16	0.6875	5-3/8	9-1/4	2	114-039	**64.00**
45/64	0.7031	5-5/8	9-1/2	2	114-040	**71.60**
23/32	0.7188	5-5/8	9-1/2	2	114-041	**66.50**
47/64	0.7344	5-7/8	9-3/4	2	114-042	**75.90**
3/4	0.7500	5-7/8	9-3/4	2	114-043	**76.80**
49/64	0.7656	6	9-7/8	2	114-044	**91.20**
25/32	0.7812	6	9-7/8	2	114-045	**87.20**
51/64	0.7969	6-1/8	10-3/4	3	114-046	**100.00**
13/16	0.8125	6-1/8	10-3/4	3	114-047	**92.70**
53/64	0.8281	6-1/8	10-3/4	3	114-048	**104.30**
27/32	0.8438	6-1/8	10-3/4	3	114-049	**100.50**
55/64	0.8594	6-1/8	10-3/4	3	114-050	**107.70**
7/8	0.8750	6-1/8	10-3/4	3	114-051	**105.90**
57/64	0.8906	6-1/8	10-3/4	3	114-052	**110.10**
29/32	0.9062	6-1/8	10-3/4	3	114-053	**108.50**
59/64	0.9219	6-1/8	10-3/4	3	114-054	**111.50**
15/16	0.9375	6-1/8	10-3/4	3	114-055	**111.10**
61/64	0.9531	6-3/8	11	3	114-056	**114.50**
31/32	0.9688	6-3/8	11	3	114-057	**113.80**
63/64	0.9844	6-3/8	11	3	114-058	**121.80**
1	1.0000	6-3/8	11	3	114-059	**116.40**
1-1/64	1.0156	6-1/2	11-1/8	3	114-060	**138.40**
1-1/32	1.0312	6-1/2	11-1/8	3	114-061	**125.70**
1-3/64	1.0469	6-5/8	11-1/4	3	114-062	**145.30**
1-1/16	1.0625	6-5/8	11-1/4	3	114-063	**127.80**
1-5/64	1.0781	6-7/8	12-1/2	4	114-064	**167.50**
1-3/32	1.0938	6-7/8	12-1/2	4	114-065	**151.00**
1-7/64	1.1094	7-1/8	12-3/4	4	114-067	**174.30**
1-1/8	1.1250	7-1/8	12-3/4	4	114-068	**157.00**

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	114-069	**184.60**
1-5/32	1.1562	7-1/4	12-7/8	4	114-070	**164.30**
1-11/64	1.1719	7-3/8	13	4	114-071	**186.60**
1-3/16	1.1875	7-3/8	13	4	114-072	**171.00**
1-13/64	1.2031	7-1/2	13-1/8	4	114-073	**199.80**
1-7/32	1.2188	7-1/2	13-1/8	4	114-074	**184.00**
1-15/64	1.2344	7-7/8	13-1/2	4	114-075	**217.90**
1-1/4	1.2500	7-7/8	13-1/2	4	114-076	**192.50**
1-17/64	1.2656	8-1/2	14-1/8	4	114-077	**251.20**
1-9/32	1.2812	8-1/2	14-1/8	4	114-078	**239.80**
1-19/64	1.2969	8-5/8	14-1/4	4	114-079	**267.50**
1-5/16	1.3125	8-5/8	14-1/4	4	114-080	**241.20**
1-21/64	1.3281	8-3/4	14-3/8	4	114-081	**276.50**
1-11/32	1.3438	8-3/4	14-3/8	4	114-082	**257.50**
1-23/64	1.3594	8-7/8	14-1/2	4	114-083	**282.50**
1-3/8	1.3750	8-7/8	14-1/2	4	114-084	**258.90**
1-25/64	1.3906	9	14-5/8	4	114-085	**290.10**
1-13/32	1.4062	9	14-5/8	4	114-086	**279.50**
1-27/64	1.4219	9-1/8	14-3/4	4	114-087	**300.50**
1-7/16	1.4375	9-1/8	14-3/4	4	114-088	**279.90**
1-29/64	1.4531	9-1/4	14-7/8	4	114-089	**316.00**
1-15/32	1.4688	9-1/4	14-7/8	4	114-090	**301.20**
1-31/64	1.4844	9-3/8	15	4	114-091	**324.30**
1-1/2	1.5000	9-3/8	15	4	114-092	**297.60**
1-33/64	1.5156	9-3/8	16-3/8	5	114-093	**417.30**
1-17/32	1.5312	9-3/8	16-3/8	5	114-094	**347.20**
1-35/64	1.5469	9-5/8	16-5/8	5	114-095	**443.70**
1-9/16	1.5625	9-5/8	16-5/8	5	114-096	**360.30**
1-37/64	1.5781	9-7/8	16-7/8	5	114-097	**472.70**
1-19/32	1.5938	9-7/8	16-7/8	5	114-098	**392.90**
1-39/64	1.6094	10	17	5	114-099	**495.30**
1-5/8	1.6250	10	17	5	114-100	**389.20**
1-41/64	1.6406	10-1/8	17-1/8	5	114-101	**527.50**
1-21/32	1.6562	10-1/8	17-1/8	5	114-102	**422.40**
1-43/64	1.6719	10-1/8	17-1/8	5	114-103	**548.00**
1-11/16	1.6875	10-1/8	17-1/8	5	114-104	**429.00**
1-45/64	1.7031	10-1/8	17-1/8	5	114-105	**565.80**
1-23/32	1.7188	10-1/8	17-1/8	5	114-106	**454.40**
1-47/64	1.7344	10-1/8	17-1/8	5	114-107	**544.60**
1-3/4	1.7500	10-1/8'	17-1/8	5	114-108	**459.20**
1-25/32	1.7812	10-1/8	17-1/8	5	114-109	**481.80**
1-13/16	1.8125	10-1/8	17-1/8	5	114-110	**489.40**
1-27/32	1.8438	10-1/8	17-1/8	5	114-111	**516.10**
1-7/8	1.8750	10-3/8	17-3/8	5	114-112	**512.20**
1-29/32	1.9062	10-3/8	17-3/8	5	114-113	**539.60**
1-15/16	1.9375	10-3/8	17-3/8	5	114-114	**551.10**
1-31/32	1.9688	10-3/8	17-3/8	5	114-115	**568.60**
2	2.0000	10-3/8	17-3/8	5	114-116	**572.20**
2-1/32	2.0312	10-3/8	17-3/8	5	114-117	**606.80**
2-1/16	2.0625	10-1/4	17-3/8	5	114-118	**605.60**
2-3/32	2.0938	10-1/4	17-3/8	5	114-119	**646.90**
2-1/8	2.1250	10-1/4	17-3/8	5	114-120	**640.70**
2-5/32	2.1562	10-1/4	17-3/8	5	114-121	**689.80**
2-3/16	2.1875	10-1/4	17-3/8	5	114-122	**695.10**
2-7/32	2.2188	10-1/8	17-3/8	5	114-123	**727.50**
2-1/4	2.2500	10-1/8	17-3/8	5	114-124	**725.80**
2-9/32	2.2812	10-1/8	17-3/8	5	114-125	**805.40**
2-5/16	2.3125	10-1/8	17-3/8	5	114-126	**782.20**
2-11/32	2.3438	10-1/8	17-3/8	5	114-127	**829.90**
2-3/8	2.3750	10-1/8	17-3/8	5	114-128	**805.10**
2-13/32	2.4062	11-1/4	18-3/4	5	114-129	**1,054.80**
2-7/16	2.4375	11-1/4	18-3/4	5	114-130	**1,026.70**
2-15/32	2.4688	11-1/4	18-3/4	5	114-131	**1,085.90**
2-1/2	2.5000	11-1/4	18-3/4	5	114-132	**1,049.70**
2-17/32	2.5312	11-7/8	19-1/2	5	114-133	**1,182.20**
2-9/16	2.5625	11-7/8	19-1/2	5	114-134	**1,157.20**
2-5/8	2.6250	11-7/8	19-1/2	5	114-135	**1,229.30**
2-11/16	2.6875	12-3/4	20-3/8	5	114-136	**1,342.50**
2-23/32	2.7188	12-3/4	20-3/8	5	114-137	**1,511.90**
2-3/4	2.7500	12-3/4	20-3/8	5	114-138	**1,368.00**
2-13/16	2.8125	13-3/8	21-1/8	5	114-139	**1,502.30**
2-27/32	2.8438	13-3/8	21-1/8	5	114-140	**1,623.20**
2-7/8	2.8750	13-3/8	21-1/8	5	114-141	**1,571.40**

Taper Shank Drills HSS - cont'd

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
2-15/16	2.9375	14	21-3/4	5	114-142	**1,670.80**
3	3.0000	14	21-3/4	5	114-143	**1,728.40**
3-1/16	3.0625	14-5/8	24-1/2	6	114-144	**2,291.70**
3-1/8	3.1250	14-5/8	24-1/2	6	114-145	**2,291.70**
3-3/16	3.1875	14-5/8	24-1/2	6	114-146	**2,615.00**
3-1/4	3.2500	15-1/2	25-1/2	6	114-147	**2,615.00**
3-5/16	3.3125	15-1/2	25-1/2	6	114-148	**2,891.00**
3-3/8	3.3750	15-1/2	25-1/2	6	114-149	**3,092.20**
3-7/16	3.4375	15-1/2	25-1/2	6	114-150	**3,888.80**
3-1/2	3.5000	16-3/8	26-1/2	6	114-151	**3,570.70**
3-5/8	3.6250	16-3/8	26-1/2	6	114-152	**4,028.70**
3-3/4	3.7500	16-3/8	26-1/2	6	114-153	**4,936.80**
3-7/8	3.8750	16-3/8	26-1/2	6	114-154	**5,691.80**
4	4.0000	17-1/2	27-1/2	6	114-155	**6,219.80**

HSCO Taper Shank Drills

- Super Cobalt
- Heavy duty
- 135° notched point



Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSCO Code No.	Price $
1/2	.5000	4-3/8	8-1/4	2	106-302	**76.40**
33/64	.5156	4-5/8	8-1/2	2	106-304	**93.40**
17/32	.5312	4-5/8	8-1/2	2	106-306	**86.80**
35/64	.5469	4-7/8	8-3/4	2	106-308	**97.80**
9/16	.5625	4-7/8	8-3/4	2	106-310	**90.70**
37/64	.5781	4-7/8	8-3/4	2	106-312	**103.70**
19/32	.5938	4-7/8	8-3/4	2	106-314	**100.80**
39/64	.6094	4-7/8	8-3/4	2	106-316	**114.30**
5/8	.625	4-7/8	8-3/4	2	106-318	**103.20**
41/64	.6406	5-1/8	9-3/4	3	106-320	**130.60**
21/32	.6562	5-1/8	9-3/4	3	106-322	**118.10**
43/64	.6719	5-3/8	10	3	106-324	**139.60**
11/16	.6875	5-3/8	10	3	106-326	**126.10**
45/64	.7031	5-5/8	10-1/4	3	106-328	**152.20**
23/32	.7188	5-5/8	10-1/4	3	106-330	**140.00**
47/64	.7344	5-7/8	10-1/2	3	106-332	**154.50**
3/4	.750	5-7/8	10-1/2	3	106-334	**146.20**
49/64	.7656	6	10-5/8	3	106-336	**165.50**
25/32	.7812	6	10-5/8	3	106-338	**153.70**
51/64	.7969	6-1/8	10-3/4	3	106-340	**175.60**
13/16	.8125	6-1/8	10-3/4	3	106-342	**158.70**
53/64	.8281	6-1/8	10-3/4	3	106-344	**204.60**
27/32	.8438	6-1/8	10-3/4	3	106-346	**188.40**
55/64	.8594	6-1/8	10-3/4	3	106-348	**204.60**
7/8	.875	6-1/8	10-3/4	3	106-350	**188.40**
57/64	.8906	6-1/8	10-3/4	3	106-352	**204.60**
29/32	.9062	6-1/8	10-3/4	3	106-354	**184.90**
59/64	.9219	6-1/8	10-3/4	3	106-356	**240.50**
15/16	.9375	6-1/8	10-3/4	3	106-358	**217.20**
61/64	.9531	6-3/8	11	3	106-360	**272.10**
31/32	.9688	6-3/8	11	3	106-362	**257.60**
63/64	.9844	6-3/8	11	3	106-364	**264.80**
1	1.000	6-3/8	11	3	106-366	**245.80**
1-1/64	1.0156	6-1/2	12-1/8	4	106-367	**357.70**
1-1/32	1.0312	6-1/2	12-1/8	4	106-368	**329.70**
1-3/64	1.0469	6-5/8	12-1/4	4	106-369	**325.30**
1-1/16	1.0625	6-5/8	12-1/4	4	106-370	**314.90**
1-1/8	1.125	7-1/8	12-3/4	4	106-374	**344.50**
1-5/32	1.1562	7-1/4	12-7/8	4	106-376	**409.00**
1-3/16	1.1875	7-3/8	13	4	106-378	**390.60**
1-7/32	1.2188	7-1/2	13-1/8	4	106-380	**466.10**
1-1/4	1.250	7-7/8	13-1/2	5	106-382	**453.40**
1-5/16	1.3125	8-5/8	15/7/8	5	106-386	**543.50**
1-3/8	1.375	8-7/8	15-7/8	5	106-390	**584.30**
1-7/16	1.4375	9-1/8	16-1/8	5	106-394	**690.70**
1-1/2	1.500	9-3/8	16-3/8	5	106-398	**741.60**
1-5/8	1.625	10	17	5	106-406	**872.90**
1-3/4	1.750	10-1/8	17-1/8	5	106-414	**1,092.80**

Taper Shank Drills - Shank Larger Than Standard

- High Speed Steel
- 118º point



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	114-156	**41.80**
25/64	0.3906	3-5/8	7-1/2	2	114-157	**46.00**
13/32	0.4062	3-5/8	7-1/2	2	114-158	**43.60**
27/64	0.4219	3-7/8	7-3/4	2	114-159	**46.00**
7/16	0.4375	3-7/8	7-3/4	2	114-160	**50.00**
29/64	0.4531	4-1/8	8	2	114-161	**50.00**
15/32	0.4688	4-1/8	8	2	114-162	**49.80**
41/64	0.6406	5-1/8	9-3/4	3	114-163	**87.50**
21/32	0.6562	5-1/8	9-3/4	3	114-164	**83.90**
43/64	0.6719	5-3/8	10	3	114-165	**94.00**
11/16	0.6875	5-3/8	10	3	114-166	**92.00**
45/64	0.7031	5-5/8	10-1/4	3	114-167	**101.60**
23/32	0.7188	5-5/8	10-1/4	3	114-168	**98.50**
47/64	0.7344	5-7/8	10-1/2	3	114-169	**109.90**
3/4	0.7500	5-7/8	10-1/2	3	114-170	**103.20**
49/64	0.7656	6	10-5/8	3	114-171	**122.20**
25/32	0.7812	6	10-5/8	3	114-172	**113.50**
1	1.0000	6-3/8	12	4	114-173	**165.20**
1-1/32	1.0312	6-1/2	12-1/8	4	114-174	**186.00**
1-1/16	1.0625	6-5/8	12-1/4	4	114-175	**194.40**

Taper Shank Drills - Shank Smaller Than Standard

- High Speed Steel
- 118º point



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	114-176	**52.60**
1/2	0.5000	4-3/8	7-3/4	1	114-177	**46.00**
33/64	0.5156	4-5/8	8	1	114-178	**57.70**
17/32	0.5312	4-5/8	8	1	114-179	**52.90**
35/64	0.5469	4-7/8	8-1/4	1	114-180	**61.70**
9/16	0.5625	4-7/8	8-1/4	1	114-181	**57.90**
37/64	0.5781	4-7/8	8-1/4	1	114-182	**65.30**
51/64	0.7969	6-1/8	10	2	114-183	**112.50**
13/16	0.8125	6-1/8	10	2	114-184	**102.90**
53/64	0.8281	6-1/8	10	2	114-185	**119.70**
27/32	0.8438	6-1/8	10	2	114-186	**109.90**
55/64	0.8594	6-1/8	10	2	114-187	**124.80**
7/8	0.8750	6-1/8	10	2	114-188	**113.10**
57/64	0.8906	6-1/8	10	2	114-189	**128.80**
29/32	0.9062	6-1/8	10	2	114-190	**118.20**
1	1.0000	6-1/4	10-1/8	2	114-191	**126.40**
1-5/64	1.0781	6-7/8	11-1/2	3	114-192	**199.00**
1-3/32	1.0938	6-7/8	11-1/2	3	114-193	**179.50**
1-7/64	1.1094	7-1/8	11-3/4	3	114-194	**202.20**
1-1/8	1.1250	7-1/8	11-3/4	3	114-195	**186.40**
1-9/64	1.1406	7-1/4	11-7/8	3	114-196	**214.80**
1-5/32	1.1562	7-1/4	11-7/8	3	114-197	**203.10**
1-11/64	1.1719	7-3/8	12	3	114-198	**221.70**
1-3/16	1.1875	7-3/8	12	3	114-199	**207.10**
1-13/64	1.2031	7-1/2	12-1/8	3	114-200	**238.00**
1-7/32	1.2188	7-1/2	12-1/8	3	114-201	**222.60**
1-15/64	1.2344	7-7/8	12-1/2	3	114-202	**259.30**
1-1/4	1.2500	7-7/8	12-1/2	3	114-203	**244.30**
1-5/16	1.3125	8-5/8	13-1/4	3	114-204	**302.10**
1-3/8	1.3750	8-7/8	13-1/2	3	114-205	**318.10**
1-7/16	1.4375	9-1/8	13-3/4	3	114-206	**351.00**

Taper Shank Drills - Shank Smaller Than Standard cont'd

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1-1/2	1.5000	9-3/8	14	3	114-207	**369.20**
1-33/64	1.5156	9-3/8	15	4	114-208	**417.50**
1-17/32	1.5312	9-3/8	15	4	114-209	**390.40**
1-35/64	1.5469	9-5/8	15-1/4	4	114-210	**444.00**
1-9/16	1.5625	9-5/8	15-1/4	4	114-211	**417.60**
1-37/64	1.5781	9-7/8	15-1/2	4	114-212	**472.00**
1-19/32	1.5938	9-7/8	15-1/2	4	114-213	**446.40**
1-39/64	1.6094	10	15-5/8	4	114-214	**490.20**
1-5/8	1.6250	10	15-5/8	4	114-215	**456.60**
1-41/64	1.6406	10-1/8	15-3/4	4	114-216	**528.40**
1-21/32	1.6562	10-1/8	15-3/4	4	114-217	**511.50**
1-43/64	1.6719	10-1/8	15-3/4	4	114-218	**548.40**
1-11/16	1.6875	10-1/8	15-3/4	4	114-219	**511.80**
1-45/64	1.7031	10-1/8	15-3/4	4	114-220	**564.80**
1-23/32	1.7188	10-1/8	15-3/4	4	114-221	**523.40**
1-47/64	1.7344	10-3/8	16-1/4	4	114-222	**544.70**
1-3/4	1.7500	10-3/8	16-1/4	4	114-223	**496.70**
1-25/32	1.7812	10-3/8	16-1/4	4	114-224	**547.70**
1-13/16	1.8125	10-3/8	16-1/4	4	114-225	**547.70**
1-27/32	1.8438	10-3/8	16-1/4	4	114-226	**583.50**
1-7/8	1.8750	10-1/2	16-1/2	4	114-227	**580.20**
1-57/64	1.8906	10-1/2	16-1/2	4	114-228	**653.80**
1-29/32	1.9062	10-1/2	16-1/2	4	114-229	**627.20**
1-15/16	1.9375	10-5/8	16-5/8	4	114-230	**618.90**
1-31/32	1.9688	10-5/8	16-5/8	4	114-231	**638.10**
2	2.0000	10-5/8	16-5/8	4	114-232	**621.80**
2-1/32	2.0312	10-3/8	16-1/4	4	114-233	**660.30**
2-1/16	2.0625	10-1/4	16-1/4	4	114-234	**660.30**
2-3/32	2.0938	10-1/4	16-1/4	4	114-235	**718.40**
2-1/8	2.1250	10-1/4	16-1/4	4	114-236	**718.40**
2-5/32	2.1562	10-1/4	16-1/4	4	114-237	**764.70**
2-3/16	2.1875	10-1/4	16-1/4	4	114-238	**764.70**
2-7/32	2.2188	10-1/8	16-1/4	4	114-239	**805.50**
2-1/4	2.2500	10-1/8	16-1/8	4	114-240	**805.50**
2-5/16	2.3125	10-1/8	16-1/8	4	114-241	**870.70**
2-3/8	2.3750	10-1/8	16-1/8	4	114-242	**884.90**
2-7/16	2.4375	11-1/4	17-1/4	4	114-243	**1,122.20**
2-1/2	2.5000	11-1/4	17-1/4	4	114-244	**1,154.20**
2-5/8	2.6250	11-7/8	18	4	114-245	**1,356.20**
2-3/4	2.7500	12-3/4	19-1/8	4	114-246	**1,526.00**
3-1/16	3.0625	14-1/4	22	5	114-247	**2,498.90**
3-1/8	3.1250	14-1/4	22	5	114-248	**2,636.10**
3-3/16	3.1875	14-1/4	22	5	114-249	**2,636.10**
3-1/4	3.2500	15-1/4	23	5	114-250	**2,636.10**
3-5/16	3.3125	15-1/4	23	5	114-251	**3,079.60**
3-3/8	3.3750	15-1/4	23	5	114-252	**3,255.20**
3-7/16	3.4375	15-1/4	23	5	114-253	**3,502.00**
3-1/2	3.5000	16-1/4	24	5	114-254	**3,783.20**
3-5/8	3.6250	16-1/4	24	5	114-255	**4,224.10**

Taper Shank Drills HSS - Letter Sizes

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	114-256	**33.20**
B	0.2380	2-7/8	6-1/8	114-257	**33.20**
C	0.2420	2-7/8	6-1/8	114-258	**33.20**
D	0.2460	2-7/8	6-1/8	114-259	**29.40**
E	0.2500	2-7/8	6-1/8	114-260	**18.50**
F	0.2570	3	6-1/4	114-261	**29.20**
G	0.2610	3	6-1/4	114-262	**34.70**
H	0.2660	3	6-1/4	114-263	**34.70**
I	0.2720	3	6-1/4	114-264	**34.70**
J	0.2770	3	6-1/4	114-265	**32.00**
K	0.2810	3	6-1/4	114-266	**36.50**
L	0.2900	3-1/8	6-3/8	114-267	**36.50**
M	0.2950	3-1/8	6-3/8	114-268	**36.50**
N	0.3020	3-1/8	6-3/8	114-269	**36.50**
O	0.3160	3-1/4	6-1/2	114-270	**43.20**
P	0.3230	3-1/4	6-1/2	114-271	**43.20**
Q	0.3320	3-1/4	6-1/2	114-272	**45.30**
R	0.3390	3-1/4	6-1/2	114-273	**49.80**
S	0.3480	3-1/2	6-3/4	114-274	**52.20**
T	0.3580	3-1/2	6-3/4	114-275	**52.20**
U	0.3680	3-1/2	6-3/4	114-276	**52.20**
V	0.3770	3-5/8	7	114-277	**54.90**
W	0.3860	3-5/8	7	114-278	**54.90**
X	0.3970	3-5/8	7	114-279	**56.50**
Y	0.4040	3-5/8	7	114-280	**56.50**
Z	0.4130	3-7/8	7-1/4	114-281	**59.10**

Taper Shank Drills HSS - Wire Gauge Sizes

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	114-282	**32.00**
2	0.2210	114-283	**32.00**
3	0.2130	114-284	**32.00**
4	0.2090	114-285	**32.00**
5	0.2055	114-286	**32.00**
6	0.2040	114-287	**32.00**
7	0.2010	114-288	**30.60**
8	0.1990	114-289	**30.60**
9	0.1960	114-290	**30.60**
10	0.1935	114-291	**30.60**
11	0.1910	114-292	**30.60**
12	0.1890	114-293	**30.60**
13	0.1850	114-294	**30.60**
14	0.1820	114-295	**30.60**
15	0.1800	114-296	**30.60**
16	0.1770	114-297	**30.60**
17	0.1730	114-298	**30.60**
18	0.1695	114-299	**30.60**
19	0.1660	114-300	**30.60**
20	0.1610	114-301	**28.60**
21	0.1590	114-302	**28.60**
22	0.1570	114-303	**28.60**
23	0.1540	114-304	**28.60**
24	0.1520	114-305	**28.60**
25	0.1495	114-306	**28.60**
26	0.1470	114-307	**28.60**
27	0.1440	114-308	**28.60**
28	0.1405	114-309	**28.60**
29	0.1360	114-310	**28.60**
30	0.1285	114-311	**28.60**
31	0.1200	114-312	**28.60**
37	0.1040	114-313	**28.60**
39	0.0995	114-314	**28.60**
40	0.0980	114-315	**28.60**
44	0.0860	114-316	**28.60**
47	0.0785	114-317	**28.60**

Taper Shank Drills HSS - Metric

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	114-318	**25.00**
3.20	0.1260	1-7/8"	5-1/8"	1	114-319	**26.20**
3.50	0.1378	2-1/8"	5-3/8"	1	114-320	**25.00**
3.80	0.1496	2-1/8"	5-3/8"	1	114-321	**26.20**
4.00	0.1575	2-1/8"	5-3/8"	1	114-322	**25.00**
4.20	0.1654	2-1/2"	5-3/4"	1	114-323	**26.20**
4.50	0.1772	2-1/2"	5-3/4"	1	114-324	**20.40**
4.80	0.1890	2-1/2"	5-3/4"	1	114-325	**20.40**
5.00	0.1969	2-3/4"	6"	1	114-326	**20.40**
5.20	0.2047	2-3/4"	6"	1	114-327	**20.40**
5.50	0.2165	2-3/4"	6"	1	114-328	**20.40**
5.80	0.2283	2-7/8"	6-1/8"	1	114-329	**21.30**
6.00	0.2362	2-7/8"	6-1/8"	1	114-330	**21.30**
6.20	0.2441	2-7/8"	6-1/8"	1	114-331	**22.60**
6.50	0.2559	3"	6-1/4"	1	114-332	**22.60**
6.80	0.2677	3"	6-1/4"	1	114-333	**23.70**
7.00	0.2756	3"	6-1/4"	1	114-334	**22.60**
7.20	0.2835	3-1/8"	6-3/8"	1	114-335	**23.80**
7.50	0.2953	3-1/8"	6-3/8"	1	114-336	**22.60**
7.80	0.3071	3-1/8"	6-3/8"	1	114-337	**25.00**
8.00	0.3150	3-1/4"	6-1/2"	1	114-338	**30.70**
8.20	0.3228	3-1/4"	6-1/2"	1	114-339	**32.40**
8.50	0.3346	3-1/4"	6-1/2"	1	114-340	**32.40**
8.80	0.3465	3-1/2"	6-3/4"	1	114-341	**36.40**
9.00	0.3543	3-1/4"	6-1/2"	1	114-342	**35.30**
9.20	0.3622	3-1/4"	6-1/2"	1	114-343	**35.40**
9.50	0.3740	3-1/4"	6-1/2"	1	114-344	**35.40**
9.80	0.3858	3-5/8"	7"	1	114-345	**35.40**
10.00	0.3937	3-5/8"	7"	1	114-346	**35.40**
10.20	0.4016	3-5/8"	7"	1	114-347	**36.40**
10.50	0.4134	3-7/8"	7-1/4"	1	114-348	**39.10**
10.80	0.4252	3-7/8"	7-1/4"	1	114-349	**39.50**
11.00	0.4331	3-7/8"	7-1/4"	1	114-350	**39.30**
11.20	0.4409	4-1/8"	7-1/2"	1	114-351	**43.00**
11.50	0.4528	4-1/8"	7-1/2"	1	114-352	**43.00**
11.80	0.4646	4-1/8"	7-1/2"	1	114-353	**46.30**
12.00	0.4724	4-3/8"	8-1/4"	2	114-354	**46.20**
12.20	0.4803	4-3/8"	8-1/4"	2	114-355	**52.80**
12.50	0.4921	4-3/8"	8-1/4"	2	114-356	**46.20**
12.80	0.5039	4-5/8"	8-1/2"	2	114-357	**54.10**
13.00	0.5118	4-5/8"	8-1/2"	2	114-358	**51.70**
13.20	0.5197	4-5/8"	8-1/2"	2	114-359	**56.40**
13.50	0.5315	4-5/8"	8-1/2"	2	114-360	**56.40**
13.80	0.5433	4-7/8"	8-3/4"	2	114-361	**58.90**
14.00	0.5512	4-7/8"	8-3/4"	2	114-362	**53.90**
14.25	0.5610	4-7/8"	8-3/4"	2	114-363	**61.90**
14.50	0.5709	4-7/8"	8-3/4"	2	114-364	**60.00**
14.75	0.5807	4-7/8"	8-3/4"	2	114-365	**68.70**
15.00	0.5906	4-7/8"	8-3/4"	2	114-366	**58.40**
15.25	0.6004	4-7/8"	8-3/4"	2	114-367	**64.60**
15.50	0.6102	4-7/8"	8-3/4"	2	114-368	**61.70**
15.75	0.6201	4-7/8"	8-3/4"	2	114-369	**64.50**
16.00	0.6299	5-1/8"	9"	2	114-370	**66.10**
16.25	0.6398	5-1/8"	9"	2	114-371	**77.60**
16.50	0.6496	5-1/8"	9"	2	114-372	**67.90**
16.75	0.6594	5-3/8"	9-1/4"	2	114-373	**81.70**
17.00	0.6693	5-3/8"	9-1/4"	2	114-374	**68.40**
17.25	0.6791	5-3/8"	9-1/4"	2	114-375	**81.60**
17.50	0.6890	5-5/8"	9-1/2"	2	114-376	**72.60**
18.00	0.7087	5-5/8"	9-1/2"	2	114-377	**72.60**
18.50	0.7283	5-5/8"	9-1/2"	2	114-378	**83.50**
19.00	0.7480	5-7/8"	9-3/4"	2	114-379	**81.30**
19.50	0.7677	6"	9-7/8"	2	114-380	**99.50**
20.00	0.7874	6"	9-7/8"	3	114-381	**100.40**
20.50	0.8071	6-1/8"	10-3/4"	3	114-382	**110.90**
21.00	0.8268	6-1/8"	10-3/4"	3	114-383	**111.40**
21.50	0.8465	6-1/8"	10-3/4"	3	114-384	**123.10**
22.00	0.8661	6-1/8"	10-3/4"	3	114-385	**111.40**

Taper Shank Drills HSS - Metric - cont'd

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 $
22.50	0.8858	6-1/8"	10-3/4"	3	114-386	**120.00**
23.00	0.9055	6-1/8"	10-3/4"	3	114-387	**111.90**
23.50	0.9252	6-1/8"	10-3/4"	3	114-388	**123.60**
24.00	0.9449	6-3/8"	11"	3	114-389	**121.70**
24.50	0.9646	6-3/8"	11"	3	114-390	**134.30**
25.00	0.9843	6-3/8"	11"	3	114-391	**130.10**
25.50	1.0039	6-1/2"	11-1/8"	3	114-392	**150.00**
26.00	1.0236	6-1/2"	11-1/8"	3	114-393	**136.00**
26.50	1.0433	6-5/8"	11-1/4"	3	114-394	**169.90**
27.00	1.0630	6-5/8"	11-1/4"	3	114-395	**167.90**
27.50	1.0827	6-7/8"	12-1/2"	4	114-396	**188.80**
28.00	1.1024	7-1/8"	12-3/4"	4	114-397	**176.30**
28.50	1.1220	7-1/8"	12-3/4"	4	114-398	**206.90**
29.00	1.1417	7-1/4"	12-7/8"	4	114-399	**182.70**
29.50	1.1614	7-3/8"	13"	4	114-400	**225.40**
30.00	1.1811	7-3/8"	13"	4	114-401	**191.90**
30.50	1.2008	7-1/2"	13-1/8"	4	114-402	**243.70**
31.00	1.2205	7-7/8"	13-1/2"	4	114-403	**221.90**
31.50	1.2402	7-7/8"	13-1/2"	4	114-404	**253.60**
32.00	1.2598	8-1/2"	14-1/8"	4	114-405	**259.00**
32.50	1.2795	8-1/2"	14-1/8"	4	114-406	**306.80**
33.00	1.2992	8-5/8"	14-1/4"	4	114-407	**265.70**
33.50	1.3189	8-3/4"	14-3/8"	4	114-408	**329.50**
34.00	1.3386	8-3/4"	14-3/8"	4	114-409	**288.60**
34.50	1.3583	8-7/8"	14-1/2"	4	114-410	**348.00**
35.00	1.3780	9"	14-5/8"	4	114-411	**313.50**
35.50	1.3976	9"	14-5/8"	4	114-412	**357.90**
36.00	1.4173	9-1/8"	14-3/4"	4	114-413	**316.70**
36.50	1.4370	9-1/8"	14-3/4"	4	114-414	**361.60**
37.00	1.4567	9-1/4"	14-7/8"	4	114-415	**336.70**
37.50	1.4764	9-3/8"	15"	4	114-416	**384.50**
38.00	1.4961	9-3/8"	15"	4	114-417	**336.70**
39.00	1.5354	9-5/8"	16-5/8"	5	114-418	**444.80**
40.00	1.5748	9-7/8"	16-7/8"	5	114-419	**444.80**
41.00	1.6142	10"	17"	5	114-420	**480.40**
42.00	1.6535	10-1/8"	17-1/8"	5	114-421	**516.50**
43.00	1.6929	10-1/8"	17-1/8"	5	114-422	**555.70**
44.00	1.7323	10-1/8"	17-1/8"	5	114-423	**567.00**
45.00	1.7717	10-1/8"	17-1/8"	5	114-424	**588.90**
46.00	1.8110	10-1/8"	17-1/8"	5	114-425	**612.00**
47.00	1.8504	10-3/8"	17-3/8"	5	114-426	**632.30**
48.00	1.8898	10-3/8"	17-3/8"	5	114-427	**659.80**
49.00	1.9291	10-3/8"	17-3/8"	5	114-428	**680.20**
50.00	1.9685	10-3/8"	17-3/8"	5	114-429	**637.30**
51.00	2.0079	10-3/8"	17-3/8"	5	114-430	**742.00**
57.00	2.2441	10-3/8"	17-3/8"	5	114-431	**938.30**
59.00	2.3228	10-3/8"	17-3/8"	5	114-432	**1,008.20**
65.00	2.5591	11-7/8"	19-1/2"	5	114-433	**1,427.90**
66.00	2.5984	11-7/8"	19-1/2"	5	114-434	**1,494.40**
69.00	2.7165	12-3/4"	20-3/8"	5	114-435	**1,795.00**
70.00	2.7559	13-3/8"	21-1/8"	5	114-436	**1,896.90**
72.00	2.8346	13-3/8"	21-1/8"	5	114-437	**1,970.70**

Taper Shank Drills HSS - Titanium Coated

- High Speed Steel
- 118º point
- Made in USA



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	114-438	**59.60**
3/8	3-1/2	6-3/4	1	114-439	**62.30**
7/16	3-7/8	7-1/4	1	114-440	**67.80**
1/2	4-3/8	8-1/4	2	114-441	**71.60**
33/64	4-5/8	8-1/2	2	114-442	**85.50**
17/32	4-5/8	8-1/2	2	114-443	**79.10**
9/16	4-7/8	8-3/4	2	114-444	**87.70**
19/32	4-7/8	8-3/4	2	114-445	**94.50**
5/8	4-7/8	8-3/4	2	114-446	**95.80**
21/32	5-1/8	9	2	114-447	**106.30**
11/16	5-3/8	9-1/4	2	114-448	**109.80**
23/32	5-5/8	9-1/2	2	114-449	**118.10**
3/4	5-7/8	9-3/4	2	114-450	**132.60**
25/32	6	9-7/8	2	114-451	**153.50**
13/16	6-1/8	10-3/4	3	114-452	**160.50**
27/32	6-1/8	10-3/4	3	114-453	**172.40**
7/8	6-1/8	10-3/4	3	114-454	**177.00**
29/32	6-1/8	10-3/4	3	114-455	**211.50**
15/16	6-1/8	10-3/4	3	114-456	**431.60**
31/32	6-3/8	11	3	114-457	**218.00**
63/64	6-3/8	11	3	114-458	**240.50**
1	6-3/8	11	3	114-459	**221.90**
1-1/32	6-1/2	11-1/8	3	114-460	**244.50**
1-1/16	6-5/8	11-1/4	3	114-461	**226.60**
1-3/32	6-7/8	12-1/2	4	114-462	**301.20**
1-1/8	7-1/8	12-3/4	4	114-463	**279.50**
1-5/32	7-1/4	12-7/8	4	114-464	**330.30**
1-3/16	7-3/8	13	4	114-465	**343.40**
1-7/32	7-1/2	13-1/8	4	114-466	**369.90**
1-1/4	7-7/8	13-1/2	4	114-467	**342.00**
1-5/16	8-5/8	14-1/4	4	114-468	**483.30**
1-3/8	8-7/8	14-1/2	4	114-469	**515.00**
1-1/2	9-3/8	15	4	114-470	**594.30**

QUALITY IMPORT

HSS Taper Shank Drills

- High Speed Steel
- 118° point



Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1/2	.5000	4-3/8	8-1/4	2	106-002	**10.10**
33/64	.5156	4-5/8	8-1/2	2	106-004	**10.50**
17/32	.5312	4-5/8	8-1/2	2	106-006	**10.50**
35/64	.5469	4-7/8	8-3/4	2	106-008	**10.50**
9/16	.5625	4-7/8	8-3/4	2	106-010	**12.70**
37/64	.5781	4-7/8	8-3/4	2	106-012	**12.70**
19/32	.5938	4-7/8	8-3/4	2	106-014	**12.30**
39/64	.6094	4-7/8	8-3/4	2	106-016	**10.70**
5/8	.6250	4-7/8	8-3/4	2	106-018	**13.30**
41/64	.6406	5-1/8	9	2	106-020	**12.70**
21/32	.6562	5-1/8	9	2	106-022	**15.20**
43/64	.6719	5-3/8	9-1/4	2	106-024	**15.20**
11/16	.6875	5-3/8	9-1/4	2	106-026	**15.20**
45/64	.7031	5-5/8	9-1/2	2	106-028	**15.20**
23/32	.7188	5-5/8	9-1/2	2	106-030	**15.20**
47/64	.7344	5-7/8	9-3/4	2	106-032	**16.60**
3/4	.7500	5-7/8	9-3/4	2	106-034	**17.30**
49/64	.7656	6	9-7/8	2	106-036	**19.90**
25/32	.7812	6	9-7/8	2	106-038	**19.90**
51/64	.7969	6-1/8	10-3/4	3	106-040	**20.00**
13/16	.8125	6-1/8	10-3/4	3	106-042	**20.00**
53/64	.8281	6-1/8	10-3/4	3	106-044	**22.90**
27/32	.8438	6-1/8	10-3/4	3	106-046	**21.90**
55/64	.8594	6-1/8	10-3/4	3	106-048	**23.50**
7/8	.8750	6-1/8	10-3/4	3	106-050	**21.90**
57/64	.8906	6-1/8	10-3/4	3	106-052	**25.50**
29/32	.9062	6-1/8	10-3/4	3	106-054	**26.80**
59/64	.9219	6-1/8	10-3/4	3	106-056	**30.30**
15/16	.9375	6-1/8	10-3/4	3	106-058	**31.10**
61/64	.9531	6-3/8	11	3	106-060	**31.10**
31/32	.9688	6-3/8	11	3	106-062	**30.30**
63/64	.9844	6-3/8	11	3	106-064	**30.50**
1	1.0000	6-3/8	11	3	106-066	**30.70**
1-1/64	1.0156	6-1/2	11-1/8	3	106-067	**36.40**
1-1/32	1.0312	6-1/2	11-1/8	3	106-068	**41.20**
1-3/64	1.0469	6-5/8	11-1/4	3	106-069	**39.30**
1-1/16	1.0625	6-5/8	11-1/4	3	106-070	**40.20**
1-5/64	1.0781	6-7/8	12-1/2	4	106-071	**41.20**
1-3/32	1.0938	6-7/8	12-1/2	4	106-072	**37.90**
1-7/64	1.1094	7-1/8	12-3/4	4	106-073	**41.20**
1-1/8	1.1250	7-1/8	12-3/4	4	106-074	**47.10**
1-9/64	1.1406	7-1/4	12-7/8	4	106-075	**46.90**
1-5/32	1.1562	7-1/4	12-7/8	4	106-076	**52.10**
1-11/64	1.1719	7-3/8	13	4	106-077	**49.10**
1-3/16	1.1875	7-3/8	13	4	106-078	**54.40**
1-13/64	1.2031	7-1/2	13-1/8	4	106-079	**58.00**
1-7/32	1.2188	7-1/2	13-1/8	4	106-080	**60.50**
1-15/64	1.2344	7-7/8	13-1/2	4	106-081	**67.70**
1-1/4	1.2500	7-7/8	13-1/2	4	106-082	**75.00**
1-17/64	1.2656	8-1/2	14-1/8	4	106-083	**72.90**
1-9/32	1.2812	8-1/2	14-1/8	4	106-084	**75.00**
1-19/64	1.2969	8-5/8	14-1/4	4	106-085	**79.00**
1-5/16	1.3125	8-5/8	14-1/4	4	106-086	**82.50**
1-21/64	1.3281	8-3/4	14-3/8	4	106-087	**82.10**
1-11/32	1.3438	8-3/4	14-3/8	4	106-088	**84.10**
1-23/64	1.3594	8-7/8	14-1/2	4	106-089	**69.90**
1-3/8	1.3750	8-7/8	14-1/2	4	106-090	**86.90**
1-25/64	1.3906	9	14-5/8	4	106-091	**94.30**
1-13/32	1.4062	9	14-5/8	4	106-092	**99.10**
1-27/64	1.4219	9-1/8	14-3/4	4	106-093	**98.80**
1-7/16	1.4375	9-1/8	14-3/4	4	106-094	**101.20**
1-29/64	1.4531	9-1/4	14-7/8	4	106-095	**107.60**
1-15/32	1.4688	9-1/4	14-7/8	4	106-096	**107.60**
1-31/64	1.4844	9-3/8	15	4	106-097	**113.50**
1-1/2	1.5000	9-3/8	15	4	106-098	**118.00**
1-33/64	1.5156	9-3/8	16-3/8	5	106-099	**122.00**
1-17/32	1.5312	9-3/8	16-3/8	5	106-100	**122.00**
1-35/64	1.5469	9-5/8	16-5/8	5	106-101	**87.20**
1-9/16	1.5625	9-5/8	16-5/8	5	106-102	**124.60**

HSS Taper Shank Drills cont'd

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1-37/64	1.5781	9-7/8	16-7/8	5	106-103	**123.00**
1-19/32	1.5938	9-7/8	16-7/8	5	106-104	**123.00**
1-39/64	1.6094	10	17	5	106-105	**123.00**
1-5/8	1.6250	10	17	5	106-106	**124.50**
1-41/64	1.6406	10-1/8	17-1/8	5	106-107	**124.50**
1-21/32	1.6562	10-1/8	17-1/8	5	106-108	**129.00**
1-43/64	1.6719	10-1/8	17-1/8	5	106-109	**134.10**
1-11/16	1.6875	10-1/8	17-1/8	5	106-110	**134.10**
1-45/64	1.7031	10-1/8	17-1/8	5	106-111	**138.80**
1-23/32	1.7188	10-1/8	17-1/8	5	106-112	**148.40**
1-47/64	1.7344	10-1/8	17-1/8	5	106-113	**146.10**
1-3/4	1.7500	10-1/8	17-1/8	5	106-114	**146.10**
1-25/32	1.7812	10-1/8	17-1/8	5	106-116	**169.30**
1-13/16	1.8125	10-1/8	17-1/8	5	106-118	**335.10**
1-27/32	1.8438	10-1/8	17-1/8	5	106-120	**351.30**
1-7/8	1.8750	10-3/8	17-3/8	5	106-122	**190.30**
1-29/32	1.9062	10-3/8	17-3/8	5	106-124	**190.30**
1-15/16	1.9375	10-3/8	17-3/8	5	106-126	**190.30**
1-31/32	1.9688	10-3/8	17-3/8	5	106-128	**197.10**
2	2.0000	10-3/8	17-3/8	5	106-130	**214.70**
2-1/32	2.0313	10-3/8	17-3/8	5	106-131	**227.60**
2-1/16	2.0625	10-1/4	17-3/8	5	106-132	**229.60**
2-3/32	2.0938	10-1/4	17-3/8	5	106-133	**229.60**
2-1/8	2.1250	10-1/4	17-3/8	5	106-134	**248.40**
2-5/32	2.1562	10-1/4	17-3/8	5	106-135	**186.30**
2-3/16	2.1875	10-1/4	17-3/8	5	106-136	**261.40**
2-7/32	2.2188	10-1/8	17-3/8	5	106-137	**271.80**
2-1/4	2.2500	10-1/8	17-3/8	5	106-138	**277.20**
2-5/16	2.3125	10-1/8	17-3/8	5	106-140	**298.90**
2-3/8	2.3750	10-1/8	17-3/8	5	106-142	**331.50**
2-7/16	2.4375	11-1/4	18-3/4	5	106-144	**405.70**
2-1/2	2.5000	11-1/4	18-3/4	5	106-146	**443.90**
2-9/16	2.5625	11-7/8	19-1/2	5	106-148	**470.20**
2-5/8	2.6250	11-7/8	19-1/2	5	106-150	**506.20**
2-11/16	2.6875	12-3/4	20-3/8	5	106-152	**374.50**
2-3/4	2.7500	12-3/4	20-3/8	5	106-154	**512.70**
2-13/16	2.8125	13-3/8	21-1/8	5	106-156	**397.50**
2-7/8	2.8750	14	21-3/4	5	106-158	**593.90**
2-15/16	2.9375	14	21-3/4	5	106-160	**586.70**
3	3.0000	14	21-3/4	5	106-162	**1,169.30**
3-1/16	3.0625	14-5/8	24-1/2	6	106-164	**1,577.60**
3-1/8	3.1250	14-5/8	24-1/2	6	106-166	**1,617.80**
3-3/16	3.1875	14-5/8	24-1/2	6	106-168	**1,805.70**
3-1/4	3.2500	15-1/2	25-1/2	6	106-170	**1,899.00**
3-5/16	3.3125	15-1/2	25-1/2	6	106-172	**2,004.40**
3-3/8	3.3750	15-1/2	25-1/2	6	106-174	**2,074.70**
3-7/16	3.4375	15-1/2	25-1/2	6	106-176	**2,283.40**
3-1/2	3.5000	16-3/8	26-1/2	6	106-178	**2,110.00**
3-5/8	3.6250	16-3/8	26-1/2	6	106-180	**2,742.80**
3-3/4	3.7500	16-3/8	26-1/2	6	106-182	**3,094.50**
3-7/8	3.8750	16-3/8	26-1/2	6	106-184	**3,235.20**
4	4.0000	17-1/2	27-1/2	6	106-186	**4,282.30**

Knock-Out Drill Drifts



M.T. Size	Overall Length (in.)	Thickness (in.)	Width At Hole	Code No.	Price $
1	4-1/2	13/64	11/16	106-201	**12.70**
2	5-1/4	1/4	13/16	106-202	**14.70**
3	6	5/16	1-1/16	106-203	**16.00**
4	7	15/32	1-1/8	106-204	**20.10**

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

- High Speed Steel
- 118° point
- 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	114-471	**80.10**				9	114-512	**102.30**
9/64	0.1406	1	5	114-472	**84.00**						
5/32	0.1562	1	5	114-473	**84.00**	7	114-489	**86.30**			
11/64	0.1719	1	5	114-474	**84.00**	7	114-490	**88.10**	9	114-513	**103.70**
3/16	0.1875	1	5	114-475	**84.00**				9	114-514	**103.70**
13/64	0.2031	1	5	114-476	**84.00**	7	114-491	**90.90**	9	114-515	**106.00**
7/32	0.2188	1	5	114-477	**84.00**	7	114-492	**90.90**	9	114-516	**106.00**
15/64	0.2344	1	5	114-478	**84.00**	7	114-493	**90.90**	9	114-517	**106.00**
1/4	0.2500	1	5	114-479	**75.20**	7	114-494	**90.90**	9	114-518	**106.00**
17/64	0.2656	1	5	114-480	**90.90**				9	114-519	**116.10**
9/32	0.2812	1	5	114-481	**81.40**	7	114-495	**99.10**	9	114-520	**116.10**
19/64	0.2969	1	5	114-482	**90.90**	7	114-496	**99.10**	9	114-521	**116.10**
5/16	0.3125	1	5	114-483	**81.40**				9	114-522	**116.10**
21/64	0.3281	1	5	114-484	**91.60**	7	114-497	**107.40**	9	114-523	**126.40**
11/32	0.3438	1	5	114-485	**102.50**				9	114-524	**126.40**
23/64	0.3594	1	5	114-486	**105.30**	7	114-498	**110.40**	9	114-525	**130.00**
3/8	0.3750	1	5	114-487	**105.30**	7	114-499	**110.40**	9	114-526	**130.00**
25/64	0.3906	1							9	114-527	**136.40**
13/32	0.4062	1							9	114-528	**136.40**
27/64	0.4219	1							9	114-529	**141.10**
7/16	0.4375	1				7	114-500	**117.60**	9	114-530	**141.10**
29/64	0.4531	1				7	114-501	**129.10**	9	114-531	**152.00**
15/32	0.4688	1	5	114-488	**115.80**	7	114-502	**124.50**	9	114-532	**146.30**
31/64	0.4844	2				6	114-503	**142.60**	8	114-533	**167.50**
1/2	0.5000	2				6	114-504	**137.50**	8	114-534	**161.80**
33/64	0.5156	2				6	114-505	**142.60**	8	114-535	**167.50**
17/32	0.5312	2				6	114-506	**137.50**	8	114-536	**162.50**
35/64	0.5469	2				6	114-507	**139.50**	8	114-537	**170.00**
9/16	0.5625	2				6	114-508	**139.50**	8	114-538	**164.10**
37/64	0.5781	2				6	114-509	**146.30**	8	114-539	**172.40**
19/32	0.5938	2				6	114-510	**141.20**	8	114-540	**166.20**
39/64	0.6094	2				6	114-511	**150.50**	8	114-541	**183.70**
5/8	0.6250	2							8	114-542	**177.00**
41/64	0.6406	2							8	114-543	**189.40**
21/32	0.6562	2							8	114-544	**189.40**
43/64	0.6719	2							8	114-545	**206.50**
11/16	0.6875	2							8	114-546	**206.50**
45/64	0.7031	2							8	114-547	**220.10**
23/32	0.7188	2							8	114-548	**220.10**
47/64	0.7344	2							8	114-549	**228.80**
3/4	0.7500	2							8	114-550	**228.80**
49/64	0.7656	2							8	114-551	**241.60**
25/32	0.7812	2							8	114-552	**241.60**
51/64	0.7969	3							7	114-553	**255.00**
13/16	0.8125	3							7	114-554	**255.00**
53/64	0.8281	3							7	114-555	**255.00**
27/32	0.8438	3							7	114-556	**255.00**
55/64	0.8594	3							7	114-557	**255.00**
7/8	0.8750	3							7	114-558	**255.00**
57/64	0.8906	3							7	114-559	**280.30**
29/32	0.9062	3							7	114-560	**280.30**
59/64	0.9219	3							7	114-561	**289.50**
15/16	0.9375	3							7	114-562	**289.50**
61/64	0.9531	3									
31/32	0.9688	3							7	114-563	**303.30**
63/64	0.9844	3									
1	1.0000	3							7	114-564	**305.40**

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

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	114-588	**138.30**			
13/64	0.2031	1				12	114-589	**138.30**			
7/32	0.2188	1				12	114-590	**138.30**			
15/64	0.2344	1				12	114-591	**138.30**			
1/4	0.2500	1				12	114-592	**138.30**	15	114-651	**179.90**
17/64	0.2656	1				12	114-593	**145.80**	15	114-652	**183.10**
9/32	0.2812	1				12	114-594	**145.80**	15	114-653	**183.10**
19/64	0.2969	1				12	114-595	**153.50**	15	114-654	**187.70**
5/16	0.3125	1				12	114-596	**153.50**	15	114-655	**187.70**
21/64	0.3281	1				12	114-597	**161.10**	15	114-656	**194.70**
11/32	0.3438	1				12	114-598	**161.10**	15	114-657	**194.70**
23/64	0.3594	1				12	114-599	**179.50**	15	114-658	**203.60**
3/8	0.3750	1				12	114-600	**179.50**	15	114-659	**203.60**
25/64	0.3906	1				12	114-601	**179.50**	15	114-660	**203.60**
13/32	0.4062	1				12	114-602	**179.50**	15	114-661	**203.60**
27/64	0.4219	1				12	114-603	**179.50**	15	114-662	**203.60**
7/16	0.4375	1				12	114-604	**179.50**	15	114-663	**203.60**
29/64	0.4531	1	11	114-565	**184.40**	12	114-605	**184.10**	15	114-664	**203.60**
15/32	0.4688	1	11	114-566	**184.40**				15	114-665	**203.60**
31/64	0.4844	2	10	114-567	**187.20**	11	114-606	**186.80**	14	114-666	**203.60**
1/2	0.5000	2	10	114-568	**187.20**	11	114-607	**186.80**	14	114-667	**203.60**
33/64	0.5156	2	10	114-569	**189.10**	11	114-608	**186.80**	14	114-668	**203.60**
17/32	0.5312	2				11	114-609	**186.80**	14	114-669	**203.60**
35/64	0.5469	2	10	114-570	**205.50**	11	114-610	**189.40**	14	114-670	**206.50**
9/16	0.5625	2	10	114-571	**205.50**	11	114-611	**189.40**	14	114-671	**206.50**
37/64	0.5781	2	10	114-572	**205.50**	11	114-612	**192.10**	14	114-672	**208.90**
19/32	0.5938	2				11	114-613	**192.10**	14	114-673	**208.90**
39/64	0.6094	2	10	114-573	**216.70**	11	114-614	**205.00**	14	114-674	**224.00**
5/8	0.6250	2	10	114-574	**216.70**	11	114-615	**205.00**	14	114-675	**224.00**
41/64	0.6406	2	10	114-575	**201.10**	11	114-616	**219.40**	14	114-676	**240.40**
21/32	0.6562	2	10	114-576	**207.30**	11	114-617	**219.40**	14	114-677	**240.40**
43/64	0.6719	2				11	114-618	**240.50**	14	114-678	**263.60**
11/16	0.6875	2				11	114-619	**240.50**	14	114-679	**263.60**
45/64	0.7031	2	10	114-577	**254.30**	11	114-620	**248.70**	14	114-680	**283.60**
23/32	0.7188	2	10	114-578	**254.30**	11	114-621	**248.70**	14	114-681	**283.60**
47/64	0.7344	2	10	114-579	**276.10**	11	114-622	**266.40**	14	114-682	**292.40**
3/4	0.7500	2	10	114-580	**246.60**	11	114-623	**266.40**	14	114-683	**292.40**
49/64	0.7656	2	10	114-581	**289.30**	11	114-624	**281.10**	14	114-684	**308.20**
25/32	0.7812	2	10	114-582	**258.40**	11	114-625	**281.10**	14	114-685	**308.20**
51/64	0.7969	3				10	114-626	**281.10**	13	114-686	**308.20**
13/16	0.8125	3				10	114-627	**281.10**	14	114-687	**308.20**
53/64	0.8281	3				10	114-628	**281.10**	13	114-688	**321.60**
27/32	0.8438	3	9	114-583	**267.90**	10	114-629	**281.10**	13	114-689	**321.60**
55/64	0.8594	3				10	114-630	**281.10**	13	114-690	**333.20**
7/8	0.8750	3	9	114-584	**297.30**	10	114-631	**281.10**	13	114-691	**333.20**
57/64	0.8906	3	9	114-585	**332.90**	10	114-632	**316.40**	13	114-692	**344.90**
29/32	0.9062	3				10	114-633	**316.40**	13	114-693	**344.90**
59/64	0.9219	3				10	114-634	**316.40**	13	114-694	**350.70**
15/16	0.9375	3				10	114-635	**332.60**	13	114-695	**350.70**
61/64	0.9531	3				10	114-636	**337.60**	13	114-696	**356.50**
31/32	0.9688	3	9	114-586	**361.90**	10	114-637	**337.60**	13	114-697	**356.50**
63/64	0.9844	3	9	114-587	**361.90**	10	114-638	**341.70**	13	114-698	**376.70**
1	1.0000	3				10	114-639	**341.70**	13	114-699	**376.70**
1-1/32	1.0312	3				10	114-640	**343.20**	13	114-700	**408.50**
1-3/64	1.0469	3				10	114-641	**349.70**	13	114-701	**408.50**
1-1/16	1.0625	3				10	114-642	**343.20**	13	114-702	**408.50**
1-5/64	1.0781	4				9	114-643	**367.90**	12	114-703	**412.70**
1-3/32	1.0938	4				10	114-644	**367.90**	12	114-704	**412.70**
1-1/8	1.1250	4				10	114-645	**367.90**	12	114-705	**412.70**
1-5/32	1.1562	4				10	114-646	**375.30**	12	114-706	**459.00**
1-11/64	1.1719	4				10	114-647	**379.50**	12	114-707	**630.80**
1-3/16	1.1875	4				10	114-648	**379.50**	12	114-708	**459.90**
1-7/32	1.2188	4				9	114-649	**402.50**	12	114-709	**482.90**
1-15/64	1.2344	4							12	114-710	**482.90**
1-1/4	1.2500	4				9	114-650	**402.50**	12	114-711	**482.90**
1-9/32	1.2813	4							12	114-712	**546.50**
1-5/16	1.3125	4							12	114-713	**546.50**
1-11/32	1.3438	4							12	114-714	**612.20**
1-23/64	1.3594	4							12	114-715	**612.20**
1-3/8	1.3750	4							12	114-716	**612.20**
1-13/32	1.4062	4							12	114-717	**630.80**
1-7/16	1.4375	4							12	114-718	**630.80**
1-15/32	1.4688	4							12	114-719	**683.80**
1-1/2	1.5000	4							12	114-720	**683.80**
1-9/16	1.5625	5							10	114-721	**761.60**
1-5/8	1.6250	5							10	114-722	**812.30**
1-11/16	1.6875	5							10	114-723	**866.40**
1-3/4	1.7500	5							10	114-724	**972.60**
1-7/8	1.8750	5							10	114-725	**1,175.80**

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

- High Speed Steel
- 118° point
- Taper shank



Size	Decimal Equiv.	Morse Taper No.	Flute Length	20" O.A.L. Code No.	20" O.A.L. Price $	Flute Length	24" O.A.L. HSS Code No.	24" O.A.L. HSS Price $	Flute Length	30" O.A.L. HSS Code No.	30" O.A.L. HSS Price $	Flute Length	36" O.A.L. HSS Code No.	36" O.A.L. HSS Price $
3/8	0.3750	1				21	114-747	**285.50**						
25/64	0.3906	1				21	114-748	**285.50**						
13/32	0.4062	1				21	114-749	**285.50**						
27/64	0.4219	1				21	114-750	**285.50**						
7/16	0.4375	1				21	114-751	**285.50**						
29/64	0.4531	1				21	114-752	**285.50**						
15/32	0.4688	1				21	114-753	**285.50**						
31/64	0.4844	2				21	114-754	**285.50**						
1/2	0.5000	2				20	114-755	**285.50**						
33/64	0.5156	2	16	114-726	**259.60**	20	114-756	**296.50**						
17/32	0.5312	2				20	114-757	**296.50**						
35/64	0.5469	2				20	114-758	**296.50**						
9/16	0.5625	2				20	114-759	**296.50**						
37/64	0.5781	2				20	114-760	**296.50**						
19/32	0.5938	2				20	114-761	**296.50**						
39/64	0.6094	2				20	114-762	**296.50**						
5/8	0.6250	2				20	114-763	**296.50**						
41/64	0.6406	2				20	114-764	**296.50**						
21/32	0.6562	2	16	114-727	**296.50**	20	114-765	**296.50**						
43/64	0.6719	2				20	114-766	**313.50**						
11/16	0.6875	2				20	114-767	**313.50**						
45/64	0.7031	2				20	114-768	**324.00**						
23/32	0.7188	2				20	114-769	**324.00**						
47/64	0.7344	2				20	114-770	**342.40**						
3/4	0.7500	2				20	114-771	**342.40**	26	114-832	**526.90**			
49/64	0.7656	2				20	114-772	**353.30**						
25/32	0.7812	2				20	114-773	**353.30**						
51/64	0.7969	3				19	114-774	**371.90**						
13/16	0.8125	3	15	114-728	**340.70**	19	114-775	**371.90**	25	114-833	**620.70**			
53/64	0.8281	3				19	114-776	**427.90**						
27/32	0.8438	3	15	114-729	**394.90**	19	114-777	**427.90**						
55/64	0.8594	3				19	114-778	**447.60**						
7/8	0.8750	3	15	114-730	**377.40**	19	114-779	**447.60**	25	114-834	**711.60**			
57/64	0.8906	3				19	114-780	**447.60**						
29/32	0.9062	3	15	114-731	**383.30**	19	114-781	**447.60**						
59/64	0.9219	3				19	114-782	**466.10**						
15/16	0.9375	3	15	114-732	**383.30**	19	114-783	**466.10**	25	114-835	**769.90**			
61/64	0.9531	3				19	114-784	**513.50**						
31/32	0.9688	3	15	114-733	**411.50**	19	114-785	**513.50**						
63/64	0.9844	3				19	114-786	**523.00**						
1	1.0000	3				19	114-787	**523.00**	25	114-836	**847.60**			
1-1/32	1.0312	3				19	114-788	**536.40**						
1-3/64	1.0469	3				19	114-789	**536.40**						
1-1/16	1.0625	3	15	114-734	**446.90**	18	114-790	**536.40**	25	114-837	**847.60**			
1-5/64	1.0781	4				18	114-791	**589.50**						
1-3/32	1.0938	4	14	114-735	**470.40**	18	114-792	**589.50**						
1-1/8	1.1250	4	14	114-736	**470.40**	18	114-793	**589.50**	24	114-838	**967.70**			
1-5/32	1.1562	4	14	114-737	**510.60**	18	114-794	**634.30**						
1-11/64	1.1719	4				18	114-795	**658.10**						
1-3/16	1.1875	4	14	114-738	**548.20**	18	114-796	**658.10**	24	114-839	**1,054.80**			
1-7/32	1.2188	4	14	114-739	**548.20**	18	114-797	**665.60**						
1-15/64	1.2344	4				18	114-798	**665.60**						
1-1/4	1.2500	4	14	114-740	**548.20**	18	114-799	**665.60**	24	114-840	**1,142.00**			
1-9/32	1.2813	4				18	114-800	**753.60**						
1-5/16	1.3125	4				18	114-801	**753.60**	24	114-841	**1,296.50**			
1-11/32	1.3438	4	14	114-741	**692.10**									
1-23/64	1.3594	4				18	114-802	**665.60**						
1-3/8	1.3750	4	14	114-742	**707.40**	18	114-803	**843.00**	24	114-842	**1,411.10**			
1-13/32	1.4062	4	14	114-743	**736.80**	18	114-804	**871.50**						
1-7/16	1.4375	4	14	114-744	**736.80**	18	114-805	**871.50**	24	114-843	**1,452.10**			
1-15/32	1.4688	4				18	114-806	**944.70**						
1-1/2	1.5000	4				18	114-807	**944.70**	24	114-844	**1,582.90**	29	114-865	**2,293.30**
1-9/16	1.5625	5				17	114-808	**1,049.60**						
1-5/8	1.6250	5				17	114-809	**1,049.60**	23	114-845	**1,767.80**			
1-11/16	1.6875	5				17	114-810	**1,195.50**						
1-3/4	1.7500	5				17	114-811	**1,336.80**	23	114-846	**1,953.80**	29	114-866	**2,830.00**
1-25/32	1.7812	5	13	114-745	**1,237.70**									
1-7/8	1.8750	5				17	114-812	**1,641.40**	23	114-847	**2,187.40**			
1-15/16	1.9375	5				17	114-813	**1,803.40**						

Extra Length Taper Shank Drills HSS - 20"-36" Overall Length - cont'd

Size	Decimal Equiv.	Morse Taper No.	Flute Length	20" O.A.L. HSS Code No.	20" O.A.L. HSS Price $	Flute Length	24" O.A.L. HSS Code No.	24" O.A.L. HSS Price $	Flute Length	30" O.A.L. HSS Code No.	30" O.A.L. HSS Price $	Flute Length	36" O.A.L. HSS Code No.	36" O.A.L. HSS Price $
2	2.0000	5				17	114-814	**1,955.20**	23	114-848	**2,488.30**	29	114-867	**3,788.20**
2-1/16	2.0625	5				17	114-815	**2,106.80**	23	114-849	**2,745.80**			
2-1/8	2.1250	5				17	114-816	**2,106.80**	23	114-850	**2,745.80**	29	114-868	**4,422.80**
2-3/16	2.1875	5				17	114-817	**2,315.60**						
2-7/32	2.2188	5	13	114-746	**1,768.00**	17	114-818	**2,522.20**						
2-1/4	2.2500	5				17	114-819	**2,315.60**	23	114-851	**2,946.30**	29	114-869	**4,424.60**
2-5/16	2.3125	5				17	114-820	**2,524.20**	23	114-852	**3,214.40**			
2-3/8	2.3750	5				17	114-821	**2,524.20**	23	114-853	**3,214.40**	29	114-870	**5,301.90**
2-7/16	2.4375	5				17	114-822	**2,694.10**	23	114-854	**3,430.90**			
2-1/2	2.5000	5				17	114-823	**2,694.10**	23	114-855	**3,430.90**	29	114-871	**5,301.90**
2-9/16	2.5625	5				17	114-824	**2,863.90**	23	114-856	**2,310.20**			
2-5/8	2.6250	5				17	114-825	**2,863.90**	23	114-857	**3,641.90**	29	114-872	**6,011.20**
2-11/16	2.6875	5				17	114-826	**3,101.20**						
2-3/4	2.7500	5				17	114-827	**3,101.20**	23	114-858	**3,945.60**	29	114-873	**7,011.60**
2-13/16	2.8125	5				17	114-828	**3,338.40**						
2-7/8	2.8750	5				17	114-829	**3,338.40**	23	114-859	**4,170.00**			
2-15/16	2.9375	5				17	114-830	**3,814.20**						
3	3.0000	5				17	114-831	**3,814.20**	23	114-860	**4,857.60**	29	114-874	**8,005.60**
3-1/8	3.1250	5							23	114-861	**5,517.60**	29	114-875	**8,564.00**
3-1/4	3.2500	5							23	114-862	**6,656.70**	29	114-876	**10,500.80**
3-3/8	3.3750	5							23	114-863	**8,931.00**	29	114-877	**15,354.40**
3-1/2	3.5000	5							23	114-864	**11,404.60**	29	114-878	**18,439.30**

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.

- 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	114-879	**326.50**
15/64	0.2344	5-1/8	7-1/2	114-880	**326.50**
1/4	0.2500	3-3/4	6-1/8	114-881	**326.50**
9/32	0.2812	4	6-3/8	114-882	**326.50**
19/64	0.2969	4	6-3/8	114-883	**326.50**
5/16	0.3125	4	6-3/8	114-884	**326.50**
21/64	0.3281	4-1/8	6-1/2	114-885	**326.50**
11/32	0.3438	4-1/8	6-1/2	114-886	**326.50**
23/64	0.3594	4-1/4	6-3/4	114-887	**326.50**
3/8	0.3750	4-1/4	6-3/4	114-888	**326.50**
25/64	0.3906	4-3/8	7	114-889	**325.10**
13/32	0.4062	4-3/8	7	114-890	**331.10**
27/64	0.4219	4-5/8	7-1/4	114-891	**331.10**
7/16	0.4375	4-5/8	7-1/4	114-892	**343.10**
29/64	0.4531	4-7/8	7-1/2	114-893	**343.10**
15/32	0.4688	4-7/8	7-1/2	114-894	**350.40**
31/64	0.4844	5	7-3/4	114-895	**350.40**
1/2	0.5000	5	7-3/4	114-896	**355.00**
33/64	0.5156	5-1/4	8	114-897	**355.00**
17/32	0.5312	5-1/4	8	114-898	**360.00**
35/64	0.5469	5-3/8	8-1/4	114-899	**360.00**
9/16	0.5625	5-3/8	8-1/4	114-900	**368.50**
37/64	0.5781	5-5/8	8-1/2	114-901	**368.50**
19/32	0.5938	5-5/8	8-1/2	114-902	**372.70**
39/64	0.6094	5-3/4	8-3/4	114-903	**372.70**
5/8	0.6250	5-3/4	8-3/4	114-904	**390.70**
41/64	0.6406	5-7/8	9	114-905	**390.70**
21/32	0.6562	5-7/8	9	114-906	**390.70**
43/64	0.6719	6	9-1/4	114-907	**390.70**
11/16	0.6875	6	9-1/4	114-908	**399.50**
45/64	0.7031	6-3/16	9-1/2	114-909	**399.50**
23/32	0.7188	6-3/16	9-1/2	114-910	**410.00**
47/64	0.7344	6-3/8	9-3/4	114-911	**410.00**
3/4	0.7500	6-3/8	9-3/4	114-912	**438.40**
49/64	0.7656	6-1/2	9-7/8	114-913	**438.40**
25/32	0.7812	6-1/2	9-7/8	114-914	**445.90**
51/64	0.7969	6-5/8	10	114-915	**445.90**
13/16	0.8125	6-5/8	10	114-916	**456.40**
53/64	0.8281	6-3/4	10-1/4	114-917	**456.40**
27/32	0.8438	6-3/8	10-1/4	114-918	**465.40**
55/64	0.8594	7	10-1/2	114-919	**465.40**
7/8	0.8750	7	10-1/2	114-920	**503.70**
57/64	0.8906	7	10-5/8	114-921	**503.70**
29/32	0.9062	7	10-5/8	114-922	**539.60**
59/64	0.9219	7	10-3/4	114-923	**577.10**
15/16	0.9375	7	10-3/4	114-924	**577.10**
61/64	0.9531	7-1/8	10-7/8	114-925	**605.10**
31/32	0.9688	7-1/8	10-7/8	114-926	**605.10**
63/64	0.9844	7-3/16	11	114-927	**635.10**
1	1.0000	7-3/16	11	114-928	**635.10**
1-1/64	1.0156	7-5/16	11-1/8	114-929	**670.70**
1-1/32	1.0312	7-5/16	11-1/8	114-930	**670.70**
1-3/64	1.0469	7-3/8	11-1/4	114-931	**697.90**
1-1/16	1.0625	7-3/8	11-1/4	114-932	**697.90**
1-5/64	1.0781	7-5/8	11-1/2	114-933	**725.90**
1-3/32	1.0938	7-5/8	11-1/2	114-934	**725.90**
1-7/64	1.1094	7-7/8	11-3/4	114-935	**763.00**
1-1/8	1.1250	7-7/8	11-3/4	114-936	**763.00**
1-9/64	1.1406	8	11-7/8	114-937	**800.40**
1-5/32	1.1562	8	11-7/8	114-938	**800.40**
1-11/64	1.1719	8-1/8	12	114-939	**837.80**
1-3/16	1.1875	8-1/8	12	114-940	**837.80**
1-13/64	1.2031	8-1/8	12-1/8	114-941	**874.80**
1-7/32	1.2188	8-1/8	12-1/8	114-942	**874.80**
1-15/64	1.2344	8-1/2	12-1/2	114-943	**910.70**
1-1/4	1.2500	8-1/2	12-1/2	114-944	**910.70**
1-17/64	1.2656	9-1/4	14-1/8	114-945	**969.30**
1-9/32	1.2812	9-1/4	14-1/8	114-946	**969.30**
1-19/64	1.2969	9-1/4	14-1/4	114-947	**1,010.40**
1-5/16	1.3125	9-1/4	14-1/4	114-948	**1,010.40**
1-21/64	1.3281	9-1/2	14-3/8	114-949	**1,075.60**
1-11/32	1.3438	9-1/2	14-3/8	114-950	**1,075.60**
1-23/64	1.3594	9-1/2	14-1/2	114-951	**1,134.40**
1-3/8	1.3750	9-1/2	14-1/2	114-952	**1,134.40**
1-13/32	1.4062	9-1/2	14-5/8	114-953	**1,269.80**
1-7/16	1.4375	9-1/8	14-3/4	114-954	**1,269.80**
1-15/32	1.4688	9-1/8	14-7/8	114-955	**1,374.00**
1-1/2	1.5000	9-5/8	15	114-956	**1,374.00**
1-9/16	1.5625	9-5/8	15-1/4	114-957	**1,523.00**
1-5/8	1.6250	9-7/8	15-5/8	114-958	**1,648.40**
1-11/16	1.6875	10	15-3/4	114-959	**1,872.50**
1-3/4	1.7500	10-1/2	16-1/4	114-960	**1,977.90**
1-13/16	1.8125	10-1/2	16-1/4	114-961	**1,994.10**
1-7/8	1.8750	10-3/4	16-1/2	114-962	**2,193.00**
1-15/16	1.9375	10-3/4	16-5/8	114-963	**2,355.20**
2	2.0000	10-3/4	16-5/8	114-964	**2,473.40**

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	114-965	**337.50**
3	8-1/2	114-966	**348.90**
4	10-1/2	114-967	**916.50**
5	13-3/4	114-968	**1,762.20**

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
- High speed steel

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	114-969	**540.40**
25/64	0.3906	3-5/8	8	2	114-970	**540.40**
13/32	0.4062	3-5/8	8	2	114-971	**540.40**
27/64	0.4219	3-7/8	8-1/8	2	114-972	**540.40**
7/16	0.4375	3-7/8	8-3/8	2	114-973	**540.40**
29/64	0.4531	4-1/8	8-3/4	2	114-974	**540.40**
15/32	0.4688	4-1/8	8-3/4	3	114-975	**506.50**
31/64	0.4844	4-3/8	9	3	114-976	**506.50**
1/2	0.5000	4-3/8	9	3	114-977	**506.50**
33/64	0.5156	4-5/8	9-1/4	3	114-978	**506.50**
17/32	0.5312	4-5/8	9-1/4	3	114-979	**506.50**
35/64	0.5469	4-7/8	9-1/2	3	114-980	**506.50**
9/16	0.5625	4-7/8	9-1/2	3	114-981	**453.20**
37/64	0.5781	4-7/8	9-1/2	3	114-982	**506.50**
19/32	0.5938	4-7/8	9-1/2	3	114-983	**453.20**
39/64	0.6094	4-7/8	9-1/2	3	114-984	**453.20**
5/8	0.6250	4-7/8	9-1/2	3	114-985	**453.20**
41/64	0.6406	5-1/8	9-3/4	3	114-986	**453.20**
21/32	0.6562	5-1/8	9-3/4	3	114-987	**454.00**
43/64	0.6719	5-3/8	10	3	114-988	**460.40**
11/16	0.6875	5-3/8	10	3	114-989	**460.40**
45/64	0.7031	5-5/8	10-1/4	3	114-990	**466.70**
23/32	0.7188	5-5/8	10-1/4	3	114-991	**466.70**
47/64	0.7344	5-7/8	10-1/2	3	114-992	**466.70**
3/4	0.7500	5-7/8	10-1/2	3	114-993	**466.70**
49/64	0.7656	6	10-5/8	3	114-994	**471.20**
25/32	0.7812	6	10-5/8	3	114-995	**471.20**
51/64	0.7969	6-1/8	10-3/4	3	114-996	**471.20**
13/16	0.8125	6-1/8	10-3/4	3	114-997	**471.20**
53/64	0.8281	6-1/8	10-3/4	3	114-998	**512.70**
27/32	0.8438	6-1/8	10-3/4	3	114-999	**512.70**
55/64	0.8594	6-1/8	10-3/4	3	115-800	**512.70**
7/8	0.8750	6-1/8	10-3/4	3	115-801	**512.70**
57/64	0.8906	6-1/8	10-3/4	3	115-802	**514.30**
29/32	0.9062	6-1/8	10-3/4	3	115-803	**514.30**
59/64	0.9219	6-1/8	10-3/4	3	115-804	**514.30**
15/16	0.9375	6-1/8	10-3/4	3	115-805	**514.30**
61/64	0.9531	6-3/8	11	3	115-806	**606.40**
31/32	0.9688	6-3/8	11	3	115-807	**606.40**
63/64	0.9844	6-3/8	11	3	115-808	**606.40**
1	1.0000	6-3/8	11	3	115-809	**606.40**
1-1/64	1.0156	6-1/2	11-1/8	3	115-810	**656.90**
1-1/32	1.0312	6-1/2	11-1/8	3	115-811	**656.90**
1-3/64	1.0469	6-5/8	11-1/4	3	115-812	**656.90**

Oil Hole Drills HSS - Taper Shank cont'd

Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	HSS Code No.	Price $
1-1/16	1.0625	6-5/8	11-1/4	3	115-813	**656.90**
1-5/64	1.0781	6-7/8	12-1/2	4	115-814	**775.70**
1-3/32	1.0938	6-7/8	12-1/2	4	115-815	**775.70**
1-7/64	1.1094	7-1/8	12-3/4	4	115-816	**848.70**
1-1/8	1.1250	7-1/8	12-3/4	4	115-817	**848.70**
1-9/64	1.1406	7-1/4	12-7/8	4	115-818	**848.70**
1-5/32	1.1562	7-1/4	12-7/8	4	115-819	**848.70**
1-11/64	1.1719	7-3/8	13	4	115-820	**853.80**
1-3/16	1.1875	7-3/8	13	4	115-821	**853.80**
1-13/64	1.2031	7-1/2	13-1/8	4	115-822	**971.60**
1-7/32	1.2188	7-1/2	13-1/8	4	115-823	**971.60**
1-15/64	1.2344	7-7/8	13-1/2	4	115-824	**971.60**
1-1/4	1.2500	7-7/8	13-1/2	4	115-825	**971.60**
1-17/64	1.2656	8-1/2	14-1/8	4	115-826	**1,180.70**
1-9/32	1.2812	8-1/2	14-1/8	4	115-827	**1,180.70**
1-19/64	1.2969	8-5/8	14-1/4	4	115-828	**1,270.40**
1-5/16	1.3125	8-5/8	14-1/4	4	115-829	**1,270.40**
1-21-64	1.3281	8-3/4	14-3/8	4	115-830	**1,270.40**
1-11/32	1.3438	8-3/4	14-3/8	4	115-831	**1,270.40**
1-23/64	1.3594	8-7/8	14-1/2	4	115-832	**1,406.30**
1-3/8	1.3750	8-7/8	14-1/2	4	115-833	**1,406.30**
1-13/32	1.4062	9	14-5/8	4	115-834	**1,406.30**
1-7/16	1.4375	9-1/8	14-3/4	4	115-835	**1,406.30**
1-15/32	1.4688	9-1/4	14-7/8	4	115-836	**1,468.00**
1-1/2	1.5000	9-3/8	15	4	115-837	**1,468.00**
1-9/16	1.5625	9-5/8	15-1/4	4	115-838	**1,537.80**
1-5/8	1.6250	10	15-5/8	4	115-839	**1,653.80**
1-11/16	1.6875	10-1/8	15-3/4	4	115-840	**1,943.80**
1-3/4	1.7500	10-1/8	16	4	115-841	**2,002.10**
1-13/16	1.8125	10-1/8	17-1/8	5	115-842	**2,088.80**
1-7/8	1.8750	10-3/8	17-3/8	5	115-843	**2,205.10**
1-15/16	1.9375	10-3/8	17-3/8	5	115-844	**2,335.50**
2	2.0000	10-3/8	17-3/8	5	115-845	**2,393.60**

Extra Length Oil Hole Drills

- 118° notched point



* Shank larger than standard

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	115-846	**556.00**				
1/2	0.5000	3	115-847	**556.00**	115-850	**604.30**	115-870	**719.10**
33/64	0.5156	3	115-848	**556.00**	115-851	**604.30**	115-871	**719.10**
17/32	0.5312	3	115-849	**556.00**	115-852	**604.30**	115-872	**719.10**
9/16	0.5625	3			115-853	**604.30**	115-873	**719.10**
19/32	0.5938	3			115-854	**604.30**	115-874	**719.10**
5/8	0.6250	3			115-855	**604.30**	115-875	**719.10**
41/64	0.6406	3			115-856	**604.30**	115-876	**719.10**
21/32	0.6562	3			115-857	**604.30**	115-877	**719.10**
11/16	0.6875	3			115-858	**604.30**	115-878	**719.10**
23/32	0.7188	3			115-859	**604.30**	115-879	**719.10**
47/64	0.7344	3			115-860	**604.30**	115-880	**719.10**
3/4	0.7500	3			115-861	**604.30**	115-881	**719.10**
49/64	0.7656	3			115-862	**634.40**	115-882	**747.20**
25/32	0.7812	3			115-863	**634.50**	115-883	**746.00**
13/16	0.8125	3			115-864	**634.50**	115-884	**746.00**
27/32	0.8438	3			115-865	**650.70**	115-885	**767.30**
7/8	0.8750	3			115-866	**659.10**	115-886	**767.30**
29/32	0.9062	3			115-867	**659.10**	115-887	**781.80**
15/16	0.9375	3			115-868	**659.10**	115-888	**781.80**
31/32	0.9688	3			115-869	**694.00**	115-889	**811.20**
63/64	0.9844	3			115-890	**1,060.80**	115-893	**878.60**
1	1.0000	3			115-891	**754.40**	115-894	**878.60**
1-1/32	1.0312	3			115-892	**1,099.50**	115-895	**908.30**
1-1/16	1.0625	3					115-896	**908.30**
1-1/8*	1.1250	4					115-897	**1,139.30**
1-3/16*	1.1875	4					115-898	**1,222.10**
1-1/4*	1.2500	4					115-899	**1,355.40**

Taper Shank Core Drills HSS

- Used to open out existing pre-drilled holes
- 118° notched point
- 4 flute

Size (in.)	Morse Taper No.	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
13/32	1	3-5/8	7	106-500	**105.50**
7/16	1	3-7/8	7-1/4	106-501	**110.80**
15/32	1	4-1/8	7-1/4	106-502	**48.70**
31/64	2	4-3/8	8-1/4	106-503	**71.30**
1/2	2	4-3/8	8-1/4	106-504	**133.60**
33/64	2	4-5/8	8-1/2	106-505	**78.80**
17/32	2	4-5/8	8-1/2	106-506	**148.20**
9/16	2	4-7/8	8-3/4	106-507	**161.90**
19/32	2	4-7/8	8-3/4	106-508	**167.30**
39/64	2	4-7/8	8-3/4	106-509	**170.90**
5/8	2	4-7/8	8-3/4	106-510	**176.30**
41/64	2	5-1/8	9	106-511	**103.70**
21/32	2	5-1/8	9	106-512	**194.90**
11/16	2	5-3/8	9-1/2	106-513	**209.40**
45/64	2	5-5/8	9-1/2	106-514	**218.70**
23/32	2	5-5/8	9-1/2	106-515	**228.70**
47/64	2	5-5/8	9-1/2	106-516	**129.30**
3/4	2	5-7/8	9-3/4	106-517	**243.10**
49/64	2	6	9-7/8	106-518	**251.80**
25/32	2	6	9-7/8	106-519	**251.80**
51/64	3	6-1/8	10-3/4	106-520	**128.50**
13/16	3	6-1/8	10-3/4	106-521	**289.70**
27/32	3	6-1/8	10-3/4	106-522	**134.90**
55/64	3	6-1/8	10-3/4	106-523	**313.60**
7/8	3	6-1/8	10-3/4	106-524	**318.70**
29/32	3	6-1/8	10-3/4	106-525	**147.90**
59/64	3	6-1/8	10-3/4	106-526	**187.60**
15/16	3	6-1/8	10-3/4	106-527	**352.30**
61/64	3	6-3/8	11	106-528	**171.00**
31/32	3	6-3/8	11	106-529	**385.30**
63/64	3	6-3/8	11	106-530	**409.00**
1	3	6-3/8	11	106-532	**409.00**
1-1/32	3	6-1/2	11-1/8	106-533	**216.00**
1-3/64	3	6-5/8	11-1/4	106-534	**240.30**
1-1/16	3	6-5/8	11-1/4	106-535	**451.50**
1-5/64	4	6-7/8	12-1/2	106-536	**471.50**
1-3/32	4	6-7/8	12-1/2	106-537	**504.00**
1-1/8	4	7-1/8	12-3/4	106-538	**532.40**
1-5/32	4	7-1/4	12-7/8	106-539	**570.00**
1-11/64	4	7-3/8	13	106-540	**318.70**
1-3/16	4	7-3/8	13	106-541	**598.60**
1-13/64	4	7-1/2	13-1/8	106-542	**618.00**
1-7/32	4	7-1/2	13-1/8	106-543	**632.00**
1-15/64	4	7-1/8	13-1/2	106-544	**670.00**
1-1/4	4	7-1/8	13-1/2	106-545	**693.20**
1-17/64	4	8-1/2	14-1/8	106-546	**421.50**
1-9/32	4	8-1/2	14-1/8	106-547	**793.40**
1-5/16	4	8-5/8	14-1/4	106-548	**826.30**
1-11/32	4	8-3/4	14-3/8	106-549	**381.10**
1-3/8	4	8-7/8	14-1/2	106-550	**897.80**
1-13/32	4	9	14-5/8	106-551	**395.20**
1-7/16	4	9-1/8	14-3/4	106-552	**978.30**
1-15/32	4	9-1/4	14-7/8	106-553	**452.30**
1-1/2	4	9-3/8	15	106-554	**1,064.00**
1-17/32	5	9-3/8	16-3/8	106-555	**1,186.70**
1-35/64	5	9-5/8	16-5/8	106-556	**529.00**
1-9/16	5	9-5/8	16-5/8	106-557	**1,253.00**
1-37/64	5	9-7/8	16-7/8	106-558	**557.40**
1-19/32	5	9-7/8	16-7/8	106-559	**1,320.30**
1-39/64	5	10	17	106-560	**728.40**
1-5/8	5	10	17	106-561	**1,367.00**
1-21/32	5	10-1/8	17-1/8	106-562	**1,419.10**
1-11/16	5	10-1/8	17-1/8	106-563	**1,471.10**
1-23/32	5	10-1/8	17-1/8	106-564	**1,519.50**
1-3/4	5	10-1/8	17-1/8	106-565	**1,566.40**
1-25/32	5	10-1/8	17-1/8	106-566	**1,622.90**
1-13/16	5	10-1/8	17-1/8	106-567	**740.80**
1-27/32	5	10-1/8	17-1/8	106-568	**1,718.70**
1-7/8	5	10-3/8	17-3/8	106-569	**1,813.80**
1-29/32	5	10-3/8	17-3/8	106-570	**1,879.40**
1-15/16	5	10-3/8	17-3/8	106-571	**1,937.10**

Taper Shank Core Drills HSS cont'd

Size (in.)	Morse Taper No.	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
1-31/32	5	10-3/8	17-3/8	106-572	**1,998.40**
2	5	10-3/8	17-3/8	106-573	**2,055.30**
2-1/32	5	10-3/8	17-3/8	106-574	**2,111.90**
2-1/16	5	10-1/4	17-3/8	106-575	**2,174.30**
2-1/8	5	10-1/4	17-3/8	106-576	**2,287.70**
2-3/16	5	10-1/4	17-3/8	106-577	**2,219.30**
2-1/4	5	10-1/8	17-3/8	106-578	**2,515.50**
2-5/16	5	10-1/8	17-3/8	106-579	**2,517.10**
2-3/8	5	10-1/8	17-3/8	106-580	**2,517.10**
2-7/16	5	11-1/4	18-3/4	106-581	**3,392.90**
2-1/2	5	11-1/4	18-3/4	106-582	**3,510.50**
2-9/16	5	11-7/8	19-1/2	106-583	**3,679.60**
2-5/8	5	11-7/8	18-3/4	106-584	**4,079.40**
2-11/16	5	12-3/4	20-3/8	106-585	**4,506.00**
2-3/4	5	12-3/4	20-3/8	106-586	**4,743.20**
2-13/16	5	13-3/8	21-1/8	106-587	**5,170.60**
2-7/8	5	13-3/8	21-1/8	106-588	**5,454.70**
2-15/16	5	14	21-3/4	106-589	**2,564.70**
3	5	14	21-3/4	106-590	**2,732.90**

Carbide Tipped Drills



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.**

- Jobber length
- 118° point
- High speed steel bodies

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	115-900	**27.50**
9/64	0.1406	1-3/4	2-7/8	115-901	**29.10**
5/32	0.1562	2	3-1/8	115-902	**29.10**
11/64	0.1719	2-1/8	3-1/4	115-903	**31.00**
3/16	0.1875	2-5/16	3-1/2	115-904	**31.00**
13/64	0.2031	2-7/16	3-5/8	115-905	**33.70**
7/32	0.2188	2-1/2	3-3/4	115-906	**33.70**
15/64	0.2344	2-5/8	3-7/8	115-907	**37.20**
1/4	0.2500	2-3/4	4	115-908	**36.50**
17/64	0.2656	2-7/8	4-1/8	115-909	**43.90**
9/32	0.2812	2-15/16	4-1/4	115-910	**43.00**
19/64	0.2969	3-1/16	4-3/8	115-911	**47.30**
5/16	0.3125	3-3/16	4-1/2	115-912	**46.40**
21/64	0.3281	3-5/16	4-5/8	115-913	**50.20**
11/32	0.3438	3-7/16	4-3/4	115-914	**49.30**
23/64	0.3594	3-1/2	4-7/8	115-915	**53.50**
3/8	0.3750	3-5/8	5	115-916	**52.40**
25/64	0.3906	3-3/4	5-1/8	115-917	**58.10**
13/32	0.4062	3-7/8	5-1/4	115-918	**57.00**
27/64	0.4219	3-15/16	5-3/8	115-919	**63.00**
7/16	0.4375	4-1/16	5-1/2	115-920	**62.00**
29/64	0.4531	4-3/16	5-5/8	115-921	**70.70**
15/32	0.4688	4-5/16	5-3/4	115-922	**69.40**
31/64	0.4844	4-3/8	5-7/8	115-923	**79.10**
1/2	0.5000	4-1/2	6	115-924	**77.60**
33/64	0.5156	4-13/16	6-5/8	115-925	**119.20**
17/32	0.5312	4-13/16	6-5/8	115-926	**119.20**
35/64	0.5469	4-13/16	6-5/8	115-927	**120.40**
9/16	0.5625	4-13/16	6-5/8	115-928	**120.40**
37/64	0.5781	4-13/16	6-5/8	115-929	**132.80**
19/32	0.5938	5-3/16	7-1/8	115-930	**128.90**
39/64	0.6094	5-3/16	7-1/8	115-931	**152.40**
5/8	0.6250	5-3/16	7-1/8	115-932	**145.90**
41/64	0.6406	5-3/16	7-1/8	115-933	**168.40**
21/32	0.6562	5-3/16	7-1/8	115-934	**148.30**
43/64	0.6719	5-5/8	7-5/8	115-935	**193.20**
11/16	0.6875	5-5/8	7-5/8	115-936	**151.20**

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	115-937	**39.70**
B	0.2380	2-3/4	4	115-938	**39.70**
C	0.2420	2-3/4	4	115-939	**39.70**
D	0.2460	2-3/4	4	115-940	**39.70**
E	0.2500	2-3/4	4	115-941	**37.90**
F	0.2570	2-7/8	4-1/8	115-942	**44.90**
G	0.2610	2-7/8	4-1/8	115-943	**45.50**
H	0.2660	2-7/8	4-1/8	115-944	**45.50**
I	0.2720	2-7/8	4-1/8	115-945	**45.50**
J	0.2770	2-7/8	4-1/8	115-946	**45.00**
K	0.2810	2-15/16	4-1/4	115-947	**45.00**
L	0.2900	2-15/16	4-1/4	115-948	**45.00**
M	0.2950	3-1/16	4-3/8	115-949	**47.40**
N	0.3020	3-1/16	4-3/8	115-950	**47.40**
O	0.3160	3-3/16	4-1/2	115-951	**47.40**
P	0.3230	3-5/16	4-5/8	115-952	**50.40**
Q	0.3320	3-7/16	4-3/4	115-953	**50.40**
R	0.3390	3-7/16	4-3/4	115-954	**52.50**
S	0.3480	3-1/2	4-7/8	115-955	**53.70**
T	0.3580	3-1/2	4-7/8	115-956	**53.70**
U	0.3680	3-5/8	5	115-957	**53.70**
V	0.3770	3-5/8	5	115-958	**54.80**
W	0.3860	3-3/4	5-1/8	115-959	**59.60**
X	0.3970	3-3/4	5-1/8	115-960	**59.60**
Y	0.4040	3-7/8	5-1/4	115-961	**59.60**
Z	0.4130	3-7/8	5-1/4	115-962	**68.70**

Wire Gauge Sizes

Size	Decimal Equiv..	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1	0.2280	2-5/8	3-7/8	115-963	**34.60**
2	0.2210	2-5/8	3-7/8	115-964	**34.60**
3	0.2130	2-1/2	3-3/4	115-965	**32.80**
4	0.2090	2-1/2	3-3/4	115-966	**32.80**
5	0.2055	2-1/2	3-3/4	115-967	**32.80**
6	0.2040	2-1/2	3-3/4	115-968	**32.80**
7	0.2010	2-7/16	3-5/8	115-969	**32.80**
8	0.1990	2-7/16	3-5/8	115-970	**32.80**
9	0.1960	2-7/16	3-5/8	115-971	**32.80**
10	0.1935	2-7/16	3-5/8	115-972	**32.80**
11	0.1910	2-5/16	3-1/2	115-973	**32.80**
12	0.1890	2-5/16	3-1/2	115-974	**32.80**
13	0.1850	2-5/16	3-1/2	115-975	**31.00**
14	0.1820	2-3/16	3-3/8	115-976	**31.00**
15	0.1800	2-3/16	3-3/8	115-977	**31.00**
16	0.1770	2-3/16	3-3/8	115-978	**31.00**
17	0.1730	2-3/16	3-3/8	115-979	**31.00**
18	0.1695	2-1/8	3-1/4	115-980	**31.00**
19	0.1660	2-1/8	3-1/4	115-981	**31.00**
20	0.1610	2-1/8	3-1/4	115-982	**31.00**
21	0.1590	2-1/8	3-1/4	115-983	**31.00**
22	0.1570	2	3-1/8	115-984	**31.00**
23	0.1540	2	3-1/8	115-985	**29.30**
24	0.1520	2	3-1/8	115-986	**29.30**
25	0.1495	1-7/8	3	115-987	**29.30**
26	0.1470	1-7/8	3	115-988	**29.30**
27	0.1440	1-7/8	3	115-989	**29.30**
28	0.1405	1-3/4	2-7/8	115-990	**29.30**
29	0.1360	1-3/4	2-7/8	115-991	**28.80**
30	0.1285	1-5/8	2-3/4	115-992	**28.00**
31	0.1200	1-5/8	2-3/4	115-993	**28.00**
32	0.1160	1-5/8	2-3/4	115-994	**28.00**

Carbide Tipped Drills - Taper Length

- High Speed Steel bodies
- 118º point



Size	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	2-3/4	5-1/8	115-995	**43.10**
9/64	3	5-3/8	115-996	**43.10**
5/32	3	5-3/8	115-997	**45.40**
11/64	3-3/8	5-3/4	115-998	**46.10**
3/16	3-3/8	5-3/4	115-999	**46.10**
5 mm	3-1/2	6-1/4	116-000	**48.80**
13/64	3-5/8	6	116-001	**48.70**
7/32	3-5/8	6	116-002	**48.70**
15/64	3-3/4	6-1/8	116-003	**56.10**
"C"	3-1/2	6-1/4	116-004	**56.30**
6.3 mm	3-1/2	6-1/4	116-005	**61.90**
1/4	3-3/4	6-1/8	116-006	**55.00**
"F"	3-1/2	6-1/4	116-007	**57.90**
17/64	3-7/8	6-1/4	116-008	**63.00**
9/32	3-7/8	6-1/4	116-009	**61.90**
19/64	4	6-3/8	116-010	**67.70**
5/16	4	6-3/8	116-011	**66.60**
"O"	3-1/2	6-1/4	116-012	**71.80**
21/64	4-1/8	6-1/2	116-013	**74.70**
11/32	4-1/8	6-1/2	116-014	**73.30**
23/64	4-1/4	6-3/4	116-015	**81.90**
9.4 mm	4	7	116-016	**80.30**
3/8	4-1/4	6-3/4	116-017	**80.20**
25/64	4-3/8	7	116-018	**90.00**
13/32	4-3/8	7	116-019	**88.40**
27/64	4-5/8	7-1/4	116-020	**103.70**
7/16	4-5/8	7-1/4	116-021	**101.80**
29/64	4-3/4	7-1/2	116-022	**114.50**
15/32	4-3/4	7-1/2	116-023	**112.40**
12 mm	5-1/2	7-1/4	116-024	**118.30**
31/64	4-3/4	7-3/4	116-025	**119.90**
1/2	4-3/4	7-3/4	116-026	**117.70**
33/64	4-3/4	8	116-027	**154.50**
17/32	4-3/4	8	116-028	**152.40**
35/64	4-7/8	8-1/4	116-029	**159.50**
9/16	4-7/8	8-1/4	116-030	**153.90**
37/64	4-7/8	8-1/4	116-031	**168.40**
19/32	4-7/8	8-1/4	116-032	**165.40**
39/64	4-7/8	8-3/4	116-033	**194.10**
5/8	4-7/8	8-3/4	116-034	**187.10**
41/64	5-1/8	8-3/4	116-035	**201.10**
21/32	5-1/8	9	116-036	**194.10**
43/64	5-3/8	9	116-037	**204.60**
11/16	5-3/8	9-1/4	116-038	**197.30**
45/64	5-5/8	9-1/4	116-039	**206.90**
23/32	5-5/8	9-1/2	116-040	**201.60**
47/64	5-7/8	9-1/2	116-041	**210.40**
3/4	5-7/8	9-3/4	116-042	**206.20**
49/64	6	9-3/4	116-043	**231.60**
25/32	6	9-7/8	116-044	**223.10**
51/64	6-1/8	9-7/8	116-045	**232.70**
13/16	6-1/8	10	116-046	**224.20**
53/64	6-1/8	10	116-047	**232.70**
27/32	6-1/8	10	116-048	**224.20**
55/64	6-1/8	10	116-049	**245.80**
7/8	6-1/8	10	116-050	**236.90**
57/64	6-1/8	10	116-051	**254.30**
29/32	6-1/8	10	116-052	**245.20**
59/64	6-1/8	10-3/4	116-053	**255.40**
15/16	6-1/8	10-3/4	116-054	**248.70**
61/64	6-3/8	11	116-055	**268.80**
31/32	6-3/8	11	116-056	**260.30**
63/64	6-3/8	11	116-057	**275.70**
1	6-3/8	11	116-058	**268.50**

Carbide Tipped Drills - Taper Shank

- High Speed Steel bodies
- 118º point



Size (in.)	Flute Length (in.)	Overall Length (in.)	Morse Taper No.	Code No.	Price $
1/4	2-7/8	6-1/8	1	116-059	**74.90**
17/64	3	6-1/4	1	116-060	**77.90**
9/32	3	6-1/4	1	116-061	**76.30**
19/64	3-1/8	6-3/8	1	116-062	**77.90**
5/16	3-1/8	6-3/8	1	116-063	**76.30**
21/64	3-1/4	6-1/2	1	116-064	**98.90**
11/32	3-1/4	6-1/2	1	116-065	**97.10**
23/64	3-1/2	6-3/4	1	116-066	**98.90**
3/8	3-1/2	6-3/4	1	116-067	**97.10**
25/64	3-5/8	7	1	116-068	**114.60**
13/32	3-5/8	7	1	116-069	**112.70**
27/64	3-7/8	7-1/4	1	116-070	**114.60**
7/16	3-7/8	7-1/4	1	116-071	**112.70**
29/64	4-1/8	7-1/2	1	116-072	**138.70**
15/32	4-1/8	7-1/2	1	116-073	**136.20**
31/64	4-3/8	8-1/4	2	116-074	**138.70**
1/2	4-3/8	8-1/4	2	116-075	**142.90**
33/64	4-5/8	8-1/2	2	116-076	**155.30**
17/32	4-5/8	8-1/2	2	116-077	**149.60**
35/64	4-7/8	8-3/4	2	116-078	**157.30**
9/16	4-7/8	8-3/4	2	116-079	**151.80**
37/64	4-7/8	8-3/4	2	116-080	**164.70**
19/32	4-7/8	8-3/4	2	116-081	**158.80**
39/64	4-7/8	8-3/4	2	116-082	**187.30**
5/8	4-7/8	8-3/4	2	116-083	**180.60**
41/64	5-1/8	9	2	116-084	**198.60**
21/32	5-1/8	9	2	116-085	**191.50**
43/64	5-3/8	9-1/4	2	116-086	**192.50**
11/16	5-3/8	9-1/4	2	116-087	**185.50**
45/64	5-5/8	9-1/2	2	116-088	**197.60**
23/32	5-5/8	9-1/2	2	116-089	**190.50**
47/64	5-7/8	9-3/4	2	116-090	**201.60**
3/4	5-7/8	9-3/4	2	116-091	**194.40**
49/64	6	9-7/8	2	116-092	**210.70**
25/32	6-1/8	9-7/8	2	116-093	**213.00**
51/64	6-1/8	10-3/4	3	116-094	**217.70**
13/16	6-1/8	10-3/4	3	116-095	**230.90**
53/64	6-1/8	10-3/4	3	116-096	**248.50**
27/32	6-1/8	10-3/4	3	116-097	**247.30**
55/64	6-1/8	10-3/4	3	116-098	**234.30**
7/8	6-1/8	10-3/4	3	116-099	**234.30**
57/64	6-1/8	10-3/4	3	116-100	**240.40**
29/32	6-1/8	10-3/4	3	116-101	**240.40**
59/64	6-1/8	10-3/4	3	116-102	**250.80**
15/16	6-1/8	10-3/4	3	116-103	**250.80**
61/64	6-3/8	11	3	116-104	**269.20**
31/32	6-3/8	11	3	116-105	**265.50**
63/64	6-3/8	11	3	116-106	**269.20**
1	6-3/8	11	3	116-107	**261.10**
1-1/32	6-1/2	11-1/8	3	116-108	**322.70**
1-1/16	6-5/8	11-1/4	4	116-109	**327.00**
1-3/32	6-7/8	12-1/2	4	116-110	**353.80**
1-1/8	7-1/8	12-3/4	4	116-111	**362.40**
1-5/32	7-1/4	12-7/8	4	116-112	**410.30**
1-3/16	7-3/8	13	4	116-113	**414.60**
1-7/32	7-1/2	13-1/8	4	116-114	**438.60**
1-1/4	7-7/8	13-1/2	4	116-115	**444.30**

Die Drills - Carbide Tipped

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	116-116	**29.30**
5/64*	-	1-1/2	116-117	**29.30**
3/32*	-	2	116-118	**33.20**
7/64*	-	2	116-119	**33.20**
1/8*	-	2	116-120	**33.20**
9/64*	-	2	116-121	**35.30**
5/32*	-	2	116-122	**40.80**
11/64	1-1/2	3-1/2	116-123	**61.30**
3/16	1-1/2	3-1/2	116-124	**61.30**
13/64	1-3/4	3-3/4	116-125	**63.30**
7/32	1-3/4	3-3/4	116-126	**63.30**
15/64	2	4	116-127	**65.50**
1/4	2	4	116-128	**65.50**
17/64	2-1/4	4-1/4	116-129	**69.10**
9/32	2-1/4	4-1/4	116-130	**69.10**
19/64	2-1/2	4-1/2	116-131	**72.50**
5/16	2-1/2	4-1/2	116-132	**72.50**
21/64	2-3/4	4-3/4	116-133	**77.90**
11/32	2-3/4	4-3/4	116-134	**77.90**
23/64	3	5	116-135	**83.10**
3/8	3	5	116-136	**83.10**
25/64	3	5-1/4	116-137	**96.70**
13/32	3	5-1/4	116-138	**96.70**
27/64	3	5-1/2	116-139	**112.30**
7/16	3	5-1/2	116-140	**112.30**
29/64	3-1/4	5-3/4	116-141	**123.50**
15/32	3-1/4	5-3/4	116-142	**123.50**
31/64	3-1/2	6	116-143	**144.80**
1/2	3-1/2	6	116-144	**144.80**
17/32	3-1/2	6	116-145	**174.60**
9/16	3-1/2	6	116-146	**174.60**
19/32	4	7	116-147	**190.40**
5/8	4	7	116-148	**190.40**
21/32	4-1/2	7-1/2	116-149	**200.70**
11/16	4-1/2	7-1/2	116-150	**206.30**
23/32	4-3/4	8	116-151	**220.20**
3/4	4-3/4	8	116-152	**222.00**
13/16	4-3/4	8	116-153	**382.20**
7/8	4-3/4	8	116-154	**397.50**
15/16	4-3/4	8	116-155	**440.10**
1	4-3/4	8	116-156	**457.00**

RC65 Straight Flute Drills - Carbide Tipped

For drilling and centre drilling heat treated high speed steel up to 65 RC. 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	116-157	**110.10**
5/32	1/2	3	1800	116-158	**119.20**
3/16	3/4	3-1/4	1600	116-159	**103.30**
7/32	1-1/4	3-1/4	1400	116-160	**105.40**
1/4	1-1/2	3-1/2	1200	116-161	**110.10**
5/16	1-3/4	3-3/4	1000	116-162	**116.20**
3/8	2	4	800	116-163	**125.20**
7/16	2-1/4	4-1/2	800	116-164	**167.40**
1/2	2-1/2	5	700	116-165	**202.50**
5/8	2-1/2	5	700	116-166	**254.10**

Carbide Tipped Stub Drills

- Carbide tipped



Size	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
1/8	7/8	1-7/8	116-167	**46.40**
9/64	15/16	1-15/16	116-168	**50.10**
5/32	1	2-1/16	116-169	**52.60**
3/16	1-1/8	2-3/16	116-170	**56.40**
7/32	1-1/4	2-3/8	116-171	**56.80**
1/4	1-3/8	2-1/2	116-172	**53.10**
9/32	1-1/2	2-11/16	116-173	**72.90**
5/16	1-5/8	2-13/16	116-174	**80.30**
3/8	3-1/8	3-1/8	116-175	**78.10**
7/16	3-7/16	3-7/16	116-176	**104.90**
1/2	2-1/4	3-3/4	116-177	**132.30**

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	116-178	**6.80**
5/32 (3" OAL)	5/32	116-179	**7.20**
11/64 (3" OAL)	11/64	116-180	**7.20**
3/16	3/16	116-181	**7.30**
7/32	7/32	116-182	**7.60**
1/4	1/4	116-183	**7.70**
9/32	1/4	116-184	**7.80**
5/16	1/4	116-185	**7.90**
3/8	1/4	116-186	**8.50**
1/2	1/4	116-187	**9.90**

6" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/8	1/8	116-188	**7.20**
3/16	3/16	116-189	**7.50**
1/4	1/4	116-190	**7.70**
9/32	1/4	116-191	**8.40**
5/16	1/4	116-192	**8.90**
3/8	1/4	116-193	**9.10**
7/16	1/4	116-194	**9.70**
7/16	3/8	116-195	**9.70**
1/2	1/4	116-196	**10.50**
1/2	3/8	116-197	**10.50**
9/16	3/8	116-198	**14.40**
9/16	1/2	116-199	**14.40**
5/8	1/2	116-200	**16.70**
11/16	1/2	116-201	**18.30**
3/4	1/2	116-202	**19.80**
7/8	1/2	116-203	**25.00**
1	1/2	116-204	**30.70**
1-1/8	1/2	116-205	**43.90**
1-1/4	1/2	116-206	**57.00**
1-3/8	1/2	116-207	**76.80**
1-1/2	1/2	116-208	**78.80**

Carbide Tipped Masonry Drills cont'd

12" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/8	1/8	116-209	**16.60**
3/16	3/16	116-210	**17.10**
1/4	1/4	116-211	**17.40**
5/16	1/4	116-212	**18.40**
3/8	1/4	116-213	**20.80**
7/16	3/8	116-214	**24.60**
1/2	3/8	116-215	**25.20**
9/16	1/2	116-216	**28.60**
5/8	1/2	116-217	**31.70**
11/16	1/2	116-218	**37.10**
3/4	1/2	116-219	**37.80**
7/8	1/2	116-220	**45.00**
1	1/2	116-221	**51.70**
1-1/8	1/2	116-222	**64.90**

18" O.A.L.

Size (in.)	Shank Size (in.)	Code No.	Price $
1/4	1/4	116-223	**23.80**
3/16	3/16	116-224	**25.00**
5/16	1/4	116-225	**26.80**
3/8	5/16	116-226	**28.50**
7/16	3/8	116-227	**34.30**
1/2	3/8	116-228	**35.10**
9/16	1/2	116-229	**40.30**
5/8	1/2	116-230	**42.80**
11/16	1/2	116-231	**49.80**
3/4	1/2	116-232	**51.00**
7/8	1/2	116-233	**61.60**
1	1/2	116-234	**69.70**
1-1/8	1/2	116-235	**99.20**
1-1/4	1/2	116-236	**105.20**
1-1/2	1/2	116-237	**135.70**

Solid Carbide Centre Drills

- Micrograin carbide
- Regular length



Catalog No.	Body Diameter (in.)	Drill Diameter (in.)	Overall Length (in.)	Code No.	Price $
1	1/8	3/64	1-1/4	170-700	**27.50**
2	3/16	5/64	1-7/8	170-702	**42.80**
3	1/4	7/64	2	170-704	**51.00**
4	5/16	1/8	2-1/8	170-706	**69.50**
5	7/16	3/16	2-3/4	170-708	**105.50**
6	1/2	7/32	3	170-710	**143.90**

60° Carbide and HSS Combined Drill and 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.	HSS Price $	Carbide	Carbide Code No.	Carbide Price $
00	0.025	1/8	HS00CD	121-810	**19.60**	C00CD	121-830	**45.70**
0	0.031	1/8	HS0CD	121-812	**19.60**	C0CD	121-832	**40.00**
1	3/64	1/8	HS1CD	121-814	**13.90**	C1CD	121-834	**33.00**
2	5/64	3/16	HS2CD	121-816	**14.30**	C2CD	121-836	**52.10**
3	7/64	1/4	HS3CD	121-818	**14.90**	C3CD	121-838	**50.80**
4	1/8	5/16	HS4CD	121-820	**15.60**	C4CD	121-840	**69.30**
5	3/16	7/16	HS5CD	121-822	**24.40**	C5CD	121-842	**119.20**
6	7/32	1/2	HS6CD	121-824	**36.70**	C6CD	121-844	**162.60**
7	1/4	5/8	HS7CD	121-826	**63.00**	C7CD	121-846	**313.00**
8	5/16	3/4	HS8CD	121-828	**81.70**	C8CD	121-848	**344.80**

QUALITY IMPORT

Combined Drills And Countersinks - Regular Length

- Plain type
- 60° point
- High Speed Steel



Size	Body Dia. (in.)	Drill Dia. (in.)	Drill Length (in.)	Overall Length (in.)	Bell Dia.	Made in Poland Code No.	Price $	Quality Import Code No.	Price $
1	1/8	3/64	3/64	1-1/4		125-381 •	11.90		
2	3/16	5/64	5/64	1-7/8		125-382 •	15.40	125-281	3.90
3	1/4	7/64	7/64	2		125-383 •	16.00	125-282	3.90
4	5/16	1/8	1/8	2-1/8		125-384 •	17.70	125-283	3.90
5	7/16	3/16	3/16	2-3/4		125-385 •	31.10	125-284	9.50
6	1/2	7/32	7/32	3				125-285	14.40
7	5/8	1/4	1/4	3-1/4				125-286	24.80
8	3/4	5/16	5/16	3-1/2				125-287	26.30
Bell Type									
11	1/8	3/64	3/64	1-1/4				125-291	7.20
12	3/16	1/16	1/16	1-7/8	.150			125-292	7.20
13	1/4	3/32	3/32	2	.200			125-293	7.70
14	5/16	7/64	7/64	2-1/8	.250			125-294	8.00
15	7/16	5/32	5/32	2-3/4	.350			125-295	13.60
16	1/2	3/16	3/16	3	.400			125-296	20.20
17	5/8	7/32	7/32	3-1/4	.500			125-297	26.70
18	3/4	1/4	1/4	3-1/2	.600			125-298	35.80

• Available only while quantities last

QUALITY IMPORT

Combined Drills And Countersinks - Long Series

- Right hand
- 60° point
- High Speed Steel



Size	Body Dia. (in.)	Drill Dia. (in.)	Drill Length (in.)	Overall Length (in.)	HSS Code No.	Price $
1	1/8	3/64	3/64	3	125-351	16.00
1	1/8	3/64	3/64	4	125-352	16.70
1	1/8	3/64	3/64	5	125-353	18.00
1	1/8	3/64	3/64	6	125-354	30.00
2	3/16	5/64	5/64	4	125-355	20.10
2	3/16	5/64	5/64	5	125-356	23.50
2	3/16	5/64	5/64	6	125-357	29.70
3	1/4	7/64	7/64	4	125-358	25.00
3	1/4	7/64	7/64	5	125-359	27.10
3	1/4	7/64	7/64	6	125-360	30.80
4	5/16	1/8	1/8	4	125-361	22.90
4	5/16	1/8	1/8	5	125-362	28.80
4	5/16	1/8	1/8	6	125-363	33.40
4-1/2	3/8	9/64	9/64	4	125-364	25.20
4-1/2	3/8	9/64	9/64	5	125-365	29.40
4-1/2	3/8	9/64	9/64	6	125-366	34.90
5	7/16	3/16	3/16	4	125-367	27.50
5	7/16	3/16	3/16	5	125-368	29.70
5	7/16	3/16	3/16	6	125-369	36.50
6	1/2	7/32	7/32	5	125-370	33.70
6	1/2	7/32	7/32	6	125-371	40.60
7	5/8	1/4	1/4	5	125-372	43.90
7	5/8	1/4	1/4	6	125-373	77.70
8	3/4	5/16	5/16	6	125-374	85.50

stm Premium

Combined Drills And Countersinks - Plain Type

- 60° countersink
- High Speed Steel
- Cobalt
- Solid 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	116-238	6.80	116-248	20.00	116-256	32.00
2	3/16	5/64	1-7/8	116-239	6.80	116-249	20.40	116-257	49.90
3	1/4	7/64	2	116-240	7.00	116-250	21.50	116-258	59.30
4	5/16	1/8	2-1/8	116-241	7.20	116-251	22.10	116-259	81.50
5	7/16	3/16	2-3/4	116-242	10.50	116-252	40.70	116-260	123.40
6	1/2	7/32	3	116-243	15.70	116-253	54.60	116-261	179.20
7	5/8	1/4	3-1/4	116-244	22.60	116-254	70.50		
8	3/4	5/16	3-1/2	116-245	31.30	116-255	100.50		
9	7/8	11/32	3-5/8	116-246	58.50				
10	1	3/8	3-3/4	116-247	76.40				

Combined Drills And Countersinks - Bell Type

- 60° countersink
- High Speed Steel
- 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	116-262	9.10	116-272	27.10
12	3/16	1/16	1-7/8	0.1500	116-263	9.10	116-273	28.50
13	1/4	3/32	2	0.2000	116-264	10.70	116-274	28.00
14	5/16	7/64	2-1/8	0.2500	116-265	9.40	116-275	34.30
15	7/16	5/32	2-3/4	0.3500	116-266	15.40	116-276	39.90
16	1/2	3/16	3	0.4000	116-267	23.20	116-277	55.70
17	5/8	7/32	3-1/4	0.5000	116-268	28.80	116-278	82.30
18	3/4	1/4	3-1/2	0.6000	116-269	39.50	116-279	103.20
20	1	3/8	3-3/4	0.8000	116-271	76.00		

stm Premium

Combined Drills And Countersinks - Long Series

- High Speed Steel



Size	Body Dia. (in.)	Drill Dia. (in.)	Overall Length (in.)	HSS Code No.	Price $
1	1/8	3/64	3	116-280	24.10
1	1/8	3/64	4	116-281	25.20
1	1/8	3/64	5	116-282	33.90
1	1/8	3/64	6	116-283	45.30
2	3/16	5/64	4	116-284	27.60
2	3/16	5/64	5	116-285	35.10
2	3/16	5/64	6	116-286	45.30
3	1/4	7/64	4	116-287	29.10
3	1/4	7/64	5	116-288	38.10
3	1/4	7/64	6	116-289	45.30
4	5/16	1/8	4	116-290	31.90
4	5/16	1/8	5	116-291	40.80
4	5/16	1/8	6	116-292	47.10
4-1/2	3/8	9/64	4	116-294	35.70
4-1/2	3/8	9/64	5	116-295	43.60
4-1/2	3/8	9/64	6	116-296	49.80
5	7/16	3/16	4	116-297	40.90
5	7/16	3/16	5	116-298	46.60
5	7/16	3/16	6	116-299	52.40
6	1/2	7/32	5	116-300	49.10
6	1/2	7/32	6	116-301	59.30
7	5/8	1/4	6	116-302	109.10
8	3/4	5/16	6	116-305	119.20

Combined Drills And Countersinks HSS - Metric Sizes

- Plain type
- 60° countersink
- High Speed Steel



Size (mm)	Drill Diameter (in.)	Body Diameter (in.)	Overall Length (in.)	HSS Code No.	Price $
.50 *	.0197	1/8	13/16	116-306	**18.60**
.80 *	.0315	1/8	13/16	116-307	**17.40**
1.00	.0394	1/8	1-1/4	116-308	**15.40**
1.25	.0492	1/8	1-1/4	116-309	**15.40**
1.60	.0630	5/32	1-5/16	116-310	**14.50**
2.00	.0787	.1969	1-9/16	116-311	**16.20**
2.50	.0984	1/4	1-3/4	116-312	**18.40**
3.15	.1240	.3150	2	116-313	**22.50**
4.00	.1575	0.3937	2-1/4	116-314	**38.00**
5.00	.1969	0.4921	2-1/2	116-315	**52.60**
6.30	.2480	0.6299	2-3/4	116-316	**76.90**
8.00	.3150	0.7874	3-1/8	116-317	**119.40**

* Single end

Missile And Aircraft Series HSS

- High Speed Steel



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	116-318	**8.00**
00	1/8	0.025	0.025	1-1/4	116-319	**8.00**
0	1/8	1/32	1/32	1-1/4	116-320	**8.00**

Carbide Tipped Combined Drills And Countersinks

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

- 120° point
- 60° countersink



Size	Body Diameter (in.)	Drill Diameter (in.)	Overall Length (in.)	Code No.	Price $
4-1	5/16	3/32	2-1/8	116-321	**113.50**
4-2	5/16	1/8	2-1/8	116-322	**113.50**
6-1	1/2	7/32	3	116-323	**144.90**
6-2	1/2	9/32	3	116-324	**144.90**

Spotting And Centering Drills HSS

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

- Right hand
- Left hand
- 118° point
- 118° point



Size (in.)	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	Right Hand Code No.	Price $	Left Hand Code No.	Price $
3/8	.3750	1	2	116-325	**13.20**	116-336	**22.80**
7/16	.4375	1	2	116-326	**21.50**	116-337	**30.90**
1/2	.5000	1	2	116-327	**22.90**	116-338	**33.20**
5/8	.6250	1-1/8	2-1/4	116-328	**36.40**	116-339	**51.60**
3/4	.7500	1-1/8	2-1/4	116-329	**51.60**	116-340	**71.80**
7/8	.8750	1-1/4	2-1/2	116-330	**74.10**	116-341	**101.50**
1	1.0000	1-1/4	2-1/2	116-331	**83.20**	116-342	**108.80**
1-1/4	1.2500	2	4	116-332	**165.30**	116-343	**247.70**
1-1/2	1.5000	2-1/2	5	116-333	**257.60**	116-344	**348.30**
1-3/4	1.7500	2-3/4	5-1/2	116-334	**389.60**	116-345	**523.50**
2	2.000	3	6	116-335	**462.20**	–	

NC/CNC Spotting Drills HSS

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

- Standard length
- 90° point
- Right hand cut
- 120° point



Size (in.)	Decimal Equiv. (in.)	Overall Length (in.)	90° Flute Length	HSS Code No.	Price $	120° Flute Length	HSS Code No.	Price $
1/4	.2500	2-1/2	3/4	116-346	**31.20**	21/32	116-352	**31.60**
3/8	.3750	3-1/8	1-1/8	116-347	**33.50**	1	116-353	**33.90**
1/2	.5000	3-3/4	1-3/8	116-348	**42.90**	1-3/16	116-354	**43.50**
5/8	.6250	4-3/8	1-5/8	116-349	**56.50**	1-15/32	116-355	**56.20**
3/4	.7500	5	1-7/8	116-350	**71.50**	1-3/4	116-356	**72.00**
1	1.0000	6	2-1/4	116-351	**120.30**	2-3/32	116-357	**121.70**

Centre Drills HSS

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

- 118° point



Size	Decimal Equiv. (in.)	Flute Length (in.)	Overall Length (in.)	HSS Code No.	Price $
#56	.0465	3/8	1-3/16	116-358	**3.50**
1/16	.0625	3/8	1-3/16	116-359	**3.50**
5/64	.0781	3/4	1-1/4	116-360	**3.50**
3/32	.0938	3/4	1-1/4	116-361	**3.70**
#41	.0960	3/4	1-1/4	116-362	**3.70**
#40	.0980	3/4	1-1/4	116-363	**4.10**
7/64	.1094	3/4	1-1/4	116-364	**3.70**
1/8	.1250	3/4	1-1/4	116-365	**3.30**
#30	.1285	3/4	1-1/4	116-366	**3.40**
9/64	.1406	3/4	1-1/4	116-367	**4.90**
5/32	.1562	1	1-1/2	116-368	**5.40**
#21	.1590	1	1-1/2	116-369	**5.40**
#20	.1610	1	1-1/2	116-370	**5.40**
11/64	.1719	1	1-1/2	116-371	**5.40**
3/16	.1875	1	1-1/2	116-372	**5.40**
13/64	.2031	1	1-1/2	116-373	**5.40**
#5	.2055	1	1-1/2	116-374	**5.40**
7/32	.2188	1	1-1/2	116-375	**5.40**
1/4	.2500	1	1-1/2	116-376	**5.90**
9/32	.2812	1	1-1/2	116-377	**8.10**
5/16	.3125	1	1-1/2	116-378	**9.70**
29/64	.4531	1	1-1/2	116-379	**15.50**

Spotting and Centering Drills HSS

- 118° angle
- High Speed Steel



Dia. (in.)	Overall Length (in.)	Flute Length (in.)	HSS Code No.	Price $
3/8	2	1	144-311	**19.50**
7/16	2	1	144-312	**24.90**
1/2	2	1	144-313	**27.20**
5/8	2-1/4	1-1/8	144-314	**28.90**
3/4	2-1/4	1-1/8	144-315	**43.30**
7/8	2-1/2	1-1/4	144-316	**100.00**
1	2-1/2	1-1/4	144-317	**132.90**
1-1/4	4	2	144-318	**196.90**
1-1/2	5	2-1/2	144-319	**290.80**

stm Premium

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	.0225	1	2	116-380	**6.80**
74	.0225	1	3	116-381	**7.60**
73	.0240	5/8	1-1/2	116-382	**7.20**
69	.0292	2	3	116-383	**8.00**
68	.0320	2	6	116-384	**12.10**
60	.0400	3	4	116-385	**7.70**
58	.0420	3	4	116-386	**8.00**
57	.0430	4	6	116-387	**10.50**
57	.0430	2	3	116-388	**6.80**
57	.0430	3	4	116-389	**8.20**
3/64	.0469	2	3	116-390	**7.10**
55	.0520	2-1/4	3	116-391	**7.30**
55	.0520	2-1/2	4-1/2	116-392	**8.90**
55	.0520	3	4	116-393	**8.40**
55	.0520	3-1/2	6-1/4	116-394	**10.10**
54	.0550	4	6	116-395	**11.20**
1/16	.0625	2-1/2	3-1/2	116-396	**8.00**
1/16	.0625	3	4	116-397	**8.80**
1/16	.0625	4	5	116-398	**11.50**
1/16	.0625	4	6	116-400	**11.80**
52	.0635	4	5	116-401	**10.10**
50	.0700	3	4	116-402	**9.00**
50	.0700	3	5	116-403	**10.40**
50	.0700	4	6	116-404	**12.10**

Drill And Reamer Blanks HSS

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

- High Speed Steel



Drill Blanks

- to 1/2" + .0000/ - .0003", to 1 " + .0000"/ - .0005"

Reamer Blanks

- + .0002"/ - .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	116-405	**3.40**	116-670	**3.40**
1/32	0.0312	1-3/8	116-406	**3.40**	116-671	**3.40**
3/64	0.0469	1-3/4	116-407	**3.60**	116-672	**3.60**
1/16	0.0625	1-7/8	116-408	**3.50**	116-673	**3.50**
5/64	0.0781	2	116-409	**3.70**	116-674	**3.70**
3/32	0.0938	2-1/4	116-410	**3.60**	116-675	**3.60**
7/64	0.1094	2-5/8	116-411	**3.70**	116-676	**3.70**
1/8	0.1250	2-3/4	116-412	**3.60**	116-677	**3.60**
9/64	0.1406	2-7/8	116-413	**3.70**	116-678	**3.70**
5/32	0.1562	3-1/8	116-414	**4.10**	116-679	**4.10**
11/64	0.1719	3-1/4	116-415	**4.10**	116-680	**4.10**
3/16	0.1875	3-1/2	116-416	**4.60**	116-681	**4.60**
13/64	0.2031	3-5/8	116-417	**5.80**	116-682	**5.80**
7/32	0.2188	3-3/4	116-418	**5.90**	116-683	**5.90**
15/64	0.2344	3-7/8	116-419	**6.50**	116-684	**6.50**
1/4	0.2500	4	116-420	**6.80**	116-685	**6.80**
17/64	0.2656	4-1/8	116-421	**7.70**	116-686	**7.70**
9/32	0.2812	4-1/4	116-422	**8.10**	116-687	**8.10**
19/64	0.2969	4-3/8	116-423	**9.10**	116-688	**9.10**
5/16	0.3125	4-1/2	116-424	**9.00**	116-689	**9.00**
21/64	0.3281	4-5/8	116-425	**10.40**	116-690	**10.40**
11/32	0.3438	4-3/4	116-426	**11.20**	116-691	**11.20**
23/64	0.3594	4-7/8	116-427	**12.50**	116-692	**12.50**
3/8	0.3750	5	116-428	**13.10**	116-693	**13.10**
25/64	0.3906	5-1/8	116-429	**14.20**	116-694	**14.20**
13/32	0.4062	5-1/4	116-430	**15.40**	116-695	**15.40**
27/64	0.4219	5-3/8	116-431	**17.10**	116-696	**17.10**

Drill And Reamer Blanks HSS cont'd

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $	Reamer Blank Code No.	Price $
7/16	0.4375	5-1/2	116-432	**18.70**	116-697	**18.70**
29/64	0.4531	5-5/8	116-433	**19.80**	116-698	**19.80**
15/32	0.4688	5-3/4	116-434	**20.10**	116-699	**20.10**
31/64	0.4844	5-7/8	116-435	**22.80**	116-700	**22.80**
1/2	0.5000	6	116-436	**22.90**	116-701	**22.90**
33/64	0.5156	6	116-437	**35.70**		
17/32	0.5312	6	116-438	**37.50**		
35/64	0.5469	6	116-439	**35.70**		
9/16	0.5625	6	116-440	**39.00**		
37/64	0.5781	6	116-441	**44.70**		
19/32	0.5938	6	116-442	**44.70**		
39/64	0.6094	6	116-443	**43.90**		
5/8	0.6250	6	116-444	**43.90**		
41/64	0.6406	6	116-445	**51.60**		
21/32	0.6562	6	116-446	**51.60**		
43/64	0.6719	6	116-447	**56.50**		
11/16	0.6875	6	116-448	**56.50**		
45/64	0.7031	6	116-449	**56.50**		
23/32	0.7188	6	116-450	**56.50**		
47/64	0.7344	6	116-451	**58.50**		
3/4	0.7500	6	116-452	**58.50**		
49/64	0.7656	6	116-453	**64.00**		
25/32	0.7812	6	116-454	**64.00**		
51/64	0.7969	6	116-455	**68.10**		
13/16	0.8125	6	116-456	**68.10**		
53/64	0.8281	6	116-457	**75.50**		
27/32	0.8438	6	116-458	**75.50**		
55/64	0.8594	6	116-459	**80.00**		
7/8	0.8750	6	116-460	**80.00**		
57/64	0.8906	6	116-461	**87.00**		
29/32	0.9062	6	116-462	**87.00**		
59/64	0.9219	6	116-463	**92.40**		
15/16	0.9375	6	116-464	**92.40**		
61/64	0.9531	6	116-465	**96.10**		
31/32	0.9688	6	116-466	**96.10**		
63/64	0.9844	6	116-467	**101.40**		
1	1.0000	6	116-468	**101.40**		

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	116-469	**6.80**	116-495	**6.80**
B	0.2380	4	116-470	**6.80**	116-496	**6.80**
C	0.2420	4	116-471	**6.80**	116-497	**6.80**
D	0.2460	4	116-472	**6.80**	116-498	**6.80**
E	0.2500	4	116-473	**6.80**	116-499	**6.80**
F	0.2570	4-1/8	116-474	**7.60**	116-500	**7.60**
G	0.2610	4-1/8	116-475	**7.60**	116-501	**7.60**
H	0.2660	4-1/8	116-476	**7.60**	116-502	**7.60**
I	0.2720	4-1/8	116-477	**8.10**	116-503	**8.10**
J	0.2770	4-1/8	116-478	**8.10**	116-504	**8.10**
K	0.2810	4-1/4	116-479	**8.40**	116-505	**8.40**
L	0.2900	4-1/4	116-480	**8.40**	116-506	**8.40**
M	0.2950	4-3/8	116-481	**9.30**	116-507	**9.30**
N	0.3020	4-3/8	116-482	**9.30**	116-508	**9.30**
O	0.3160	4-1/2	116-483	**9.30**	116-509	**9.30**
P	0.3230	4-5/8	116-484	**10.00**	116-510	**10.00**
Q	0.3320	4-3/4	116-485	**10.00**	116-511	**10.00**
R	0.3390	4-3/4	116-486	**11.40**	116-512	**11.40**
S	0.3480	4-7/8	116-487	**12.80**	116-513	**12.80**
T	0.3580	4-7/8	116-488	**12.80**	116-514	**12.80**
U	0.3680	5	116-489	**13.60**	116-515	**13.60**
V	0.3770	5	116-490	**13.60**	116-516	**13.60**
W	0.3860	5-1/8	116-491	**14.70**	116-517	**14.70**
X	0.3970	5-1/8	116-492	**14.70**	116-518	**14.70**
Y	0.4040	5-1/4	116-493	**15.90**	116-519	**15.90**
Z	0.4130	5-1/4	116-494	**15.90**	116-520	**15.90**

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	116-521	**5.70**	116-601	**5.70**
2	0.2210	3-7/8	116-522	**5.70**	116-602	**5.70**
3	0.2130	3-3/4	116-523	**5.70**	116-603	**5.70**
4	0.2090	3-3/4	116-524	**5.70**	116-604	**5.70**
5	0.2055	3-3/4	116-525	**5.70**	116-605	**5.70**
6	0.2040	3-3/4	116-526	**5.40**	116-606	**5.40**
7	0.2010	3-5/8	116-527	**5.40**	116-607	**5.40**

Drill And Reamer Blanks HSS - cont'd

Wire Gauge Sizes cont'd

Size	Decimal Equiv. (in.)	Overall Length (in.)	Drill Blank Code No.	Price $		Reamer Blank Code No.	Price $
8	0.1990	3-5/8	116-528	**5.40**		116-608	**5.40**
9	0.1960	3-5/8	116-529	**5.40**		116-609	**5.40**
10	0.1935	3-5/8	116-530	**5.40**		116-610	**5.40**
11	0.1910	3-1/2	116-531	**4.40**		116-611	**4.40**
12	0.1890	3-1/2	116-532	**4.40**		116-612	**4.40**
13	0.1850	3-1/2	116-533	**4.40**		116-613	**4.40**
14	0.1820	3-3/8	116-534	**4.40**		116-614	**4.40**
15	0.1800	3-3/8	116-535	**4.40**		116-615	**4.40**
16	0.1770	3-3/8	116-536	**3.90**		116-616	**3.90**
17	0.1730	3-3/8	116-537	**3.90**		116-617	**3.90**
18	0.1695	3-1/4	116-538	**3.90**		116-618	**3.90**
19	0.1660	3-1/4	116-539	**3.90**		116-619	**3.90**
20	0.1610	3-1/4	116-540	**3.90**		116-620	**3.90**
21	0.1590	3-1/4	116-541	**3.90**		116-621	**3.90**
22	0.1570	3-1/8	116-542	**3.90**		116-622	**3.90**
23	0.1540	3-1/8	116-543	**3.90**		116-623	**3.90**
24	0.1520	3-1/8	116-544	**3.90**		116-624	**3.90**
25	0.1495	3	116-545	**3.90**		116-625	**3.90**
26	0.1470	3	116-546	**3.50**		116-626	**3.50**
27	0.1440	3	116-547	**3.50**		116-627	**3.50**
28	0.1405	2-7/8	116-548	**3.50**		116-628	**3.50**
29	0.1360	2-7/8	116-549	**3.50**		116-629	**3.50**
30	0.1285	2-3/4	116-550	**3.50**		116-630	**3.50**
31	0.1200	2-3/4	116-551	**3.50**		116-631	**3.50**
32	0.1160	2-3/4	116-552	**3.50**		116-632	**3.50**
33	0.1130	2-5/8	116-553	**3.50**		116-633	**3.50**
34	0.1110	2-5/8	116-554	**3.50**		116-634	**3.50**
35	0.1100	2-5/8	116-555	**3.50**		116-635	**3.50**
36	0.1065	2-1/2	116-556	**3.50**		116-636	**3.50**
37	0.1040	2-1/2	116-557	**3.50**		116-637	**3.50**
38	0.1015	2-1/2	116-558	**3.50**		116-638	**3.50**
39	0.0995	2-3/8	116-559	**3.50**		116-639	**3.50**
40	0.0980	2-3/8	116-560	**3.50**		116-640	**3.50**
41	0.0960	2-3/8	116-561	**3.40**		116-641	**3.40**
42	0.0935	2-1/4	116-562	**3.40**		116-642	**3.40**
43	0.0890	2-1/4	116-563	**3.40**		116-643	**3.40**
44	0.0860	2-1/8	116-564	**3.40**		116-644	**3.40**
45	0.0820	2-1/8	116-565	**3.40**		116-645	**3.40**
46	0.0810	2-1/8	116-566	**3.40**		116-646	**3.40**
47	0.0785	2	116-567	**3.40**		116-647	**3.40**
48	0.0760	2	116-568	**3.40**		116-648	**3.40**
49	0.0730	2	116-569	**3.40**		116-649	**3.40**
50	0.0700	2	116-570	**3.40**		116-650	**3.40**
51	0.0670	2	116-571	**3.40**		116-651	**3.40**
52	0.0635	1-7/8	116-572	**3.40**		116-652	**3.40**
53	0.0595	1-7/8	116-573	**3.40**		116-653	**3.40**
54	0.0550	1-7/8	116-574	**3.40**		116-654	**3.40**
55	0.0520	1-7/8	116-575	**3.40**		116-655	**3.40**
56	0.0465	1-3/4	116-576	**3.40**		116-656	**3.40**
57	0.0430	1-3/4	116-577	**3.40**		116-657	**3.40**
58	0.0420	1-5/8	116-578	**3.40**		116-658	**3.40**
59	0.0410	1-5/8	116-579	**3.40**		116-659	**3.40**
60	0.0400	1-5/8	116-580	**3.40**		116-660	**3.40**
61	0.0390	1-5/8	116-581	**3.30**			
62	0.0380	1-1/2	116-582	**3.30**			
63	0.0370	1-1/2	116-583	**3.30**			
64	0.0360	1-1/2	116-584	**3.30**			
65	0.0350	1-1/2	116-585	**3.30**			
66	0.0330	1-3/8	116-586	**3.30**			
67	0.0320	1-3/8	116-587	**3.30**			
68	0.0310	1-3/8	116-588	**3.30**			
69	0.0292	1-3/8	116-589	**3.30**			
70	0.0280	1-1/4	116-590	**3.30**			
71	0.0260	1-1/4	116-591	**3.30**			
72	0.0250	1-1/8	116-592	**3.30**			
73	0.0240	1-1/8	116-593	**3.30**			
74	0.0225	1	116-594	**3.30**			
75	0.0210	1	116-595	**3.30**			
76	0.0200	7/8	116-596	**3.30**			
77	0.0180	7/8	116-597	**3.30**			
78	0.0160	7/8	116-598	**3.30**			
79	0.0145	3/4	116-599	**3.30**			
80	0.0135	3/4	116-600	**3.30**			

stm Premium

Jobber Length Drill Sets



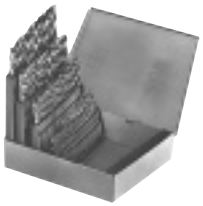


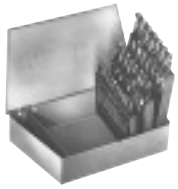

* Sizes under 1/16 - NOT split

Description	Pieces Set	Empty Case No.	Price $	Set Code No.	Price $	Sowa Premium Code No.	Price $	Quality Import Code No.	Price $
High Speed Steel - General Purpose									
Fractional 1/16 - 1/2 by 64ths	29	105-374	**22.30**	118-119	**172.60**				
Fractional 1/16 - 1/4 by 64ths	13	105-349	**11.40**	113-847	**43.70**				
Fractional 1/16 - 3/8 by 64ths	21	113-800	**22.30**	113-848	**102.70**				
Fractional 1/16 - 1/2 by 32nds	15	113-801	**22.30**	113-849	**113.70**				
Letter A-Z	26	105-989	**25.50**	118-125	**180.50**				
Wire Gauge 1 - 60	60	105-824	**21.90**	118-124	**143.60**				
Wire Gauge 61 - 80	20	113-802	**13.10**	113-850	**63.00**			105-830	**10.40**
Metric 1.0 mm - 6.0 mm by .5 mm	11	113-803	**13.70**	113-851	**42.60**				
Metric 1.0 mm - 10.00 mm by .5 mm	19	113-804	**21.00**	113-852	**114.90**				
Metric 1.0 mm - 13.0 mm by .5 mm	25	113-805	**29.10**	113-853	**225.20**				
Black/Gold High Speed Steel									
135° Split Point 1/16 - 1/2 by 64ths	29							105-380	**126.50**
Titanium Coated, High Speed Steel									
Fractional 1/16 - 1/2 by 64ths	29			118-122	**377.70**			105-370	**104.40**
Fractional 1 /16 - 1 /4 by 64ths	13	105-349	**11.40**	113-854	**112.70**				
Fractional 1/16 - 1/2 by 32nds	15			113-855	**305.20**				
Letter A - Z	26			113-856	**477.90**				
Wire Gauge 1 - 60	60			113-857	**516.70**				
TiAlN Tip High Speed Steel									
Fractional 1/16 - 1/2 by 64ths	29			127-050	**181.20**				
Wire Gauge 1 - 60	60			127-190	**158.80**				
1/16 - 1/2 by 64ths, 1 - 60, A - Z	115			127-280	**476.80**				
Cobalt, 135° Split Point									
Fractional 1/16 - 1/2 by 64ths	29			118-121	**308.50**				
Fractional 1/16 - 1/2 by 32nds	15			113-858	**198.30**				
Fractional 1/16 - 3/8 by 64ths	21			113-859	**180.50**				
Fractional 1/16 - 1/4 by 64ths	13	105-349	**11.40**	113-860	**72.90**				
Letter A - Z	26			113-861	**388.40**				
*Wire Gauge 1 - 60	60			113-862	**293.40**				
*Wire Gauge 61 - 80	20			113-863	**109.50**				
Combination Sets, General Purpose									
1/16 - 1/2 by 64ths, A - Z, 1 - 60	115	105-994	**81.90**	118-123	**507.30**				
1/16 - 1/2 by 64ths, A - Z, 1 - 80	135			113-864	**681.30**				
1/16-1/2 by 64ths, 1-80,1-13 mm by .5 mm	134			113-865	**615.40**				
Combination Set, Forged HSS									
1/16 - 1/2 by 64ths, A - Z, 1 - 60	115							119-670	**158.50**
Combination Set, Titanium Coated									
1/16 - 1/2 by 64ths, A - Z, 1 - 60	115			113-866	**1,597.90**				
Combination Set, Cobalt									
135° Sp. Pt. 1/16 - 1/2 by 64ths, A - Z, 1 - 60	115			113-867	**1,077.40**				
Split Point, High Speed Steel									
118° Split Point 1/16 - 1/2 by 64ths	29			113-868	**278.80**				
135° Split Point 1/16 - 1/2 by 64ths	29			113-869	**278.80**	128-119	**187.10**		
135° Split Point Wire Gauge 1 - 60	60					128-190	**178.00**		
135° Split Point Letter A - Z	26					128-276	**234.30**		
Combination Set, Split Point HSS									
135° 1/16- 1/2 by 64ths, A - Z, 1 - 60	115					128-280	**606.80**		
Left Hand, High Speed Steel									
Fractional 1/16 - 1/2 by 64ths	29			113-870	**541.50**				
Letter A - Z	26			113-871	**554.20**				
Wire Gauge 1 - 60	60			113-872	**463.10**				
Fast Spiral, High Speed Steel									
Fractional 1/16 - 1/2 by 64ths	29			113-873	**279.30**				
Parabolic Flute, High Speed Steel									
Fractional 1/16 - 1/2 by 64ths	29			113-875	**431.30**				
Carbide Tip, High Speed Steel									
Fractional 1/8 - 1/2 by 64ths	25			113-876	**1,219.60**				
Carbide									
Fractional 1/8 - 1/2 by 32nds	13			113-877	**1,894.60**				
Fractional 1/8 - 1/4 by 64ths	9			113-878	**544.80**				

• Available only while quantities last

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	113-807	**33.70**	113-879	**204.90**
Fractional 1/16 - 1/4 by 64ths	13	607G	113-808	**18.20**	113-880	**46.40**
Letter A - Z	26	607L	113-809	**34.60**	113-881	**236.50**
*Wire Gauge 1 - 60	60	607W	113-810	**32.80**	113-882	**183.70**
*Comb. 1/16-1/2 by 64ths, A - Z, 1 - 60	115	607X	113-811	**101.90**	113-883	**610.10**
High Speed Steel, 118° Standard Point						
Fractional 1/2 - 1" by 64ths'"	33	607H	-	-	113-884	**2,003.60**
Cobalt, 135° Split Point						
Fractional 1/16 - 1/2 by 64ths	29	607CF	113-807	**33.70**	113-885	**409.00**
Letter A - Z	26	607CL	113-809	**34.60**	113-886	**430.20**
*Wire Gauge 1 - 60	60	607CW	113-810	**32.80**	113-887	**315.50**

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	113-812	**51.00**	113-888	**431.80**
Fractional 33/64 - 3/4 by 64ths	16	4078	113-813	**180.10**	113-889	**879.40**
Fractional 49/64 - 1" by 64ths	16	407C	113-814	**216.50**	113-890	**1,795.30**
Letter A - Z	26	407L	113-815	**51.00**	113-891	**600.80**
Wire Gauge 1 - 60	60	407W	113-816	**83.70**	113-892	**775.00**
Cobalt, 135° Split Point						
Fractional 1/16 - 1/2 by 64ths	29	407CF	113-807	**33.70**	113-893	**1,115.00**
Taper Shank, High Speed Steel						
Fractional 33/64 - 3/4 by 64ths	16	200A	113-813	**180.10**	113-894	**1,229.20**
Fractional 49/64 - 1" by 64ths	16	200B	113-814	**216.50**	113-895	**2,063.20**

Aircraft Extension Drill Sets



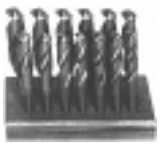
Description	Pieces Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel						
Frac. - 6" OAL 1 /16-3/8 x 64ths	21	906SF	113-908	**16.80**	113-896	**253.00**
Frac. - 12" OAL 1 /16-1/2 x 64ths	29	912SF	113-908	**16.80**	113-897	**999.00**
Letter-12" OAL A - Z	26	912SL	113-909	**16.80**	113-898	**1,054.00**
Wire Gauge - 6" OAL 1 - 60	60	906SW	113-910	**16.80**	113-899	**513.60**
Wire Gauge - 12" OAL 1 - 60	60	912SW	113-910	**16.80**	113-900	**1,319.40**

Extra Length Drill Sets



Description	Pieces 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	113-908	**16.80**	113-901	**482.00**
10" Overall 3/16 - 1/2 by 64ths	21	210ES	113-908	**16.80**	113-902	**863.80**
12" Overall 1/8 - 1/2 by 64ths	25	212ES	113-908	**16.80**	113-903	**1,211.80**
18" Overall 3/16 - 1/2 by 32nds	11	218ES	113-908	**16.80**	113-904	**951.80**

Reduced Shank Drill Sets





Description	Pieces Set	Set No.	Empty Case No.	Price $	Code No.	Price $
High Speed Steel						
1/4" shank 1/16 - 1/2 by 64ths	29	304A	113-911	**27.20**	113-913	**358.10**
1/4" shank 1/4 - 1/2 by 16ths drill, 1/4- 1/2 by 1/16ths CT masonry	10	304B			113-914	**132.60**
3/8" shank 1/16 - 1/2 by 64ths	29	308A			113-915	**364.40**
3/8" shank 3/8 - 5/8 by 32nds	8	308D			113-916	**288.00**
1/2" shank 9/16 - 1" by 16ths	8	303SA	113-912	**74.10**	113-917	**321.80**
1/2" shank 1-1/16 - 1-1/2 by 16ths	8	303SB			113-918	**1,016.60**
1/2" shk. 9/16-1" x 16ths, 1-1/8, 1-1/4	10	303SC			113-919	**494.70**
1/2" shk. 17/32 - 3/4 by 32nds, 13/16 - 1" by 16ths, 31 /32	13	303SD			113-920	**565.40**
1/2" shank 33/64 - 1 " by 64ths	32	303SE			113-921	**1,284.80**
3/4" shank 1" - 1-1/2 by 8ths	5	306A			113-922	**1,430.00**
3/4" shank 1"-2" by 4ths	5	306B			113-923	**2,168.20**
Cobalt						
1/2" shank 9/16- 1" by 16ths	8	303CA	113-912	**74.10**	113-924	**882.80**
1/2" shank 9/16-1"x 16ths, 1-1/8,1-1/4	10	303CS			113-925	**1,448.60**
1/2" shank 1-1/16-1-1/2 by 16ths	8	303CB			113-926	**2,913.60**
1/2" shank 17/32 -3/4 by 32nds, 13/16- 1" by 16ths, 31/32	13	303CD			113-927	**1,356.50**
1 /2" shank 33/64 - 1" by 64ths	32	303CE			113-928	**2,736.70**
3/4" shank 1"- 1-1/2 by 8ths	5	306D			113-929	**2,514.00**
3/4"shank 1"-2" by 4ths	5	306E			113-930	**3,871.70**

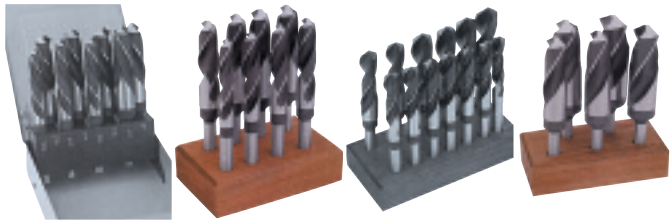
Drill Stands



Description	Pieces/Set	Code No.	Price $
Standard Shanks			
Fractional 1/16 - 1/2 by 64ths	29	113-908	**16.80**
Letter A - Z	26	113-909	**16.80**
Wire Gauge 1 - 60	60	113-910	**16.80**

QUALITY IMPORT

Prentice Drill Sets HSS



Set	Dia. (in.)	HSS Code No.	Price $
8 Pc. in Metal Case	9/16;5/8;11/16;3/4;13/16; 7/8;15/16;1	107-225	**452.90**
8 Pc. on Wooden Block	9/16;5/8;11/16;3/4;13/16; 7/8;15/16;1	107-226	**476.30**
13 Pc. on Wooden Block	17/32;9/16;19/32;5/8;21/32; 11/16;23/32;3/4;13/16; 7/8;15/16;1	107-227	**723.00**
5 Pc. on Wooden Block	1;1-1/8;1-1/4;1-3/8;1-1/2	107-228	**571.90**

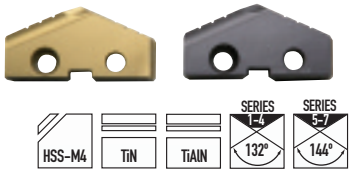
Drill Dispenser Cabinets



Description	Case No.	Code No.	Price $
Steel Cabinet holds 1/16-1/2 x 64ths Jobber Drills	13000	113-826	**208.80**
Steel Cabinet holds #1-60 Jobber Drills	13025	113-827	**267.40**

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.



Speeds & Feeds ☞ P. B59-B60

Series Min. to Max	Diameter Inch Metric	Diameter Decimal (in.)	TIN Coated Code No.	TIN Coated Price $	TIALN Coated Code No.	TIALN Coated Price $
	45/64"	.7031	162-360	**40.60**	162-500	**48.80**
	18mm	.7087	162-361	**40.60**	162-501	**48.80**
	23/32"	.7188	162-362	**41.50**	162-502	**48.80**
	18.50mm	.7283	162-363	**40.60**	162-503	**48.80**
	47/64"	.7344	162-364	**41.50**	162-504	**48.80**
	19mm	.7480	162-365	**40.60**	162-505	**48.80**
	3/4"	.7500	162-366	**41.50**	162-506	**48.80**
	49/64"	.7656	162-368	**41.50**	162-508	**48.80**
	19.50mm	.7677	162-369	**40.60**	162-509	**48.80**
1	25/32"	.7813	162-370	**41.50**	162-510	**48.80**
.690"	20.00mm	.7874	162-371	**40.60**	162-511	**48.80**
to	51/64"	.7969	162-373	**40.60**	162-513	**48.80**
.960"	20.50mm	.8071	162-375	**40.60**	162-515	**48.80**
(5/32")	13/16"	.8125	162-372	**41.50**	162-512	**48.80**
Thick	21mm	.8268	162-377	**40.60**	162-517	**48.80**
	27/32"	.8438	162-374	**40.60**	162-514	**48.80**
	55/64"	.8594	162-379	**40.60**	162-519	**48.80**
	22mm	.8661	162-381	**40.60**	162-521	**48.80**
	7/8"	.8750	162-376	**41.50**	162-516	**49.50**
	57/64"	.8906	162-383	**40.60**	162-523	**63.40**
	23mm	.9055	162-385	**41.50**	162-525	**39.20**
	29/32"	.9063	162-378	**41.50**	162-518	**48.80**
	59/64"	.9219	162-380	**40.60**	162-520	**48.80**
	15/16"	.9375	162-382	**41.50**	162-522	**48.80**
	24mm	.9449	162-387	**41.50**	162-527	**57.10**
	31/32"	.9688	162-384	**48.60**	162-524	**51.60**
	63/64"	.9843	162-386	**48.60**	162-526	**57.10**
	1"	1.0000	162-388	**48.60**	162-528	**58.10**
	1-1/64"	1.0156	162-390	**48.60**	162-530	**57.10**
	26mm	1.0236	162-391	**47.70**	162-531	**57.10**
	1-1/32"	1.0313	162-392	**48.60**	162-532	**57.10**
	1-3/64"	1.0469	162-393	**47.70**	162-533	**57.10**
2	1-1/16"	1.0625	162-394	**48.60**	162-534	**58.10**
.961"	27mm	1.0630	162-395	**47.70**	162-535	**57.10**
to	1-3/32"	1.0938	162-396	**48.60**	162-536	**57.10**
1.380"	28mm	1.1024	162-397	**48.60**	162-537	**57.10**
(3/16")	1-7/64"	1.1094	162-399	**48.60**	162-539	**57.10**
Thick	1-1/8"	1.1250	162-398	**48.60**	162-538	**57.10**
	29mm	1.1417	162-403	**47.70**	162-541	**57.10**
	1-5/32"	1.1563	162-400	**48.60**	162-540	**57.10**
	30mm	1.1811	162-404	**47.70**	162-543	**57.10**
	1-3/16"	1.1875	162-401	**48.60**	162-542	**58.10**
	1-7/32"	1.2188	162-402	**48.60**	162-544	**57.10**
	31mm	1.2205	162-405	**47.70**	162-545	**57.10**
	1-1/4"	1.2500	162-406	**48.60**	162-546	**58.10**
	32mm	1.2598	162-407	**48.60**	162-547	**57.10**
	1-9/32"	1.2813	162-408	**48.60**	162-548	**57.10**
	33mm	1.2992	162-409	**47.70**	162-549	**57.10**
	1-5/16"	1.3125	162-410	**48.60**	162-550	**57.10**
	34mm	1.3386	162-411	**47.70**	162-551	**57.10**
	1-11/32"	1.3438	162-412	**48.60**	162-552	**57.10**
	1-3/8"	1.3750	162-414	**48.60**	162-554	**58.10**
	35mm	1.3780	162-415	**47.70**	162-555	**57.10**
	1-13/32"	1.4063	162-416	**47.70**	162-558	**71.20**
	36mm	1.4173	162-417	**47.70**	162-559	**71.20**
3	1-7/16"	1.4375	162-418	**60.40**	162-560	**71.20**
1.353"	37mm	1.4567	162-419	**59.20**	162-561	**71.20**
to	1-15/32"	1.4688	162-420	**60.40**	162-562	**71.20**
1.882"	38mm	1.4961	162-421	**60.40**	162-563	**71.20**
(1/4")	1-1/2"	1.5000	162-422	**60.40**	162-564	**71.20**
Thick	1-17/32"	1.5313	162-424	**60.40**	162-566	**71.20**
	39mm	1.5354	162-425	**60.40**	162-567	**71.20**
	1-9/16"	1.5625	162-426	**60.40**	162-568	**72.50**
	40mm	1.5748	162-427	**59.20**	162-569	**71.20**
	1-19/32"	1.5938	162-428	**59.20**	162-570	**71.20**
	41mm	1.6142	162-429	**59.20**	162-571	**71.20**
	1-5/8"	1.6250	162-430	**60.40**	162-572	**72.50**
	42mm	1.6535	162-431	**59.20**	162-573	**71.20**
	1-21/32"	1.6563	162-432	**60.40**	162-574	**71.20**
3	1-11/16"	1.6875	162-434	**60.40**	162-576	**71.20**
1.353"	43mm	1.6929	162-435	**59.20**	162-577	**71.20**
to	1-23/32"	1.7188	162-436	**60.40**	162-578	**72.50**
1.882"	44mm	1.7323	162-437	**59.20**	162-579	**71.20**
(1/4")	1-3/4"	1.7500	162-438	**60.40**	162-580	**72.50**
Thick	45mm	1.7717	162-439	**59.20**	162-581	**71.20**
	1-25/32"	1.7813	162-440	**59.20**	162-582	**71.20**
	46mm	1.8110	162-441	**59.20**	162-583	**71.20**
	1-13/16"	1.8125	162-442	**60.40**	162-584	**71.20**
	1-27/32"	1.8438	162-444	**59.20**	162-586	**71.20**
	47mm	1.8504	162-445	**59.20**	162-587	**71.20**
	1-7/8"	1.8750	162-446	**60.40**	162-588	**72.50**
	1-29/32"	1.9063	162-448	**70.20**	162-590	**84.30**
	1-15/16"	1.9375	162-450	**71.40**	162-592	**84.30**
	1-31/32"	1.9688	162-452	**71.40**	162-594	**84.30**
	2"	2.0000	162-454	**71.40**	162-596	**85.80**
	2-1/32"	2.0313	162-456	**71.40**	162-598	**84.30**
	2-3/64"	2.0472	162-458	**70.20**	162-600	**84.30**
	2-1/16"	2.0625	162-460	**71.40**	162-602	**84.30**
	2-3/32"	2.0938	162-462	**70.20**	162-604	**84.30**
4	2-1/8"	2.1250	162-464	**71.40**	162-606	**84.30**
1.850"	2-5/32"	2.1563	162-466	**70.20**	162-608	**84.30**
to	2-3/16"	2.1875	162-468	**71.40**	162-610	**84.30**
2.570"	2-7/32"	2.2188	162-470	**70.20**	162-612	**85.80**
(5/16")	2-1/4"	2.2500	162-472	**71.40**	162-614	**84.30**
Thick	2-9/32"	2.2813	162-474	**70.20**	162-616	**84.30**
	2-5/16"	2.3125	162-476	**71.40**	162-618	**84.30**
	2-11/32"	2.3438	162-478	**70.20**	162-620	**84.30**
	2-3/8"	2.3750	162-480	**71.40**	162-622	**84.30**
	2-13/32"	2.4063	162-482	**70.20**	162-624	**84.30**
	2-7/16"	2.4375	162-484	**71.40**	162-626	**85.80**
	2-15/32"	2.4688	162-486	**71.40**	162-628	**84.30**
	2-1/2"	2.5000	162-488	**71.40**	162-630	**85.80**
	2-17/32"	2.5313	162-490	**70.20**	162-632	**84.30**
	2-9/16"	2.5625	162-492	**71.40**	162-634	**85.80**
	2-1/2"	2.5000	162-900	**110.20**		
	2-5/8"	2.6250	162-912	**110.20**		
5	2-3/4"	2.7500	162-922	**110.20**		
2.456"	2-25/32"	2.7813	162-926	**108.20**		
to	2-13/16"	2.8125	162-928	**108.20**		
3.000"	2-27/32"	2.8438	162-932	**108.20**		
(7/16")	2-7/8"	2.8750	162-934	**110.20**	**TiAlN**	
Thick	2-29/32"	2.9063	162-936	**108.20**		
	2-15/16"	2.9375	162-940	**110.20**		
	2-31/32"	2.9688	162-942	**110.20**	**not stocked**	
	3"	3.0000	162-946	**110.20**		
6	3-1/16"	3.0625	162-950	**127.50**		
3.001"	3-1/8"	3.1250	162-956	**127.50**	**but available**	
to	3-1/4"	3.2500	162-968	**127.50**		
3.507"	3-3/8"	3.3750	162-978	**127.50**		
(7/16")	3-7/16"	3.4375	162-984	**125.20**	**on request.**	
Thick	3-1/2"	3.5000	162-990	**127.50**		
7	3-9/16"	3.5625	162-991	**130.50**		
3.455"	3-5/8"	3.6250	163-002	**130.50**		
to 4.0"	3-3/4"	3.7500	163-012	**152.50**		
(7/16")	3-7/8"	3.8750	163-024	**130.50**		
Thick	4"	4.0000	163-034	**152.50**		

Super HSCO (T15) Spade Drill

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





Speeds & Feeds ☞ P. B59-B60

Series Min. to Max	Diameter Inch Metric	Diameter Decimal (in.)	TIN Coated Code No.	Price $	TIALN Coated Code No.	Price $
	9.50mm	.3740	161-999	**37.80**	162-179	**41.80**
	3/8”	.3750	162-000	**38.30**	162-180	**45.90**
Y	9.80mm	.3860	162-001	**37.80**	162-181	**41.80**
.374”	25/64”	.3906	162-002	**38.30**	162-182	**41.80**
to	10mm	.3937	162-003	**37.80**	162-183	**41.80**
.436”	10.20mm	.4016	162-005	**37.80**	162-185	**41.80**
(3/32”)	13/32”	.4063	162-004	**38.30**	162-184	**45.90**
Thick	10.50mm	.4134	162-007	**37.80**	162-187	**45.30**
	27/64”	.4219	162-006	**38.30**	162-186	**45.90**
	10.80mm	.4252	162-009	**37.80**	162-189	**45.30**
	11mm	.4331	162-650	**40.60**	162-720	**48.80**
	7/16”	.4375	162-008	**38.30**	162-188	**45.90**
Z	11.50mm	.4528	162-011	**37.80**	162-191	**45.30**
.437”	29/64”	.4531	162-010	**38.30**	162-190	**45.90**
to	15/32”	.4688	162-012	**38.30**	162-192	**45.90**
.510”	12mm	.4724	162-652	**40.60**	162-722	**48.80**
(3/32”)	31/64”	.4844	162-014	**38.30**	162-194	**45.90**
Thick	12.50mm	.4921	162-654	**40.60**	162-724	**48.80**
	1/2”	.5000	162-016	**38.30**	162-196	**45.90**
	13mm	.5118	162-656	**40.60**	162-726	**49.50**
	33/64”	.5156	162-018	**41.50**	162-198	**49.50**
	17/32”	.5313	162-020	**41.50**	162-200	**49.50**
	13.50mm	.5315	162-019	**41.50**	162-203	**48.80**
	35/64”	.5469	162-021	**41.50**	162-201	**49.50**
	14mm	.5512	162-658	**41.50**	162-728	**49.50**
	9/16”	.5625	162-022	**41.50**	162-204	**49.50**
	14.50mm	.5709	162-660	**40.60**	162-730	**49.50**
0	37/64”	.5781	162-024	**41.50**	162-206	**49.50**
.511”	15mm	.5906	162-662	**40.60**	162-732	**49.50**
to	19/32”	.5938	162-026	**41.50**	162-208	**49.50**
.695”	39/64”	.6094	162-027	**41.50**	162-209	**49.50**
(1/8”)	15.50mm	.6102	162-664	**40.60**	162-734	**49.50**
Thick	5/8”	.6250	162-028	**41.50**	162-210	**49.50**
	16mm	.6299	162-666	**41.50**	162-736	**49.50**
	41/64”	.6406	162-029	**41.50**	162-211	**49.50**
	16.50mm	.6496	162-668	**40.60**	162-738	**54.20**
	21/32”	.6563	162-030	**41.50**	162-212	**49.50**
	17mm	.6693	162-670	**40.60**	162-740	**49.50**
	43/64”	.6719	162-031	**41.50**	162-213	**49.50**
	11/16”	.6875	162-032	**41.50**	162-214	**49.50**
	17.50mm	.6890	162-033	**40.60**	162-215	**49.50**
	45/64”	.7031	162-036	**46.50**	162-218	**55.20**
	18mm	.7087	162-672	**46.50**	162-742	**55.20**
	23/32”	.7188	162-038	**46.50**	162-220	**55.20**
	18.50mm	.7283	162-674	**45.70**	162-744	**54.20**
	47/64”	.7344	162-040	**46.50**	162-222	**55.20**
	19mm	.7480	162-676	**45.70**	162-746	**55.20**
	3/4”	.7500	162-042	**46.50**	162-224	**55.20**
	49/64”	.7656	162-044	**46.50**	162-226	**55.20**
1	19.50mm	.7677	162-045	**46.50**	162-227	**54.20**
.690”	25/32”	.7813	162-046	**46.50**	162-228	**55.20**
to	20mm	.7874	162-678	**45.70**	162-748	**55.20**
.960”	51/64”	.7969	162-047	**46.50**	162-229	**55.20**
(5/32”)	20.50mm	.8071	162-680	**45.70**	162-750	**54.20**
Thick	13/16”	.8125	162-048	**46.50**	162-230	**55.20**
	21mm	.8268	162-682	**45.70**	162-752	**55.20**
	27/32”	.8438	162-050	**46.50**	162-232	**55.20**
	55/64”	.8594	162-051	**46.50**	162-233	**55.20**
	22mm	.8661	162-684	**46.50**	162-754	**55.20**
	7/8”	.8750	162-052	**46.50**	162-234	**55.20**
	57/64”	.8906	162-053	**46.50**	162-235	**55.20**
	23mm	.9055	162-055	**45.70**	162-237	**55.20**
	29/32”	.9063	162-054	**46.50**	162-236	**55.20**
	59/64”	.9219	162-056	**46.50**	162-238	**55.20**
	15/16”	.9375	162-058	**46.50**	162-240	**55.20**
	24mm	.9449	162-686	**45.70**	162-756	**55.20**
	31/32”	.9688	162-062	**54.70**	162-244	**64.90**
	63/64”	.9843	162-064	**54.70**	162-246	**64.90**
	1”	1.0000	162-066	**54.70**	162-248	**64.90**
	1-1/64”	1.0156	162-068	**54.70**	162-250	**58.10**
	26mm	1.0236	162-688	**54.70**	162-758	**64.90**
	1-1/32”	1.0313	162-070	**54.70**	162-252	**64.90**
	1-3/64”	1.0469	162-071	**54.70**	162-253	**64.90**
	1-1/16”	1.0625	162-072	**54.70**	162-254	**64.90**
	27mm	1.0630	162-073	**54.70**	162-255	**64.90**
2	1-3/32”	1.0938	162-074	**54.70**	162-256	**64.90**
.961”	28mm	1.1024	162-690	**54.70**	162-760	**64.90**
to	1-7/64”	1.1094	162-075	**54.70**	162-257	**64.90**
1.380”	1-1/8”	1.1250	162-076	**54.70**	162-258	**64.90**
(3/16”)	29mm	1.1417	162-692	**54.70**	162-762	**64.90**
Thick	1-5/32”	1.1563	162-078	**54.70**	162-260	**64.90**
	30mm	1.1811	162-694	**54.70**	162-764	**64.90**
	1-3/16”	1.1875	162-080	**54.70**	162-262	**64.90**
	1-7/32”	1.2188	162-082	**54.70**	162-264	**64.90**
	31mm	1.2205	162-083	**54.70**	162-265	**64.90**
	1-1/4”	1.2500	162-084	**54.70**	162-266	**64.90**
	32mm	1.2598	162-696	**54.70**	162-766	**64.90**
	1-9/32”	1.2813	162-086	**54.70**	162-268	**64.90**
	33mm	1.2992	162-698	**54.70**	162-768	**64.90**
	1-5/16”	1.3125	162-088	**54.70**	162-270	**64.90**
	34mm	1.3386	162-700	**53.70**	162-770	**63.70**
	1-11/32”	1.3438	162-090	**54.70**	162-272	**64.90**
	1-3/8”	1.3750	162-092	**54.70**	162-274	**64.90**
	35mm	1.3780	162-702	**53.70**	162-772	**63.70**
	1-13/32”	1.4063	162-094	**69.50**	162-276	**83.20**
	36mm	1.4173	162-704	**69.50**	162-774	**81.70**
	1-7/16”	1.4375	162-096	**69.50**	162-278	**83.20**
	37mm	1.4567	162-097	**68.40**	162-279	**81.70**
	1-15/32”	1.4688	162-098	**69.50**	162-280	**83.20**
	38mm	1.4961	162-099	**68.40**	162-281	**81.70**
	1-1/2”	1.5000	162-100	**69.50**	162-282	**83.20**
	1-17/32”	1.5313	162-102	**69.50**	162-284	**83.20**
	39mm	1.5354	162-103	**68.40**	162-285	**81.70**
3	1-9/16”	1.5625	162-104	**69.50**	162-286	**83.20**
1.380”	40mm	1.5748	162-706	**69.50**	162-776	**83.20**
to	1-19/32”	1.5938	162-106	**68.40**	162-288	**83.20**
1.882”	41mm	1.6142	162-107	**68.40**	162-289	**81.70**
(1/4”)	1-5/8”	1.6250	162-108	**69.50**	162-290	**83.20**
Thick	42mm	1.6535	162-109	**68.40**	162-291	**81.70**
	1-21/32”	1.6563	162-110	**69.50**	162-292	**83.20**
	1-11/16”	1.6875	162-112	**69.50**	162-294	**83.20**
	43mm	1.6929	162-113	**68.40**	162-295	**81.70**
	1-23/32”	1.7188	162-114	**69.50**	162-296	**81.70**
	44mm	1.7323	162-708	**69.50**	162-778	**81.70**
	1-3/4”	1.7500	162-116	**69.50**	162-298	**83.20**
	45mm	1.7717	162-710	**59.20**	162-780	**81.70**
	1-25/32”	1.7813	162-118	**68.40**	162-300	**83.20**
	46mm	1.8110	162-119	**69.50**	162-301	**81.70**
	1-13/16”	1.8125	162-120	**69.50**	162-302	**83.20**
	1-27/32”	1.8438	162-122	**69.50**	162-304	**83.20**
	47mm	1.8504	162-123	**68.40**	162-305	**81.70**
	1-7/8”	1.8750	162-124	**69.50**	162-306	**83.20**
	1-29/32”	1.9063	162-126	**87.80**	162-308	**105.00**
	1-15/16”	1.9375	162-128	**87.80**	162-310	**105.00**
	1-31/32”	1.9688	162-130	**87.80**	162-312	**105.00**
	2”	2.0000	162-132	**87.80**	162-314	**105.00**
	2-1/32”	2.0313	162-134	**86.20**	162-316	**105.00**
	2-3/64”	2.0472	162-135	**86.20**	162-317	**105.00**
	2-1/16”	2.0625	162-136	**87.80**	162-318	**105.00**
	2-3/32”	2.0938	162-138	**86.20**	162-320	**105.00**
4	2-1/8”	2.1250	162-140	**87.80**	162-322	**105.00**
1.850”	2-5/32”	2.1563	162-142	**86.20**	162-324	**103.20**
to	2-3/16”	2.1875	162-144	**87.80**	162-326	**105.00**
2.570”	2-7/32”	2.2188	162-146	**87.80**	162-328	**105.00**
(5/16”)	2-1/4”	2.2500	162-148	**87.80**	162-330	**105.00**
Thick	2-9/32”	2.2813	162-150	**86.20**	162-332	**103.20**
	2-5/16”	2.3125	162-152	**87.80**	162-334	**105.00**
	2-11/32”	2.3438	162-154	**86.20**	162-336	**103.20**
	2-3/8”	2.3750	162-156	**87.80**	162-338	**105.00**
	2-13/32”	2.4063	162-158	**86.20**	162-340	**103.20**
	2-7/16”	2.4375	162-160	**87.80**	162-342	**105.00**
	2-15/32”	2.4688	162-162	**86.20**	162-344	**105.00**
	2-1/2”	2.5000	162-164	**87.80**	162-346	**105.00**
	2-17/32”	2.5313	162-166	**87.80**	162-348	**105.00**
	2-9/16”	2.5625	162-168	**87.80**	162-350	**105.00**

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"	162-801	**243.20**
Z	7/16" – 1/2"	1-1/4"	2-1/32"	2-1/8"	4-13/32"	3/4"	2-3/8"	1/8"	162-803	**243.20**
0	33/64" – 11/16"	1-3/8"	2-3/16"	2-19/64"	4-9/16"	3/4"	2-3/8"	1/8"	162-805	**243.20**
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"	162-807	**249.90**
1	45/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	3/4"	3"	1/8"	162-822	**253.60**
1	45/64" –15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	1"	3"	1/8"	162-809	**253.60**
1.5	55/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	3/4"	3"	1/8"	162-808	**273.60**
1.5	55/64" – 15/16"	2-5/8"	3-7/8"	4-1/64"	6-7/8"	1"	3"	1/8"	162-811	**273.60**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1"	3-1/2"	1/8"	162-824	**273.60**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1-1/4"	3-1/2"	1/8"	162-812	**273.60**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	4-41/64"	8"	1"	3-1/2"	1/8"	162-813	**308.00**
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"	162-815	**308.00**
3	1-13/32" – 1-7/8"	4-3/4"	6"	6-3/16"	10"	1-1/4"	4"	1/4"	162-826	**311.50**
3	1-13/32" – 1-7/8"	4-3/4"	6"	6-3/16"	10"	1-1/2"	4"	1-4"	162-817	**329.50**
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"	162-828	**384.60**
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"	162-819	**334.10**
5-6	2-1/2" – 3-1/2"	6-3/4"	8-1/2"	8-3/4"	12-1/2"	2"	4"	1/2"	163-050	**811.80**
7-8	3-17/32" – 4-1/2"	6-3/4"	8-7/8"	9-1/8"	13-7/8"	3"	5"	1/2"	163-052•	**1,607.70**

• Available only while quantities last.

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"	162-833	**314.50**
1.5	55/64" – 15/16"	4-5/8"	5-7/8"	6-1/64"	8-7/8"	1"	3"	1/8"	162-834	**340.60**
2	31/32" – 1-3/8"	5-3/8"	6-1/2"	6-41/64"	10"	1-1/4"	3-1/2"	1/8"	162-835	**340.60**
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"	162-837	**375.70**
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"	162-839	**384.60**

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"	162-800	**249.90**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	3-1/4"	5-17/32"	3/4"	2-3/8"	1/8"	162-802	**249.90**
0	33/64" – 11/16"	2-1/2"	3-5/16"	3-27/64"	5-11/16"	3/4"	2-3/8"	1/8"	162-804	**249.90**
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"	162-820	**249.90**
1	45/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	3/4"	3"	1/8"	162-806	**273.60**
1	45/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	1"	3"	1/8"	162-821	**273.60**
1.5	55/64" – 15/16"	6-5/8"	7-7/8"	8-1/64"	10-7/8"	1"	3"	1/8"	162-825	**295.20**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1"	3-1/2"	1/8"	162-810	**295.20**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1-1/4"	3-1/2"	1/8"	162-827	**295.20**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	8-41/64"	12"	1"	3-1/2"	1/8"	162-829	**326.10**
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"	162-830	**326.10**
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"	162-814	**329.50**
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"	162-831	**351.30**
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"	162-818	**444.80**
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"	162-832	**477.70**
5-6	2-1/2" – 3-1/2"	10-3/4"	12-1/2"	12-3/4"	16-1/2"	2"	4"	1/2"	163-054	**743.30**
7-8	3-17/32" – 4-1/2"	10-3/4"	12-7/8"	13-1/8"	17-7/8"	3"	5"	1/2"	163-056•	**1,917.60**

• Available only while quantities last.

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"	162-917	**244.50**
Z	7/16" – 1/2"	1-1/4"	2-1/32"	3-15/32"	6-5/16"	#2	1/16"	162-901	**244.50**
0	33/64" – 11/16"	1-3/8"	2-3/16"	3-41/64"	6-15/32"	#2	1/16"	162-902	**244.50**
0.5	39/64" – 11/16"	1-3/8"	2-3/16"	3-41/64"	6-15/32"	#2	1/16"	162-903	**244.50**
1	45/64" – 15/16"	2-3/4"	3-7/8"	5-39/64"	9-5/32"	#3	1/8"	162-904	**266.40**
1	45/64" – 15/16"	2-3/4"	3-7/8"	5-43/64"	10-5/32"	#4	1/8"	162-905	**273.60**
1.5	55/64" – 15/16"	2-3/4"	3-7/8"	5-39/64"	9-5/32"	#3	1/8"	162-906	**288.00**
1.5	55/64" – 15/16"	2-3/4"	3-7/8"	5-43/64"	10-5/32"	#4	1/8"	162-907	**296.90**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	6-15/64"	9-25/32"	#3	1/8"	162-908	**296.90**
2	31/32" – 1-3/8"	3-3/8"	4-1/2"	6-19/64"	10-25/32"	#4	1/8"	162-909	**308.00**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	6-15/64"	9-25/32"	#3	1/8"	162-910	**316.90**
2.5	1-3/16" – 1-3/8"	3-3/8"	4-1/2"	6-37/64"	11-1/16"	#4	1/4"	162-911	**329.50**
3	1-13/32" – 1-7/8"	4-3/4"	6"	8-1/8"	13-9/16"	#4	1/4"	162-918	**330.00**
3	1-13/32" – 1-7/8"	4-3/4"	6"	8-1/8"	13-13/16"	#5	1/4"	162-913	**349.80**
4	1-29/32" – 2-9/16"	5-1/8"	6-1/2"	8-5/8"	14-5/16"	#5	1/4"	162-914	**419.40**
5-6	2-1/2" – 3-1/2"	6-3/4"	8-1/2"	11-5/16"	16-15/16"	#5	1/2"	162-915	**676.50**

Intermediate Length Taper Shank Holder - Straight Flute



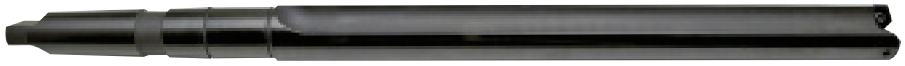
Series	Drill Insert Range	Max. Drill Depth	Flute Length	Top of Drill to Shank	Overall Length	Shank Taper	Pipe Tap	Code No.	Price $
1	45/64" – 15/16"	4-3/4"	5-7/8"	7-39/64"	11-5/32"	#3	1/8"	162-841	**325.60**
2	31/32" – 1-3/8"	5-3/8"	6-1/2"	8-19/64"	12-25/32"	#4	1/8"	162-845	**377.20**
2.5	1-3/16" – 1-3/8"	5-3/8"	6-1/2"	8-37/64"	13-1/16"	#4	1/4"	162-846	**391.50**
3	1-13/32" – 1-7/8"	6-1/2"	7-3/4"	9-7/8"	14-5/16"	#4	1/4"	162-847	**428.90**

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"	162-864	**249.90**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162-866	**249.90**
0	33/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162-868	**249.90**
0.5	39/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162-869	**249.90**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162-870	**286.20**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-43/64"	14-5/32"	#4	1/8"	162-871	**295.20**
1.5	55/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162-872	**306.20**
1.5	55/64" – 15/16"	6-3/4"	7-7/8"	9-43/64"	14-5/32"	#4	1/8"	162-873	**315.00**
2	31-32" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162-874	**315.00**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	10-19/64"	14-25/32"	#4	1/8"	162-875	**324.10**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162-876	**335.00**
2.5	1-3/16" – 1-3/8"	7-3/8"	8-1/2"	10-37/64"	15-1/16"	#4	1/4"	162-877	**349.70**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	11-1/8"	16-1/16"	#4	1/4"	162-878	**360.40**
3	1-13/32" – 1-7/8"	8-1/4"	9-1/2"	11-5/8"	17-5/16"	#5	1/4"	162-881	**387.40**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	12-5/8"	17-1/16"	#4	1/4"	162-879	**444.80**
4	1-29/32" – 2-9/16"	9-1/8"	10-1/2"	12-5/8"	18-5/16"	#5	1/4"	162-883	**476.60**
5-6	2-1/2" – 3-1/2"	10-3/4"	12-1/2"	15-5/16"	20-15/16"	#5	1/2"	163-058	**742.00**

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"	162-836	**280.60**
1	45/64" – 15/16"	10-3/4"	11-7/8"	13-39/64"	17-5/32"	#3	1/8"	162-838	**322.30**
2	31/32" – 1-3/8"	11-3/8"	12-1/2"	14-15/64"	18-25/32"	#4	1/8"	162-840	**364.10**
3	1-13/32" – 1-7/8"	13-3/4"	15"	17-1/8"	21-9/16"	#4	1/4"	162-842	**476.10**
4	1-29/32" – 2-9/16"	16-5/8"	18"	20-1/8"	25-13/16"	#5	1/4"	162-844	**619.10**

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"	162-850	**249.90**
Z	7/16" – 1/2"	2-3/8"	3-5/32"	4-19/32"	7-7/16"	#2	1/16"	162-852	**262.70**
0	33/64" – 11/16"	2-1/2"	3-5/16"	4-49/64"	7-19/32"	#2	1/16"	162-854	**262.70**
1	45/64" – 15/16"	6-3/4"	7-7/8"	9-39/64"	13-5/32"	#3	1/8"	162-856	**312.50**
2	31/32" – 1-3/8"	7-3/8"	8-1/2"	10-15/64"	13-25/32"	#3	1/8"	162-860	**354.30**

Coolant Adapters



M.T.	Description	Pipe Thread	Thread for Driving Rod	Code No.	Price $
2	SCA-2	1/8"	5/16-NC	163-100	**60.30**
3	SCA-3	1/8"	5/16-NC	163-102	**72.10**
4	SCA-4	1/4"	3/8-NC	163-104	**74.70**
5	SCA-5	1/4"	3/8-NC	163-106	**80.10**

Seal Repair Kits



M.T.	Description	Code No.	Price $
2	CA-2	163-110	**6.00**
3	CA-3	163-112	**6.50**
4	CA-4	163-114	**11.10**
5	CA-5	163-116	**18.90**

Torx Screws



Series	Torx Size	Code No.	Price $
Y, Z	T-7	162-880	**7.30**
0	T-8	162-882	**6.70**
1-1.5	T-9	162-884	**6.70**
2-2.5	T-15	162-886	**6.70**
3-4	T-20	162-888	**6.70**
5-8	T-25	162-890	**6.70**

Recommended Blade Selection And 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 ⊖HSCO-T15	TIN SFM Surface Footage	TIALN SFM Surface Footage	Feed (IPR) 3/8" to 1/2"	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	-			280	.007	.010	.013	.016	.020	.023	.028
1118, 1215,	< 12			260	.007	.010	.013	.016	.020	.023	.028
12L14, etc.	12-25			240	.007	.010	.013	.016	.020	.023	.028
Low & Medium	< 7		160	240	.006	.009	.012	.015	.019	.023	.027
Carbon Steel	7-20		150	225	.005	.0098	.010	.014	.018	.021	.024
1018, 1040,	20-29		140	210	.005	.0098	.010	.014	.018	.021	.024
12L14, etc.	29-35	⊖	130	195	.004	.007	.009	.012	.016	.019	.022
Alloy Steel	< 7		150	210	.006	.008	.010	.014	.017	.019	.022
4140,	7-20		140	195	.005	.008	.010	.014	.017	.019	.022
5140	20-29		130	180	.005	.007	.010	.014	.017	.019	.022
8640,	29-35	⊖	120	170	.004	.006	.009	.012	.015	.017	.020
etc.	35-40	⊖	110	155	.003	.006	.009	.012	.015	.017	.020
High Strength Alloy Steel	20-32	⊖	80	110	.005	.007	.009	.010	.014	.017	.020
4340, 4330V,	32-37	⊖	60	85	.004	.007	.009	.010	.014	.017	.020
300M, etc.	37-43		50	70	.003	.006	.008	.009	.012	.015	.018
Structural Steel	-		140	200	.006	.010	.012	.014	.018	.021	.026
A36, A285	12-25		120	170	.005	.009	.010	.012	.016	.019	.024
A516, etc.	37-43	⊖	100	140	.004	.008	.009	.010	.014	.017	.020
High Temp, Alloy	< 18	⊖	30	40	.003	.006	.007	.008	.010	.012	.015
Hastelloy B, Inconel 600, etc.	18-32	⊖	25	35	.003	.006	.007	.008	.010	.012	.015
Stainless Steel	< 7		75	105	.006	.008	.009	.011	.014	.016	.020
303, 416, 420, 17-4 PH, etc.	7-29		60	90	.005	.007	.008	.010	.012	.014	.018
Tool Steel	< 12	⊖	80	110	.004	.006	.008	.010	.012	.015	.017
H-13, H021, AD4, O-2, S-3, etc	12-25	⊖	60	90	.004	.006	.008	.010	.012	.015	.017
Aluminum	< 6		600	850	.008	.013	.016	.020	.022	.025	.025
			300	450	.008	.013	.016	.018	.022	.025	.025
Cast Iron	-		170	250	.007	.012	.016	.020	.024	.027	.030
Gray,	<12		150	225	.006	.011	.014	.018	.022	.025	.028
Ductile,	12-18		130	195	.006	.009	.012	.016	.018	.021	.024
Nodular	18-26	⊖	110	165	.005	.007	.009	.012	.014	.017	.020
	26-32	⊖	90	135	.004	.006	.007	.009	.012	.014	.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.

Throw-Away Drill Inserts - Coolant Pressure

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

Throw-Away Drill Inserts Spade Drill Horsepower Consumption Rate

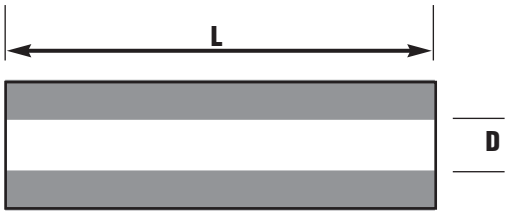
Metal Removal Rates (MRR)
Example: 1.50 dia. drill @6.412 I.P.M.

Volume of Cylinder Method: D2 x .785 x L
D=Hole Diameter
L=Length in I.P.M.
.785 is Constant

Material Drilled 4140 250 BHN:
Cutting Data: 180 S.F.M. (458 R.P.M.) x .014 Feed per Rev.

458 R.P.M. x .014 = 6.412 I.P.M. (L)
D2 (1.5)2 x .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

MADE IN GERMANY

- High Speed Steel



Size	Range	Shank Dia.	82° HSS Code No.	Price $	90° HSS Code No.	Price $
0	1/16–15/64	1/4	121-003	**55.60**	121-002	**55.60**
1	5/32–13/32	1/4	121-005	**37.80**	121-004	**37.80**
2	3/16–17/32	1/4	121-010	**53.70**	121-009	**53.70**
3	5/16–25/32	1/2	121-015	**105.50**	121-014	**105.50**
4	9/16–1-1/16	1/2	121-020	**208.90**	121-019	**208.90**
5	5/8–1-15/32	1/2	121-025	**270.70**	121-024	**270.70**
6	3/4–1-3/4	5/8	121-030	**423.00**	121-031	**423.00**

Chatterfree HSS Countersink Sets

MADE IN GERMANY

- High Speed Steel



Description	Set Contents	Set Code No.	Price $
82°	0,1,2,3,4	121-035	**460.60**
90°	0,1,2,3,4	121-033	**460.60**

Single Flute Countersinks HSS - 60º, 82º, 90º

- Radial relief generated in the first 90 degrees behind the cutting edge, ensures smooth, chatter-free cutting without overfeeding and makes the tool self-centering
- Steam black oxide surface treatment enhances tool life and prevents galling
- The best style countersink for use in hand held applications
- 100% CNC manufactured to tighter than industry standard tolerances



MADE IN USA

Body Dia. (in.)	Shank Dia. (in.)	60º	60º HSS Code No.	Price $	82º	82º HSS Code No.	Price $	90º	90º HSS Code No.	Price $
1/8	1/8	HS1-1/8-60	121-560	**15.50**	HS1-1/8-82	121-571	**15.50**	HS1-1/8-90	121-582	**15.50**
3/16	3/16	HS1-3/16-60	121-561	**15.60**	HS1-3/16-82	121-572	**15.60**	HS1-3/16-90	121-583	**15.60**
1/4	1/4	HS1-1/4-60	121-562	**16.80**	HS1-1/4-82	121-573	**17.70**	HS1-1/4-90	121-584	**17.70**
3/8	1/4	HS1-3/8-60	121-563	**22.50**	HS1-3/8-82	121-574	**23.80**	HS1-3/8-90	121-585	**23.90**
1/2	1/4	HS1-1/2-60	121-564	**27.50**	HS1-1/2-82	121-575	**29.10**	HS1-1/2-90	121-586	**29.10**
5/8	3/8	HS1-5/8-60	121-565	**37.50**	HS1-5/8-82	121-576	**39.50**	HS1-5/8-90	121-587	**39.50**
3/4	1/2	HS1-3/4-60	121-566	**53.70**	HS1-3/4-82	121-577	**56.70**	HS1-3/4-90	121-588	**56.70**
1	1/2	HS1-1-60	121-567	**83.40**	HS1-1-82	121-578	**87.90**	HS1-1-90	121-589	**87.90**
1-1/4	1/2	HS1-1-1/4-60	121-568	**143.60**	HS1-1-1/4-82	121-579	**150.30**	HS1-1-1/4-90	121-590	**150.30**
1-1/2	3/4	HS1-1-1/2-60	121-569	**196.70**	HS1-1-1/2-82	121-580	**196.70**	HS1-1-1/2-90	121-591	**196.70**
2	3/4	HS1-2-60	121-570	**381.10**	HS1-2-82	121-581	**381.10**	HS1-2-90	121-592	**381.10**

Single Flute Countersinks HSS - 100º, 120º

- Radial relief generated in the first 90 degrees behind the cutting edge, ensures smooth, chatter-free cutting without overfeeding and makes the tool self-centering
- Steam black oxide surface treatment enhances tool life and prevents galling
- The best style countersink for use in hand held applications
- 100% CNC manufactured to tighter than industry standard tolerances



MADE IN USA

Body Dia. (in.)	Shank Dia. (in.)	100º	100º HSS Code No.	Price $	120º	120º HSS Code No.	Price $
1/8	1/8	HS1-1/8-100	121-593	**14.90**	HS1-1/8-120	121-601	**14.90**
3/16	3/16	HS1-3/16-100	121-594	**15.60**	HS1-3/16-120	121-602	**15.60**
1/4	1/4	HS1-1/4-100	121-595	**16.80**	HS1-1/4-120	121-603	**17.70**
3/8	1/4	HS1-3/8-100	121-596	**22.50**	HS1-3/8-120	121-604	**22.50**
1/2	1/4	HS1-1/2-100	121-597	**27.50**	HS1-1/2-120	121-605	**27.50**
5/8	3/8	HS1-5/8-100	121-598	**37.50**	HS1-5/8-120	121-606	**37.50**
3/4	1/2	HS1-3/4-100	121-599	**53.70**	HS1-3/4-120	121-607	**53.70**
1	1/2	HS1-1-100	121-600	**83.40**	HS1-1-120	121-608	**83.40**

Single Flute Countersinks HSS - 60º, 82º, 90º, 100º





- High Speed Steel

Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60º HSS Code No.	Price $	82º HSS Code No.	Price $	90º HSS Code No.	Price $	100º HSS Code No.	Price $
3/16	3/16	3/4	1-1/2	120-739	**10.70**	120-753	**10.70**	120-767	**10.70**	120-781	**10.70**
1/4	1/4	3/4	2	120-740	**11.20**	120-754	**11.20**	120-768	**11.20**	120-782	**11.20**
5/16	1/4	1	2	120-741	**12.80**	120-755	**12.80**	120-769	**12.80**	120-783	**12.80**
3/8	1/4	1	2	120-742	**15.20**	120-756	**15.20**	120-770	**15.20**	120-784	**15.20**
1/2	1/4	1	2	120-743	**18.70**	120-757	**18.70**	120-771	**18.70**	120-785	**18.70**
5/8	3/8	1-1/8	2	120-744	**28.50**	120-758	**28.50**	120-772	**28.50**	120-786	**28.50**
5/8	1/2	1-1/8	2-3/4	120-745	**28.50**	120-759	**28.50**	120-773	**28.50**	120-787	**30.30**
3/4	3/8	1-5/16	2-3/4	120-746	**31.90**	120-760	**31.90**	120-774	**31.90**	120-788	**31.90**
3/4	1/2	1-5/16	2-3/4	120-747	**31.90**	120-761	**31.90**	120-775	**31.90**	120-789	**31.90**
7/8	1/2	1-5/16	2-3/4	120-748	**50.40**	120-762	**50.40**	120-776	**50.40**	120-790	**78.30**
1	1/2	1-5/16	2-3/4	120-749	**56.30**	120-763	**56.30**	120-777	**56.30**	120-791	**56.30**
1-1/4	3/4	1-5/8	3-3/8	120-750	**90.90**	120-764	**90.90**	120-778	**90.90**		
1-1/2	3/4	1-5/8	3-1/2	120-751	**126.40**	120-765	**126.40**	120-779	**126.40**	120-793	**126.40**
2	3/4	1-5/8	3-3/4	120-752	**208.30**	120-766	**208.30**	120-780	**208.30**	120-794	**300.00**
Sets											
5 pc. set contains:		1/4, 3/8, 1/2, 3/4, 1		120-855	**138.90**	120-858	**138.90**	120-860	**138.90**	120-862	**138.90**
9 pc. set contains:		3/16, 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1		120-857	**244.40**	120-850	**244.40**	120-852	**244.40**	120-863	**244.40**
12 pc. 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		120-840	**670.60**	120-859	**670.60**	120-861	**670.60**	120-864	**670.60**

Single Flute TiN Coated Premium Cobalt Countersinks - 60º, 82º, 90º

- Made from premium M-42, 8% cobalt H.S.S.
- 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



MADE IN USA

Body Dia. (in.)	Shank Dia. (in.)	60º	60º Code No.	Price $	82º	82º Code No.	Price $	90º	90º Code No.	Price $
1/8	1/8	HSP1-1/8-60T	121-609	**22.60**	HSP1-1/8-82T	121-618	**22.60**	HSP1-1/8-90T	121-627	**22.60**
3/16	3/16	HSP1-3/16-60T	121-610	**24.10**	HSP1-3/16-82T	121-619	**24.10**	HSP1-3/16-90T	121-628	**25.00**
1/4	1/4	HSP1-1/4-60T	121-611	**24.50**	HSP1-1/4-82T	121-620	**25.30**	HSP1-1/4-90T	121-629	**26.70**
3/8	1/4	HSP1-3/8-60T	121-612	**34.00**	HSP1-3/8-82T	121-621	**32.40**	HSP1-3/8-90T	121-630	**32.40**
1/2	3/8	HSP1-1/2-60T	121-613	**46.00**	HSP1-1/2-82T	121-622	**46.00**	HSP1-1/2-90T	121-631	**46.00**
5/8	3/8	HSP1-5/8-60T	121-614	**61.70**	HSP1-5/8-82T	121-623	**64.10**	HSP1-5/8-90T	121-632	**64.10**
3/4	1/2	HSP1-3/4-60T	121-615	**93.10**	HSP1-3/4-82T	121-624	**97.00**	HSP1-3/4-90T	121-633	**97.00**
1	1/2	HSP1-1-60T	121-616	**129.90**	HSP1-1-82	121-625	**135.30**	HSP1-1-90T	121-634	**129.90**
1-1/4	1/2	HSP1-1-1/4-60T	121-617	**202.90**	HSP1-1-1/4-82T	121-626	**207.30**	HSP1-1-1/4-90T	121-635	**202.90**

Single Flute TiN Coated Premium Cobalt Countersinks - 100º, 120º

Body Dia. (in.)	Shank Dia. (in.)	100º	100º Code No.	Price $	120º	120º Code No.	Price $
1/8	1/8	HSP1-1/8-100T	121-636	**22.60**	HSP1-1/8-120T	121-645	**22.60**
3/16	3/16	HSP1-3/16-100T	121-637	**24.10**	HSP1-3/16-120T	121-646	**24.10**
1/4	1/4	HSP1-1/4-100T	121-638	**24.50**	HSP1-1/4-120T	121-647	**24.50**
3/8	1/4	HSP1-3/8-100T	121-639	**32.40**	HSP1-3/8-120T	121-648	**32.40**
1/2	3/8	HSP1-1/2-100T	121-640	**46.00**	HSP1-1/2-120T	121-649	**46.00**
5/8	3/8	HSP1-5/8-100T	121-641	**61.70**	HSP1-5/8-120T	121-650	**61.70**
3/4	1/2	HSP1-3/4-100T	121-642	**89.10**	HSP1-3/4-120T	121-651	**93.10**
1	1/2	HSP1-1-100T	121-643	**129.90**	HSP1-1-120T	121-652	**129.90**
1-1/4	1/2	HSP1-1-1/4-100T	121-644	**190.50**	HSP1-1-1/4-120T	121-653	**190.50**

Carbide Single Flute Countersinks - 60º, 82º, 90º, 100º

- 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



MADE IN USA

Body Dia. (in.)	Shank Dia. (in.)	Single Flute 60º	60º Code No.	Price $	Single Flute 82º	82º Code No.	Price $	Single Flute 90º	90º Code No.	Price $	Single Flute 100º	100º Code No.	Price $
1/8	1/8	C1-1/8-60	121-740	**24.60**	C1-1/8-82	121-756	**24.60**	C1-1/8-90	121-772	**24.60**	C1-1/8-100	121-788	**24.50**
3/16	3/16	C1-3/16-60	121-741	**29.10**	C1-3/16-82	121-757	**29.10**	C1-3/16-90	121-773	**30.90**	C1-3/16-100	121-789	**30.70**
1/4	1/4	C1-1/4-60	121-742	**38.00**	C1-1/4-82	121-758	**38.00**	C1-1/4-90	121-774	**42.10**	C1-1/4-100	121-790	**38.00**
3/8	1/4	C1-3/8-60	121-743	**72.00**	C1-3/8-82	121-759	**72.00**	C1-3/8-90	121-775	**72.00**	C1-3/8-100	121-791	**71.60**
1/2	3/8	C1-1/2-60	121-744	**97.10**	C1-1/2-82	121-760	**104.00**	C1-1/2-90	121-776	**97.10**	C1-1/2-100	121-792	**100.60**
5/8	1/2	C1-5/8-60	121-745	**125.80**	C1-5/8-82	121-761	**134.70**	C1-5/8-90	121-777	**134.70**	C1-5/8-100	121-793	**131.30**
3/4	1/2	C1-3/4-60	121-746	**186.10**	C1-3/4-82	121-762	**204.00**	C1-3/4-90	121-778	**186.10**	C1-3/4-100	121-794	**186.10**
1	1/2	C1-1-60	121-747	**308.20**	C1-1-82	121-763	**308.20**	C1-1-90	121-779	**308.20**	C1-1-100	121-795	**301.60**

Single Flute Double End HSS and Carbide Countersinks - 60º, 82º, 90º

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



MADE IN USA

Body Dia. (in.)	Overall Length (in.)	Material Grade	60º	60º Code No.	Price $	82º	82º Code No.	Price $	90º	90º Code No.	Price $
1/8	1-1/2	HSS	DHS1-1/8-60	121-655	**26.50**	DHS1-1/8-82	121-671	**25.80**	DHS1-1/8-90	121-687	**26.50**
		Carbide	DC1-1/8-60	121-656	**42.50**	DC1-1/8-82	121-672	**42.50**	DC1-1/8-90	121-688	**42.50**
3/16	2	HSS	DHS1-3/16-60	121-657	**29.20**	DHS1-3/16-82	121-673	**28.30**	DHS1-3/16-90	121-689	**28.30**
		Carbide	DC1-3/16-60	121-658	**59.20**	DC1-3/16-82	121-674	**53.70**	DC1-3/16-90	121-690	**53.70**
1/4	2	HSS	DHS1-1/4-60	121-659	**30.00**	DHS1-1/4-82	121-675	**30.00**	DHS1-1/4-90	121-691	**30.00**
		Carbide	DC1-1/4-60	121-660	**76.00**	DC1-1/4-82	121-676	**68.80**	DC1-1/4-90	121-692	**76.00**
5/16	2-1/2	HSS	DHS1-5/16-60	121-661	**32.80**	DHS1-5/16-82	121-677	**33.70**	DHS1-5/16-90	121-693	**33.70**
		Carbide	DC1-5/16-60	121-662	**123.70**	DC1-5/16-82	121-678	**108.60**	DC1-5/16-90	121-694	**102.60**
3/8	2-1/2	HSS	DHS1-3/8-60	121-663	**37.90**	DHS1-3/8-82	121-679	**37.90**	DHS1-3/8-90	121-695	**37.90**
		Carbide	DC1-3/8-60	121-664	**130.10**	DC1-3/8-82	121-680	**130.10**	DC1-3/8-90	121-696	**122.70**
1/2	3	HSS	DHS1-1/2-60	121-665	**48.70**	DHS1-1/2-82	121-681	**48.70**	DHS1-1/2-90	121-697	**51.60**
		Carbide	DC1-1/2-60	121-666	**175.90**	DC1-1/2-82	121-682	**164.50**	DC1-1/2-90	121-698	**175.90**
5/8	3-1/2	HSS	DHS1-5/8-60	121-667	**69.00**	DHS1-5/8-82	121-683	**69.00**	DHS1-5/8-90	121-699	**67.00**
		Carbide	DC1-5/8-60	121-668	**234.00**	DC1-5/8-82	121-684	**234.00**	DC1-5/8-90	121-700	**234.00**
3/4	4	HSS	DHS1-3/4-60	121-669	**100.80**	DHS1-3/4-82	121-685	**100.80**	DHS1-3/4-90	121-701	**98.00**
		Carbide	DC1-3/4-60	121-670	**331.90**	DC1-3/4-82	121-686	**331.90**	DC1-3/4-90	121-702	**327.90**

Single Flute Double End HSS and Carbide Countersinks - 100º, 120º

Body Dia. (in.)	Overall Length (in.)	Material Grade	100º	100º Code No.	Price $	120º	120º Code No.	Price $
1/8	1-1/2	HSS	DHS1-1/8-100	121-703	**26.50**	DHS1-1/8-120	121-719	**25.80**
		Carbide	DC1-1/8-100	121-704	**40.10**	DC1-1/8-120	121-720	**40.10**
3/16	2	HSS	DHS1-3/16-100	121-705	**28.30**	DHS1-3/16-120	121-721	**28.30**
		Carbide	DC1-3/16-100	121-706	**50.40**	DC1-3/16-120	121-722	**50.40**
1/4	2	HSS	DHS1-1/4-100	121-707	**30.00**	DHS1-1/4-120	121-723	**29.20**
		Carbide	DC1-1/4-100	121-708	**64.80**	DC1-1/4-120	121-724	**64.80**
5/16	2-1/2	HSS	DHS1-5/16-100	121-709	**32.80**	DHS1-5/16-120	121-725	**33.70**
		Carbide	DC1-5/16-100	121-710	**102.60**	DC1-5/16-120	121-726	**102.60**
3/8	2-1/2	HSS	DHS1-3/8-100	121-711	**37.90**	DHS1-3/8-120	121-727	**37.90**
		Carbide	DC1-3/8-100	121-712	**143.80**	DC1-3/8-120	121-728	**122.70**
1/2	3	HSS	DHS1-1/2-100	121-713	**51.60**	DHS1-1/2-120	121-729	**48.70**
		Carbide	DC1-1/2-100	121-714	**175.90**	DC1-1/2-120	121-730	**175.90**
5/8	3-1/2	HSS	DHS1-5/8-100	121-715	**67.00**	DHS1-5/8-120	121-731	**67.00**
		Carbide	DC1-5/8-100	121-716	**234.00**	DC1-5/8-120	121-732	**234.00**
3/4	4	HSS	DHS1-3/4-100	121-717	**98.00**	DHS1-3/4-120	121-733	**100.80**
		Carbide	DC1-3/4-100	121-718	**331.90**	DC1-3/4-120	121-734	**331.90**

3 Flute Countersinks HSS- 60º, 82º, 90º, 100º

- High Speed Steel



Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60º HSS Code No.	Price $	82º HSS Code No.	Price $	90º HSS Code No.	Price $	100º HSS Code No.	Price $
1/4	3/16	3/4	1-1/2	120-795	**12.70**	120-804	**12.70**	120-813	**12.70**	120-822	**12.70**
3/8	1/4	7/8	1-3/4	120-796	**17.40**	120-805	**17.40**	120-814	**17.40**	120-823	**17.40**
1/2	3/8	1	2	120-797	**21.60**	120-806	**21.60**	120-815	**21.60**	120-824	**21.60**
5/8	3/8	1	2-1/4	120-798	**32.80**	120-807	**32.80**	120-816	**32.80**	120-825	**32.80**
3/4	1/2	1-1/4	2-5/8	120-799	**36.70**	120-808	**36.70**	120-817	**36.70**	120-826	**36.70**
1	1/2	1-1/4	2-3/4	120-800	**64.60**	120-809	**64.60**	120-818	**64.60**	120-827	**64.60**
1-1/4	3/4	1-1/4	3	120-801	**104.70**	120-976	**104.70**	120-819	**104.70**	120-828	**104.70**
1-1/2	3/4	1-1/4	3	120-802	**145.30**	120-811	**145.30**	120-820	**145.30**	120-829	**145.30**
2	3/4	1-1/4	3-1/4	120-803	**239.10**	120-812	**239.10**	120-821	**239.10**	120-830	**239.10**

3 Flute Countersinks HSS

MADE IN GERMANY

- High Speed Steel



Flute Dia. (in.)	Shank Dia. (in.)	Overall Length (in.)	82º HSS Code No.	Price $	90º HSS Code No.	Price $
1/4	1/4	1-3/4	121-038	**48.40**	121-050	**48.40**
3/8	1/4	1-7/8	121-040	**60.50**	121-052	**60.50**
1/2	3/8	2-1/8	121-042	**68.20**	121-054	**68.20**
3/4	1/2	2-7/16	121-044	**135.60**	121-056	**135.60**
1	1/2	2-5/8	121-046	**150.60**	121-058	**150.60**

3 Flute Countersink Sets HSS

MADE IN GERMANY

- High Speed Steel



Description	82º HSS Code No.	Price $	90º HSS Code No.	Price $
5 piece - 1/4, 3/8, 1/2, 3/4, 1	121-048	**462.50**	121-060	**462.50**

4 Flute Machine Countersinks HSS

- High Speed Steel



Flute Dia. (in.)	Shank Dia. (in.)	Shank Length (in.)	Overall Length (in.)	60º Code No.	Price $	82º Code No.	Price $	90º Code No.	Price $
1/2	1/2	2-1/4	3-7/8	120-831	**53.70**	120-950	**53.70**	120-845	**53.70**
5/8	1/2	2-1/4	4	120-832	**61.70**	120-955	**61.70**	120-846	**61.70**
3/4	1/2	2-1/4	4-1/8	120-833	**78.40**	120-960	**78.40**	120-847	**78.40**
7/8	1/2	2-1/4	4-1/4	120-834	**86.40**	120-965	**81.60**	120-848	**86.40**
1	1/2	2-1/4	4-3/8	120-835	**95.30**	120-970	**95.30**	120-849	**95.30**
1-1/4	1/2	2-1/4	5	120-836	**145.30**	120-975	**145.30**	120-851	**145.30**
1-1/2	1/2	2-1/4	5-3/8	120-837	**177.50**	120-980	**177.50**	120-853	**177.50**

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

European Made



121-865 121-870

Description	Code No.	Price $
Includes 6.3mm, 10.4mm, 16.5mm, 20.5mm, 25.0mm		
82º HSCO	121-860	**339.90**
90º HSS	121-865	**339.90**
TiN Coated 10.4mm, 16.5mm, 20.5mm, 25mm, 31mm		
82º HSCO TIN	121-870	**526.60**

3 Flute 82º Countersinks HSS

- High Speed Steel

QUALITY IMPORT



Dia. (in.)	Shank Dia. (in.)	3 Flute HSS Code No.	Price $
1/2	1/2	120-951	**19.60**
5/8	1/2	120-956	**31.00**
3/4	1/2	120-961	**34.70**
1	1/2	120-971	**110.80**
1-1/4	3/4	120-976	**104.70**
1-1/2	3/4	120-981	**221.30**

3 Flute Countersink Sets HSS

- High Speed Steel



Set Size (in.)	60º Code No.	Price $	82º Code No.	Price $	90º Code No.	Price $	100º Code No.	Price $
5 piece								
1/4, 3/8, 1/2, 3/4, 1	120-865	**159.40**	120-854	**159.40**	120-856	**159.40**	120-871	**159.40**
6 piece								
1/4, 3/8, 1/2, 5/8, 3/4, 1	120-866	**190.30**	120-868	**190.30**	120-870	**190.30**	120-872	**190.30**

Six Flute Countersinks HSS - 60º, 82º, 90º

- 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



MADE IN USA

Body Dia. (in.)	Shank Dia. (in.)	60º	60º HSS Code No.	Price $	82º	82º HSS Code No.	Price $	90º	90º HSS Code No.	Price $
1/8	1/8	HS6-1/8-60	121-200	**16.90**	HS6-1/8-82	121-230	**16.90**	HS6-1/8-90	121-260	**16.90**
3/16	3/16	HS6-3/16-60	121-202	**16.90**	HS6-3/16-82	121-232	**17.50**	HS6-3/16-90	121-262	**16.90**
1/4	1/4	HS6-1/4-60	121-204	**17.70**	HS6-1/4-82	121-234	**18.70**	HS6-1/4-90	121-264	**18.70**
5/16	1/4	HS6-5/16-60	121-206	**19.90**	HS6-5/16-82	121-236	**19.90**	HS6-5/16-90	121-266	**19.90**
3/8	1/4	HS6-3/8-60	121-208	**23.70**	HS6-3/8-82	121-238	**23.70**	HS6-3/8-90	121-268	**22.40**
1/2	3/8	HS6-1/2-60	121-210	**29.60**	HS6-1/2-82	121-240	**29.60**	HS6-1/2-90	121-270	**28.20**
5/8	3/8	HS6-5/8-60	121-212	**42.10**	HS6-5/8-82	121-242	**42.10**	HS6-5/8-90	121-272	**39.90**
3/4	1/2	HS6-3/4-60	121-214	**58.50**	HS6-3/4-82	121-244	**58.50**	HS6-3/4-90	121-274	**55.50**
7/8	1/2	HS6-7/8-60	121-216	**77.60**	HS6-7/8-82	121-246	**82.10**	HS6-7/8-90	121-276	**77.60**
1	1/2	HS6-1-60	121-218	**95.10**	HS6-1-82	121-248	**95.10**	HS6-1-90	121-278	**95.10**
1-1/4	1/2	HS6-1-1/4-60	121-220	**134.30**	HS6-1-1/4-82	121-250	**134.30**	HS6-1-1/4-90	121-280	**134.30**
1-1/2	3/4	HS6-1-1/2-60	121-222	**198.70**	HS6-1-1/2-82	121-252	**208.10**	HS6-1-1/2-90	121-282	**198.70**
2	3/4	HS6-2-60	121-224	**353.10**	HS6-2-82	121-254	**369.50**	HS6-2-90	121-284	**353.10**
2-1/2	3/4	HS6-2-1/2-60	121-226	**977.10**	HS6-2-1/2-82	121-256	**949.80**	HS6-2-1/2-90	121-286	**913.20**
3	3/4	HS6-3-60	121-228	**1,132.50**	HS6-3-82	121-258	**1,132.50**	HS6-3-90	121-288	**1,201.50**

Six Flute Countersinks HSS - 100º, 110º, 120º

Body Dia. (in.)	Shank Dia. (in.)	100º	100º HSS Code No.	Price $	110º	110º HSS Code No.	Price $	120º	120º HSS Code No.	Price $
1/8	1/8	HS6-1/8-100	121-261	**16.40**	HS6-1/8-110	121-292	**16.40**	HS6-1/8-120	121-318	**16.90**
3/16	3/16	HS6-3/16-100	121-263	**16.90**	HS6-3/16-110	121-294	**16.90**	HS6-3/16-120	121-320	**16.90**
1/4	1/4	HS6-1/4-100	121-265	**17.30**	HS6-1/4-110	121-296	**17.30**	HS6-1/4-120	121-322	**17.70**
5/16	1/4	HS6-5/16-100	121-267	**21.00**	HS6-5/16-110	121-298	**19.10**	HS6-5/16-120	121-324	**19.90**
3/8	1/4	HS6-3/8-100	121-269	**22.40**	HS6-3/8-110	121-300	**21.70**	HS6-3/8-120	121-326	**23.70**
1/2	3/8	HS6-1/2-100	121-271	**29.60**	HS6-1/2-110	121-302	**27.20**	HS6-1/2-120	121-328	**28.20**
5/8	3/8	HS6-5/8-100	121-273	**39.90**	HS6-5/8-110	121-304	**39.90**	HS6-5/8-120	121-330	**39.90**
3/4	1/2	HS6-3/4-100	121-275	**55.50**	HS6-3/4-110	121-306	**53.90**	HS6-3/4-120	121-332	**58.50**
7/8	1/2	HS6-7/8-100	121-277	**75.40**	HS6-7/8-110	121-308	**75.40**	HS6-7/8-120	121-334	**75.40**
1	1/2	HS6-1-100	121-279	**89.90**	HS6-1-110	121-310	**87.30**	HS6-1-120	121-336	**89.90**
1-1/4	1/2	HS6-1-1/4-100	121-281	**128.40**	HS6-1-1/4-110	121-312	**123.50**	HS6-1-1/4-120	121-338	**128.40**
1-1/2	3/4	HS6-1-1/2-100	121-283	**198.70**	HS6-1-1/2-110	121-314	**191.20**	HS6-1-1/2-120	121-340	**198.70**
2	3/4	HS6-2-100	121-285	**339.50**	HS6-2-110	121-316	**339.50**	HS6-2-120	121-342	**353.10**

6 Flute HSS Machine Countersink Sets

- High Speed Steel



Set Size (in.)	60º Code No.	Price $	82º Code No.	Price $	90º Code No.	Price $
5 piece						
1/4, 3/8, 1/2, 3/4, 1	120-873	**192.90**	120-877	**192.90**	120-881	**192.90**
8 piece						
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1	120-874	**312.40**	120-878	**312.40**	120-882	**312.40**
10 piece						
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4, 1-1/2	120-875	**583.20**	120-879	**583.20**	120-883	**583.20**
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	120-876	**598.60**	120-880	**598.60**	120-884	**598.60**

6 Flute HSS Chatterless Countersinks

- High Speed Steel



Flute Dia. (in.)	Shank Dia. (in.)	60º Code No.	Price $	82º Code No.	Price $	90º Code No.	Price $
3/16	3/16	120-700	**13.30**	120-713	**13.30**	120-726	**13.30**
1/4	1/4	120-701	**14.20**	120-714	**14.20**	120-727	**14.20**
5/16	1/4	120-702	**16.40**	120-715	**16.40**	120-728	**16.40**
3/8	1/4	120-703	**19.60**	120-716	**19.60**	120-729	**19.60**
1/2	1/4	120-704	**25.30**	120-717	**25.30**	120-730	**25.30**
5/8	1/2	120-705	**37.10**	120-718	**37.10**	120-731	**37.10**
3/4		120-706	**49.10**	120-719	**49.10**	120-732	**49.10**
7/8	1/2	120-707	**64.80**	120-720	**64.80**	120-733	**64.80**
1		120-708	**78.10**	120-721	**78.10**	120-734	**78.10**
1-1/4	3/4	120-709	**114.40**	120-722	**114.40**	120-735	**114.40**
1-1/2	3/4	120-710	**156.80**	120-723	**156.80**	120-736	**156.80**
1-3/4	1	120-711	**204.50**	120-724	**204.50**	120-737	**204.50**
2	1	120-712	**244.40**	120-725	**244.40**	120-738	**244.40**

COUNTERSINKS

Six Flute TiN Coated Premium Cobalt Countersinks - 60º, 82º, 90º

- Made from premium M-42, 8% cobalt H.S.S.
- 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



Body Dia. (in.)	Shank Dia. (in.)	60º	60º Code No.	Price $	82º	82º Code No.	Price $	90º	90º Code No.	Price $
1/8	1/8	HSP-1/8-60T	121-350	**24.80**	HSP-1/8-82T	121-372	**24.80**	HSP-1/8-90T	121-394	**24.80**
3/16	3/16	HSP-3/16-60T	121-352	**26.20**	HSP-3/16-82T	121-374	**26.20**	HSP-3/16-90T	121-396	**26.20**
1/4	1/4	HSP-1/4-60T	121-354	**28.10**	HSP-1/4-82T	121-376	**29.40**	HSP-1/4-90T	121-398	**29.40**
5/16	1/4	HSP-5/16-60T	121-356	**32.80**	HSP-5/16-82T	121-378	**32.80**	HSP-5/16-90T	121-400	**32.80**
3/8	1/4	HSP-3/8-60T	121-358	**35.80**	HSP-3/8-82T	121-380	**37.60**	HSP-3/8-90T	121-402	**37.60**
1/2	3/8	HSP-1/2-60T	121-360	**48.50**	HSP-1/2-82T	121-382	**48.50**	HSP-1/2-90T	121-404	**48.50**
5/8	3/8	HSP-5/8-60T	121-362	**67.20**	HSP-5/8-82T	121-384	**69.90**	HSP-5/8-90T	121-406	**67.20**
3/4	1/2	HSP-3/4-60T	121-364	**97.80**	HSP-3/4-82T	121-386	**101.80**	HSP-3/4-90T	121-408	**101.80**
7/8	1/2	HSP-7/8-60T	121-366	**119.80**	HSP-7/8-82T	121-388	**119.80**	HSP-7/8-90T	121-410	**119.80**
1	1/2	HSP-1-60T	121-368	**135.30**	HSP-1-82T	121-390	**140.90**	HSP-1-90T	121-412	**135.30**
1-1/4	1/2	HSP-1-1/4-60T	121-370	**221.10**	HSP-1-1/4-82T	121-392	**225.90**	HSP-1-1/4-90T	121-414	**221.10**

Six Flute TiN Coated Premium Cobalt Countersinks - 100º, 110º, 120º

- Made from premium M-42, 8% cobalt H.S.S.
- 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



Body Dia. (in.)	Shank Dia. (in.)	100º	100º Code No.	Price $	110º	110º Code No.	Price $	120º	120º Code No.	Price $
1/8	1/8	HSP-1/8-100	121-416	**24.00**	HSP-1/8-110	121-436	**24.00**	HSP-1/8-120	121-456	**24.80**
3/16	3/16	HSP-3/16-100	121-418	**25.20**	HSP-3/16-110	121-438	**25.20**	HSP-3/16-120	121-458	**27.50**
1/4	1/4	HSP-1/4-100	121-420	**28.10**	HSP-1/4-110	121-440	**27.00**	HSP-1/4-120	121-460	**27.00**
5/16	1/4	HSP-5/16-100	121-422	**32.80**	HSP-5/16-110	121-442	**31.70**	HSP-5/16-120	121-462	**31.70**
3/8	1/4	HSP-3/8-100	121-424	**35.80**	HSP-3/8-110	121-444	**34.60**	HSP-3/8-120	121-464	**35.80**
1/2	3/8	HSP-1/2-100	121-426	**48.50**	HSP-1/2-110	121-446	**46.40**	HSP-1/2-120	121-466	**48.50**
5/8	3/8	HSP-5/8-100	121-428	**67.20**	HSP-5/8-110	121-448	**67.20**	HSP-5/8-120	121-468	**69.90**
3/4	1/2	HSP-3/4-100	121-430	**97.80**	HSP-3/4-110	121-450	**93.60**	HSP-3/4-120	121-470	**93.60**
7/8	1/2	HSP-7/8-100	121-432	**114.90**	HSP-7/8-110	121-452	**114.90**	HSP-7/8-120	121-472	**114.90**
1	1/2	HSP-1-100	121-434	**135.30**	HSP-1-110	121-454	**129.50**	HSP-1-120	121-474	**135.30**

6 Flute Carbide Countersinks

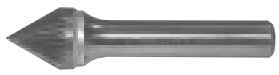
For use on hardened steel up to 60Rc, high temperature alloys and other tough jobs.



Cutting Dia. (in.)	Shank Dia. (in.)	Included Angle	Code No.	Price $
1/4	1/4	60°	172-920	**34.80**
1/4	1/4	82°	172-921	**34.80**
1/4	1/4	90°	172-922	**34.80**
3/8	1/4	60°	172-923	**57.20**
3/8	1/4	82°	172-924	**57.20**
3/8	1/4	90°	172-925	**57.20**
1/2	1/4	60°	172-926	**76.20**
1/2	1/4	82°	172-927	**76.20**
1/2	1/4	90°	172-928	**76.20**
5/8	3/8	60°	172-929	**107.50**
5/8	3/8	82°	172-930	**107.50**
5/8	3/8	90°	172-931	**107.50**
3/4	3/8	60°	172-932	**157.30**
3/4	3/8	82°	172-933	**157.30**
3/4	3/8	90°	172-934	**157.30**
1	1/2	60°	172-935	**216.70**
1	1/2	82°	172-936	**216.70**
1	1/2	90°	172-937	**216.70**

Multi-Flute Carbide Countersinks

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



Cutting Dia. (in.)	Shank Dia. (in.)	Included Angle	Code No.	Price $
1/4	1/4	60°	172-900	**32.40**
1/4	1/4	82°	172-901	**32.40**
1/4	1/4	90°	172-902	**32.40**
3/8	1/4	60°	172-903	**36.10**
3/8	1/4	82°	172-904	**36.10**
3/8	1/4	90°	172-905	**36.10**
1/2	1/4	60°	172-906	**51.40**
1/2	1/4	82°	172-907	**51.40**
1/2	1/4	90°	172-908	**51.40**
5/8	3/8	60°	172-909	**70.70**
5/8	3/8	82°	172-910	**70.70**
5/8	3/8	90°	172-911	**70.70**
3/4	3/8	60°	172-912	**95.10**
3/4	3/8	82°	172-913	**95.10**
3/4	3/8	90°	172-914	**95.10**
1	1/2	60°	172-915	**151.90**
1	1/2	82°	172-916	**151.90**
1	1/2	90°	172-917	**151.90**

Carbide Six Flute Countersinks - 60º, 82º, 90º, 100º



Body Dia. (in.)	Shank Dia. (in.)	60º	60º Code No.	Price $	82º	82º Code No.	Price $	90º	90º Code No.	Price $	100º	100º Code No.	Price $
1/8	1/8	C6-1/8-60	121-748	**26.10**	C6-1/8-82	121-764	**26.10**	C6-1/8-90	121-780	**26.10**	C6-1/8-100	121-796	**26.10**
3/16	3/16	C6-3/16-60	121-749	**32.40**	C6-3/16-82	121-765	**32.40**	C6-3/16-90	121-781	**30.70**	C6-3/16-100	121-797	**30.70**
1/4	1/4	C6-1/4-60	121-750	**40.10**	C6-1/4-82	121-766	**40.10**	C6-1/4-90	121-782	**40.10**	C6-1/4-100	121-798	**40.10**
3/8	1/4	C6-3/8-60	121-751	**71.60**	C6-3/8-82	121-767	**75.90**	C6-3/8-90	121-783	**75.90**	C6-3/8-100	121-799	**75.90**
1/2	3/8	C6-1/2-60	121-752	**107.60**	C6-1/2-82	121-768	**118.00**	C6-1/2-90	121-784	**118.00**	C6-1/2-100	121-800	**107.60**
5/8	1/2	C6-5/8-60	121-753	**140.40**	C6-5/8-82	121-769	**153.90**	C6-5/8-90	121-785	**140.40**	C6-5/8-100	121-801	**140.40**
3/4	1/2	C6-3/4-60	121-754	**183.30**	C6-3/4-82	121-770	**196.00**	C6-3/4-90	121-786	**214.70**	C6-3/4-100	121-802	**196.00**
1	1/2	C6-1-60	121-755	**301.60**	C6-1-82	121-771	**322.60**	C6-1-90	121-787	**301.60**	C6-1-100	121-803	**301.60**

Six Flute Double End HSS and Carbide Countersinks - 60º, 82º, 90º

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



MADE IN USA

Body Dia. (in.)	Overall Length (in.)	Material Grade	60º	60º Code No.	Price $	82º	82º Code No.	Price $	90º	90º Code No.	Price $
1/8	1-1/2	HSS	DHS-1/8-60	121-476	**26.90**	DHS-1/8-82	121-492	**26.90**	DHS-1/8-90	121-508	**26.90**
		Carbide	DC-1/8-60	121-477	**42.10**	DC-1/8-82	121-493	**44.70**	DC-1/8-90	121-509	**49.50**
3/16	2	HSS	DHS-3/16-60	121-478	**30.70**	DHS-3/16-82	121-494	**30.70**	DHS-3/16-90	121-510	**32.30**
		Carbide	DC-3/16-60	121-479	**62.30**	DC-3/16-82	121-495	**56.30**	DC-3/16-90	121-511	**56.30**
1/4	2	HSS	DHS-1/4-60	121-480	**31.70**	DHS-1/4-82	121-496	**33.40**	DHS-1/4-90	121-512	**31.70**
		Carbide	DC-1/4-60	121-481	**73.30**	DC-1/4-82	121-497	**72.10**	DC-1/4-90	121-513	**79.80**
5/16	2-1/2	HSS	DHS-5/16-60	121-482	**35.40**	DHS-5/16-82	121-498	**37.50**	DHS-5/16-90	121-514	**37.50**
		Carbide	DC-5/16-60	121-483	**113.90**	DC-5/16-82	121-499	**107.50**	DC-5/16-90	121-515	**107.50**
3/8	2-1/2	HSS	DHS-3/8-60	121-484	**42.00**	DHS-3/8-82	121-500	**42.00**	DHS-3/8-90	121-516	**39.70**
		Carbide	DC-3/8-60	121-485	**136.40**	DC-3/8-82	121-501	**136.40**	DC-3/8-90	121-517	**136.40**
1/2	3	HSS	DHS-1/2-60	121-486	**49.80**	DHS-1/2-82	121-502	**51.30**	DHS-1/2-90	121-518	**51.30**
		Carbide	DC-1/2-60	121-487	**184.80**	DC-1/2-82	121-503	**184.80**	DC-1/2-90	121-519	**184.80**
5/8	3-1/2	HSS	DHS-5/8-60	121-488	**70.40**	DHS-5/8-82	121-504	**70.40**	DHS-5/8-90	121-520	**72.60**
		Carbide	DC-5/8-60	121-489	**245.50**	DC-5/8-82	121-505	**245.50**	DC-5/8-90	121-521	**245.50**
3/4	4	HSS	DHS-3/4-60	121-490	**106.00**	DHS-3/4-82	121-506	**106.00**	DHS-3/4-90	121-522	**102.90**
		Carbide	DC-3/4-60	121-491	**348.50**	DC-3/4-82	121-507	**348.50**	DC-3/4-90	121-523	**348.50**

Six Flute Double End HSS and Carbide Countersinks - 100º, 120º

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



MADE IN USA

Body Dia. (in.)	Overall Length (in.)	Material Grade	100º	100º Code No.	Price $	120º	120º Code No.	Price $
1/8	1-1/2	HSS	DHS-1/8-100	121-524	**26.90**	DHS-1/8-120	121-540	**27.90**
		Carbide	DC-1/8-100	121-525	**42.10**	DC-1/8-120	121-541	**42.10**
3/16	2	HSS	DHS-3/16-100	121-526	**30.70**	DHS-3/16-120	121-542	**30.70**
		Carbide	DC-3/16-100	121-527	**56.30**	DC-3/16-120	121-543	**53.10**
1/4	2	HSS	DHS-1/4-100	121-528	**31.70**	DHS-1/4-120	121-544	**31.70**
		Carbide	DC-1/4-100	121-529	**72.10**	DC-1/4-120	121-545	**72.10**
5/16	2-1/2	HSS	DHS-5/16-100	121-530	**35.40**	DHS-5/16-120	121-546	**35.40**
		Carbide	DC-5/16-100	121-531	**113.90**	DC-5/16-120	121-547	**113.90**
3/8	2-1/2	HSS	DHS-3/8-100	121-532	**39.70**	DHS-3/8-120	121-548	**42.00**
		Carbide	DC-3/8-100	121-533	**136.40**	DC-3/8-120	121-549	**128.80**
1/2	3	HSS	DHS-1/2-100	121-534	**51.30**	DHS-1/2-120	121-550	**51.30**
		Carbide	DC-1/2-100	121-535	**184.80**	DC-1/2-120	121-551	**184.80**
5/8	3-1/2	HSS	DHS-5/8-100	121-536	**70.40**	DHS-5/8-120	121-552	**72.60**
		Carbide	DC-5/8-100	121-537	**245.50**	DC-5/8-120	121-553	**245.50**
3/4	4	HSS	DHS-3/4-100	121-538	**102.90**	DHS-3/4-120	121-554	**106.00**
		Carbide	DC-3/4-100	121-539	**348.50**	DC-3/4-120	121-555	**348.50**

HSS Chucking Reamers

This high quality tool is designed for most standard reaming needs. Available in straight or spiral flutes.
- M-2 High Speed Steel all sizes

MADE IN USA

Spiral Flute



Straight Flute



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	.1250	4	7/8	3-1/2	.1190	111-107	**18.00**	111-105	**22.40**	128-680	**23.80**
.1260	.1260	4	7/8	3-1/2	.1190	111-402	**22.40**	128-682	**25.80**	128-683	**27.00**
#30	.1285	4	7/8	3-1/2	.1190	128-684	**22.40**	128-685	**25.80**	128-686	**27.00**
#29	.1360	4	1	4	.1275	128-687	**26.70**	128-688	**30.60**	128-689	**32.20**
#28	.1405	4	1	4	.1350	128-690	**26.70**	128-691	**30.60**	128-692	**32.20**
9/64	.1406	4	1	4	.1350	111-112	**26.70**	111-110	**30.60**	–	
#27	.1440	4	1	4	.1350	128-693	**26.70**	128-694	**30.60**	128-695	**32.20**
#26	.1470	4	1	4	.1430	128-696	**26.70**	128-697	**30.60**	128-698	**32.20**
#25	.1495	4	1	4	.1430	128-699	**26.70**	128-700	**30.60**	128-702	**32.20**
#24	.1520	4	1	4	.1460	128-701	**26.70**	128-703	**30.60**	128-704	**32.20**
#23	.1540	4	1	4	.1460	128-705	**26.70**	128-706	**30.60**	128-707	**32.20**
5/32	.1562	4	1	4	.1510	111-117	**26.70**	111-115	**30.60**	128-708	**32.20**
#22	.1570	6	1	4	.1510	128-709	**26.70**	128-710	**30.60**	128-711	**32.20**
#21	.1590	6	1-1/8	4-1/2	.1530	128-712	**28.50**	128-713	**32.70**	128-714	**34.40**
#20	.1610	6	1-1/8	4-1/2	.1530	128-715	**28.50**	128-716	**32.70**	128-717	**34.40**
#19	.1660	6	1-1/8	4-1/2	.1595	128-718	**28.50**	128-719	**32.70**	128-720	**34.40**
#18	.1695	6	1-1/8	4-1/2	.1595	128-721	**28.50**	128-722	**32.70**	128-723	**34.40**
11/64	.1719	6	1-1/8	4-1/2	.1645	111-122	**28.50**	111-120	**32.70**	128-724	**34.40**
#17	.1730	6	1-1/8	4-1/2	.1645	128-725	**28.50**	128-726	**32.70**	128-727	**34.40**
#16	.1770	6	1-1/8	4-1/2	.1704	128-728	**28.50**	128-729	**32.70**	128-730	**34.40**
#15	.1800	6	1-1/8	4-1/2	.1755	128-731	**28.50**	128-732	**32.70**	128-733	**34.40**
#14	.1820	6	1-1/8	4-1/2	.1755	128-734	**28.50**	128-735	**32.70**	128-736	**34.40**
#13	.1850	6	1-1/8	4-1/2	.1805	128-737	**28.50**	128-738	**32.70**	128-739	**34.40**
.1855	.1855	6	1-1/8	4-1/2	.1805	128-740	**29.20**	128-741	**33.30**	–	
.1865	.1865	6	1-1/8	4-1/2	.1805	111-404	**28.50**	128-744	**32.70**	128-745	**34.40**
.1870	.1870	6	1-1/8	4-1/2	.1805	128-746	**29.20**	128-747	**45.30**	–	
3/16	.1875	6	1-1/8	4-1/2	.1805	111-127	**25.70**	111-125	**31.40**	128-749	**32.70**
.1885	.1885	6	1-1/8	4-1/2	.1805	111-406	**28.50**	128-751	**32.70**	128-752	**34.40**
#12	.1890	6	1-1/8	4-1/2	.1805	128-753	**28.50**	128-754	**32.70**	128-755	**34.40**
#11	.1910	6	1-1/4	5	.1860	128-756	**32.30**	128-757	**36.70**	128-758	**38.50**
#10	.1935	6	1-1/4	5	.1860	128-759	**32.30**	128-760	**36.70**	128-761	**38.50**
#9	.1960	6	1-1/4	5	.1895	128-762	**32.30**	128-763	**36.70**	128-764	**38.50**
#8	.1990	6	1-1/4	5	.1895	128-765	**32.30**	128-766	**36.70**	128-767	**38.50**
#7	.2010	6	1-1/4	5	.1945	128-768	**32.30**	128-769	**36.70**	128-770	**38.50**
13/64	.2031	6	1-1/4	5	.1945	111-132	**32.30**	111-130	**36.70**	128-771	**38.50**
#6	.2040	6	1-1/4	5	.1945	128-772	**32.30**	128-773	**36.70**	128-774	**38.50**
#5	.2055	6	1-1/4	5	.2016	128-775	**32.30**	128-776	**36.70**	128-777	**38.50**
#4	.2090	6	1-1/4	5	.2016	128-778	**32.30**	128-779	**36.70**	128-780	**38.50**
#3	.2130	6	1-1/4	5	.2075	128-781	**32.30**	128-782	**36.70**	128-783	**38.50**
7/32	.2188	6	1-1/4	5	.2075	111-137	**32.30**	111-135	**36.70**	128-784	**38.50**
#2	.2210	6	1-1/2	6	.2173	128-785	**32.70**	128-786	**37.70**	128-787	**39.50**
#1	.2280	6	1-1/2	6	.2173	128-788	**32.70**	128-789	**37.70**	128-790	**39.50**
A	.2340	6	1-1/2	6	.2265	128-791	**32.70**	128-792	**37.70**	128-793	**39.50**
15/64	.2344	6	1-1/2	6	.2265	111-142	**32.70**	111-140	**37.70**	128-794	**39.50**
B	.2380	6	1-1/2	6	.2329	128-795	**34.50**	128-796	**39.90**	128-797	**41.70**
C	.2420	6	1-1/2	6	.2329	128-798	**34.50**	128-799	**39.90**	128-800	**41.70**
D	.2460	6	1-1/2	6	.2329	128-801	**34.50**	128-802	**39.80**	128-803	**41.70**
.2480	.2480	6	1-1/2	6	.2405	128-804	**37.60**	128-805	**41.30**	–	
.2490	.2490	6	1-1/2	6	.2405	111-408	**31.10**	128-808	**40.10**	128-809	**41.70**
.2495	.2495	6	1-1/2	6	.2405	128-810	**42.50**	128-811	**46.70**	–	
1/4 E	.2500	6	1-1/2	6	.2405	111-147	**29.40**	111-145	**33.70**	128-813	**35.50**
.2510	.2510	6	1-1/2	6	.2405	111-410	**31.10**	128-815	**39.90**	128-816	**41.70**
F	.2570	6	1-1/2	6	.2485	128-817	**34.50**	128-818	**39.90**	128-819	**41.70**
G	.2610	6	1-1/2	6	.2485	128-820	**34.50**	128-821	**39.90**	128-822	**41.70**
17/64	.2656	6	1-1/2	6	.2485	111-152	**38.40**	111-150	**44.20**	128-823	**46.40**
H	.2660	6	1-1/2	6	.2485	128-824	**38.40**	128-825	**44.20**	128-826	**46.40**
I	.2720	6	1-1/2	6	.2485	128-827	**38.40**	128-828	**44.20**	128-829	**46.40**
J	.2770	6	1-1/2	6	.2485	128-830	**38.40**	128-831	**44.20**	128-832	**46.40**
K	.2810	6	1-1/2	6	.2485	128-833	**38.40**	128-834	**44.20**	128-835	**46.40**
9/32	.2812	6	1-1/2	6	.2485	111-157	**36.60**	111-155	**42.10**	128-836	**44.00**
L	.2900	6	1-1/2	6	.2792	128-837	**38.40**	128-838	**44.20**	128-839	**46.40**
M	.2950	6	1-1/2	6	.2792	128-840	**38.40**	128-841	**44.20**	128-842	**46.40**
19/64	.2969	6	1-1/2	6	.2792	111-162	**38.40**	111-160	**44.20**	128-843	**46.40**
N	.3020	6	1-1/2	6	.2792	128-844	**38.40**	128-845	**44.20**	128-846	**46.40**
.3105	.3105	6	1-1/2	6	.2792	128-847	**46.00**	128-848	**34.10**	–	
.3115	.3115	6	1-1/2	6	.2792	111-412	**36.60**	128-851	**42.10**	128-852	**44.00**
.3120	.3120	6	1-1/2	6	.2792	128-853	**48.20**	128-854	**53.20**	–	

HSS Chucking Reamers - cont'd

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	.3125	6	1-1/2	6	.2792	111-167	**34.70**	111-165	**39.90**	128-856	**41.80**
.3135	.3135	6	1-1/2	6	.2792	111-414	**36.60**	128-858	**42.10**	128-859	**44.00**
O	.3160	6	1-1/2	6	.2792	–		128-861	**44.20**	128-862	**46.40**
P	.3230	6	1-1/2	6	.2792	128-863	**41.50**	128-864	**47.30**	128-865	**49.70**
21/64	.3281	6	1-1/2	6	.2792	111-172	**41.50**	111-170	**47.30**	128-866	**49.70**
Q	.3320	6	1-1/2	6	.2792	128-867	**41.50**	128-868	**47.30**	128-869	**49.70**
R	.3390	6	1-1/2	6	.2792	128-870	**41.50**	128-871	**47.30**	128-872	**49.70**
11/32	.3438	6	1-1/2	6	.2792	111-177	**41.50**	111-175	**47.30**	128-873	**49.70**
S	.3480	6	1-3/4	7	.3105	128-874	**42.60**	128-875	**47.80**	128-876	**50.10**
T	.3580	6	1-3/4	7	.3105	128-877	**42.60**	128-878	**47.80**	128-879	**50.10**
23/64	.3594	6	1-3/4	7	.3105	111-182	**42.60**	111-180	**47.80**	128-880	**50.10**
U	.3680	6	1-3/4	7	.3105	128-881	**42.60**	128-882	**47.80**	128-883	**50.10**
.3730	.3730	6	1-3/4	7	.3105	128-884	**83.40**	–		–	
.3740	.3740	6	1-3/4	7	.3105	111-416	**39.40**	128-888	**45.40**	128-889	**47.60**
3/8	.3750	6	1-3/4	7	.3105	111-187	**37.40**	111-185	**43.10**	128-893	**45.10**
.3760	.3760	6	1-3/4	7	.3105	111-418	**39.40**	128-895	**45.40**	128-896	**47.60**
V	.3770	6	1-3/4	7	.3105	128-897	**45.10**	128-898	**51.90**	128-899	**54.40**
W	.3860	6	1-3/4	7	.3105	128-900	**45.10**	128-901	**51.90**	128-902	**54.40**
25/64	.3906	6	1-3/4	7	.3105	111-192	**45.10**	111-190	**51.90**	–	
X	.3970	6	1-3/4	7	.3105	128-903	**45.10**	128-904	**51.90**	128-905	**54.40**
Y	.4040	6	1-3/4	7	.3105	128-906	**46.90**	128-907	**53.80**	128-908	**56.60**
13/32	.4062	6	1-3/4	7	.3105	111-197	**46.90**	111-195	**53.80**	128-909	**56.60**
Z	.4130	6	1-3/4	7	.3730	128-910	**46.90**	128-911	**53.80**	128-912	**56.60**
27/64	.4219	6	1-3/4	7	.3730	111-202	**48.80**	111-200	**53.80**	128-913	**56.60**
.4355	.4355	6	1-3/4	7	.3730	128-914	**44.50**	128-915	**53.00**	–	
.4365	.4365	6	1-3/4	7	.3730	111-420	**44.50**	128-918	**53.00**	128-919	**56.60**
.4370	.4370	6	1-3/4	7	.3730	128-917	**44.50**	128-923	**69.00**	–	
7/16	.4375	6	1-3/4	7	.3730	111-207	**43.40**	111-205	**51.20**	128-925	**53.70**
.4385	.4385	6	1-3/4	7	.3730	111-422	**44.50**	128-926	**53.80**	128-927	**56.60**
29/64	.4531	6	1-3/4	7	.3730	111-212	**51.00**	111-210	**58.70**	128-928	**61.50**
15/32	.4688	6	1-3/4	7	.3730	111-217	**51.00**	111-215	**58.70**	128-929	**61.50**
31/64	.4844	6	2	8	.4355	111-222	**51.00**	111-220	**58.70**	128-930	**61.50**
.4980	.4980	6	2	8	.4355	-		128-931	**69.00**	-	
.4990	.4990	6	2	8	.4355	111-424	**48.30**	128-934	**58.70**	128-935	**60.20**
.4995	.4995	6	2	8	.4355	128-936	**62.70**	128-937	**69.00**	–	
1/2	.5000	6	2	8	.4355	111-227	**48.10**	111-225	**55.70**	128-939	**58.30**
.5010	.5010	6	2	8	.4355	111-426	**48.30**	128-940	**58.70**	128-941	**60.20**
33/64	.5156	6	2	8	.4355	111-232	**63.20**	111-230	**72.60**	–	
17/32	.5312	6	2	8	.4355	111-237	**60.10**	111-235	**69.10**	128-942	**72.60**
35/64	.5469	6	2	8	.4355	111-242	**60.90**	111-240	**69.90**	–	
9/16	.5625	6	2	8	.4355	111-247	**58.00**	111-245	**66.70**	128-943	**70.00**
37/64	.5781	6	2	8	.4355	111-252	**60.90**	111-250	**69.90**	–	
19/32	.5938	6	2	8	.4355	111-257	**58.00**	111-255	**66.70**	128-944	**70.00**
39/64	.6094	6	2	8	.4355	111-262	**71.00**	111-260	**81.70**	–	
5/8	.6250	8	2-1/4	9	.5620	111-267	**67.90**	111-265	**78.10**	128-945	**82.00**
41/64	.6406	6	2-1/4	9	.5620	111-272	**71.00**	111-270	**81.70**	–	
21/32	.6562	8	2-1/4	9	.5620	111-277	**76.50**	111-275	**82.40**	128-946	**92.30**
11/16	.6875	8	2-1/4	9	.5620	111-282	**76.50**	111-280	**87.90**	128-947	**92.30**
23/32	.7188	8	2-1/4	9	.5620	111-287	**85.30**	111-285	**98.10**	128-948	**102.90**
3/4	.7500	8	2-1/2	9-1/2	.6245	111-292	**85.80**	111-290	**98.70**	128-949	**103.70**
25/32	.7812	10	2-1/2	9-1/2	.6245	111-297	**94.40**	111-295	**106.40**	128-950	**85.50**
13/16	.8125	10	2-1/2	9-1/2	.6245	111-302	**94.40**	111-300	**106.40**	128-951	**111.80**
27/32	.8438	10	2-1/2	9-1/2	.6245	111-307	**109.50**	111-305	**125.80**	128-952	**132.00**
7/8	.8750	10	2-5/8	10	.7495	111-312	**115.40**	111-310	**128.90**	128-953	**135.20**
29/32	.9062	10	2-5/8	10	.7495	111-317	**133.10**	111-315	**138.80**	128-954	**145.70**
15/16	.9375	10	2-5/8	10	.7495	111-322	**133.10**	111-320	**138.80**	128-955	**145.70**
31/32	.9688	10	2-5/8	10	.7495	111-327	**138.80**	111-325	**155.40**	128-956	**163.20**
1	1.0000	10	2-3/4	10-1/2	.8745	111-332	**139.60**	111-330	**156.80**	128-957	**164.60**
1-1/16	1.0625	12	2-3/4	10-1/2	.8745	111-337	**153.90**	111-335	**173.80**	128-958	**182.50**
1-1/8	1.1250	12	2-7/8	11	.8745	111-342	**165.60**	111-340	**184.80**	128-959	**194.00**
1-3/16	1.1875	12	2-7/8	11	.9995	111-347	**190.50**	111-345	**214.90**	128-960	**231.20**
1-1/4	1.2500	12	3	11-1/2	.9995	111-352	**203.40**	111-350	**225.70**	128-961	**249.70**
1-5/16	1.3125	12	3	11-1/2	.9995	111-357	**239.60**	111-355	**264.60**	128-962	**296.40**
1-3/8	1.3750	12	3-1/4	12	.9995	111-362	**251.80**	111-360	**275.50**	128-963	**289.20**
1-7/16	1.4375	12	3-1/4	12	1.2495	111-367	**268.00**	111-365	**323.70**	128-964	**362.90**
1-1/2	1.5000	12	3-1/2	12-1/2	1.2495	111-372	**287.30**	111-370	**320.50**	128-965	**342.30**

Diameter Tolerances:	D/P – Dowel pin reamers made to minus tolerance. All other reamers made to a plus tolerance	
Thru 1/2"	1/2" Thru 5/8"	5/8" Thru 1"
+.0002 +.005 mm	+.0002" +.005 mm	+.0005" +.012 mm
-.0000" - .0 mm	-.0000" -.000 mm	+.001" +.0025 mm
This tolerance table applies unless otherwise indicated throughout the catalog		

Decimal Chucking Reamers HSS

This high quality tool is designed for most standard reaming needs.
- M-2 High Speed Steel all sizes

Straight Flute



Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
.1230	7/8	3-1/2	111-500	**20.50**
.1245	7/8	3-1/2	111-501	**20.50**
.1247	7/8	3-1/2	111-502	**20.50**
.1255	7/8	3-1/2	111-503	**20.50**
.1265	7/8	3-1/2	111-504	**20.50**
.1270	7/8	3-1/2	111-505	**20.50**
.1280	7/8	3-1/2	111-506	**20.50**
.1290	7/8	3-1/2	111-507	**20.50**
.1295	7/8	3-1/2	111-508	**20.50**
.1300	1	4	111-509	**20.50**
.1370	1	4	111-510	**25.10**
.1375	1	4	111-511	**25.10**
.1380	1	4	111-512	**25.10**
.1400	1	4	111-513	**25.10**
.1410	1	4	111-514	**25.10**
.1415	1	4	111-515	**25.10**
.1420	1	4	111-516	**25.10**
.1520	1	4	111-517	**25.10**
.1560	1	4	111-518	**25.10**
.1580	1-1/8	4-1/2	111-519	**27.00**
.1670	1-1/8	4-1/2	111-520	**27.00**
.1720	1-1/8	4-1/2	111-521	**27.00**
.1740	1-1/8	4-1/2	111-522	**27.00**
.1750	1-1/8	4-1/2	111-523	**27.00**
.1760	1-1/8	4-1/2	111-524	**27.00**
.1770	1-1/8	4-1/2	111-525	**27.00**
.1810	1-1/8	4-1/2	111-526	**27.00**
.1820	1-1/8	4-1/2	111-527	**27.00**
.1840	1-1/8	4-1/2	111-528	**27.90**
.1845	1-1/8	4-1/2	111-529	**27.90**
.1850	1-1/8	4-1/2	111-530	**27.90**
.1855	1-1/8	4-1/2	111-531	**27.90**
.1860	1-1/8	4-1/2	111-532	**27.90**
.1870	1-1/8	4-1/2	111-533	**27.90**
.1875	1-1/8	4-1/2	111-534	**27.90**
.1880	1-1/8	4-1/2	111-535	**27.90**
.1895	1-1/8	4-1/2	111-536	**30.50**
.1900	1-1/8	4-1/2	111-537	**30.50**
.1905	1-1/8	4-1/2	111-538	**30.50**
.1910	1-1/4	5	111-539	**30.50**
.1915	1-1/4	5	111-540	**30.50**
.1920	1-1/4	5	111-541	**30.50**
.1930	1-1/4	5	111-542	**30.50**
.1940	1-1/4	5	111-543	**30.50**
.1950	1-1/4	5	111-544	**30.50**
.1960	1-1/4	5	111-545	**30.50**
.1970	1-1/4	5	111-546	**30.50**
.1980	1-1/4	5	111-547	**30.50**
.1990	1-1/4	5	111-548	**30.50**
.2000	1-1/4	5	111-549	**30.50**
.2020	1-1/4	5	111-550	**30.50**
.2024	1-1/4	5	111-551	**30.50**
.2030	1-1/4	5	111-552	**30.50**
.2050	1-1/4	5	111-553	**30.50**
.2060	1-1/4	5	111-554	**30.50**
.2070	1-1/4	5	111-555	**30.50**
.2080	1-1/4	5	111-556	**30.50**
.2090	1-1/4	5	111-557	**30.50**
.2100	1-1/4	5	111-558	**30.50**
.2110	1-1/4	5	111-559	**30.50**
.2120	1-1/4	5	111-560	**17.10**
.2140	1-1/4	5	111-561	**30.50**
.2150	1-1/4	5	111-562	**30.50**
.2155	1-1/4	5	111-563	**30.50**
.2160	1-1/4	5	111-564	**30.50**
.2170	1-1/4	5	111-565	**30.50**
.2180	1-1/4	5	111-566	**30.50**

Decimal Chucking Reamers HSS Continued

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
.2190	1-1/4	5	111-567	**30.50**
.2200	1-1/4	5	111-568	**30.50**
.2211	1-1/4	5	111-569	**30.50**
.2270	1-1/2	6	111-570	**30.50**
.2300	1-1/2	6	111-571	**32.50**
.2310	1-1/2	6	111-572	**32.50**
.2320	1-1/2	6	111-573	**32.50**
.2340	1-1/2	6	111-574	**32.50**
.2350	1-1/2	6	111-575	**32.50**
.2360	1-1/2	6	111-576	**32.50**
.2370	1-1/2	6	111-577	**32.50**
.2380	1-1/2	6	111-578	**32.50**
.2390	1-1/2	6	111-579	**32.50**
.2400	1-1/2	6	111-580	**32.50**
.2410	1-1/2	6	111-581	**32.50**
.2420	1-1/2	6	111-582	**32.50**
.2430	1-1/2	6	111-583	**32.50**
.2440	1-1/2	6	111-584	**32.50**
.2450	1-1/2	6	111-585	**32.50**
.2460	1-1/2	6	111-586	**32.50**
.2470	1-1/2	6	111-587	**32.50**
.2475	1-1/2	6	111-588	**32.50**
.2480	1-1/2	6	111-589	**32.50**
.2485	1-1/2	6	111-590	**32.50**
.2495	1-1/2	6	111-591	**32.50**
.2505	1-1/2	6	111-592	**32.50**
.2515	1-1/2	6	111-593	**32.50**
.2520	1-1/2	6	111-594	**32.50**
.2530	1-1/2	6	111-595	**32.50**
.2540	1-1/2	6	111-596	**32.50**
.2550	1-1/2	6	111-597	**32.50**
.2560	1-1/2	6	111-598	**32.50**
.2570	1-1/2	6	111-599	**32.50**
.2580	1-1/2	6	111-600	**32.50**
.2590	1-1/2	6	111-601	**32.50**
.2600	1-1/2	6	111-602	**32.50**
.2650	1-1/2	6	111-603	**34.60**
.2690	1-1/2	6	111-604	**34.60**
.2710	1-1/2	6	111-605	**34.60**
.2760	1-1/2	6	111-606	**34.60**
.2770	1-1/2	6	111-607	**34.60**
.2800	1-1/2	6	111-608	**34.60**
.2820	1-1/2	6	111-609	**34.60**
.2830	1-1/2	6	111-610	**34.60**
.2840	1-1/2	6	111-611	**34.60**
.2860	1-1/2	6	111-612	**34.60**
.2870	1-1/2	6	111-613	**34.60**
.2890	1-1/2	6	111-614	**34.60**
.2900	1-1/2	6	111-615	**34.60**
.2920	1-1/2	6	111-616	**34.60**
.2930	1-1/2	6	111-617	**34.60**
.2940	1-1/2	6	111-618	**34.60**
.2960	1-1/2	6	111-619	**34.60**
.2980	1-1/2	6	111-620	**57.10**
.2990	1-1/2	6	111-621	**34.60**
.3030	1-1/2	6	111-622	**34.60**
.3050	1-1/2	6	111-623	**34.60**
.3060	1-1/2	6	111-624	**34.60**
.3070	1-1/2	6	111-625	**34.60**
.3090	1-1/2	6	111-626	**34.60**
.3100	1-1/2	6	111-627	**34.60**
.3105	1-1/2	6	111-628	**34.60**
.3110	1-1/2	6	111-629	**34.60**
.3120	1-1/2	6	111-630	**34.60**
.3130	1-1/2	6	111-631	**34.60**
.3140	1-1/2	6	111-632	**34.60**
.3145	1-1/2	6	111-633	**34.60**
.3150	1-1/2	6	111-634	**34.60**
.3160	1-1/2	6	111-635	**37.00**
.3165	1-1/2	6	111-636	**37.00**
.3170	1-1/2	6	111-637	**37.00**
.3180	1-1/2	6	111-638	**37.00**
.3190	1-1/2	6	111-639	**37.00**

Decimal Chucking Reamers HSS Continued

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
.3200	1-1/2	6	111-640	**37.00**
.3220	1-1/2	6	111-641	**37.00**
.3240	1-1/2	6	111-642	**37.00**
.3250	1-1/2	6	111-643	**37.00**
.3270	1-1/2	6	111-644	**37.00**
.3280	1-1/2	6	111-645	**37.00**
.3290	1-1/2	6	111-646	**37.00**
.3300	1-1/2	6	111-647	**37.00**
.3360	1-1/2	6	111-648	**37.00**
.3370	1-1/2	6	111-649	**37.00**
.3440	1-1/2	6	111-650	**37.00**
.3490	1-3/4	7	111-651	**41.40**
.3550	1-3/4	7	111-652	**41.40**
.3590	1-3/4	7	111-653	**41.40**
.3690	1-3/4	7	111-654	**41.40**
.3730	1-3/4	7	111-655	**41.40**
.3745	1-3/4	7	111-656	**41.40**
.3755	1-3/4	7	111-657	**41.40**
.3765	1-3/4	7	111-658	**41.40**
.3770	1-3/4	7	111-659	**41.40**
.3790	1-3/4	7	111-660	**41.40**
.3800	1-3/4	7	111-661	**41.40**
.3860	1-3/4	7	111-662	**41.40**
.3880	1-3/4	7	111-663	**41.40**
.4000	1-3/4	7	111-664	**41.40**
.4070	1-3/4	7	111-665	**41.40**
.4300	1-3/4	7	111-666	**41.40**
.4320	1-3/4	7	111-667	**41.40**
.4355	1-3/4	7	111-668	**41.40**
.4370	1-3/4	7	111-669	**41.40**
.4390	1-3/4	7	111-670	**41.40**
.4410	1-3/4	7	111-671	**45.70**
.4420	1-3/4	7	111-672	**45.70**
.4430	1-3/4	7	111-673	**45.70**
.4440	1-3/4	7	111-674	**45.70**
.4480	1-3/4	7	111-675	**45.70**
.4490	1-3/4	7	111-676	**45.70**
.4550	1-3/4	7	111-677	**45.70**
.4560	1-3/4	7	111-678	**45.70**
.4820	1-3/4	7	111-679	**55.10**
.4900	2	8	111-680	**55.10**
.4970	2	8	111-681	**55.10**
.4980	2	8	111-682	**55.10**
.4995	2	8	111-683	**55.10**
.5015	2	8	111-684	**59.40**
.5020	2	8	111-685	**59.40**
.5030	2	8	111-686	**59.40**
.5040	2	8	111-687	**59.40**
.5050	2	8	111-688	**59.40**
.5240	2	8	111-689	**59.40**
.5250	2	8	111-690	**59.40**
.5260	2	8	111-691	**59.40**
.5300	2	8	111-692	**59.40**
.5500	2	8	111-693	**59.40**
.5580	2	8	111-694	**59.40**
.5590	2	8	111-695	**59.40**
.5615	2	8	111-696	**59.40**
.5690	2	8	111-697	**59.40**
.5740	2	8	111-698	**59.40**
.5840	2	8	111-699	**64.00**
.5850	2	8	111-700	**64.00**
.5860	2	8	111-701	**64.00**
.5880	2	8	111-702	**64.00**
.6050	2	8	111-703	**68.50**
.6220	2-1/4	9	111-704	**68.50**
.6240	2-1/4	9	111-705	**68.50**
.6250	2-1/4	9	111-706	**68.50**
.6255	2-1/4	9	111-707	**68.50**
.6260	2-1/4	9	111-708	**68.50**
.6300	2-1/4	9	111-709	**68.50**
.7480	2-1/4	9	111-710	**92.20**
.7490	2-1/4	9	111-711	**92.20**
.7510	2-1/2	9-1/2	111-712	**94.70**
.7580	2-1/2	9-1/2	111-713	**94.70**

Dowel Pin Reamers HSS

- Straight flute



Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	Code No.	Price $
.124	7/8	3-1/2	111-400	**22.40**
.126	7/8	3-1/2	111-402	**22.40**
.1865	1-1/8	4-1/2	111-404	**28.50**
.1885	1-1/8	4-1/2	111-406	**28.50**
.249	1-1/2	6	111-408	**31.10**
.251	1-1/2	6	111-410	**31.10**
.3115	1-1/2	6	111-412	**36.60**
.3135	1-1/2	6	111-414	**36.60**
.374	1-3/4	7	111-416	**39.40**
.376	1-3/4	7	111-418	**39.40**
.4365	1-3/4	7	111-420	**44.50**
.4385	1-3/4	7	111-422	**44.50**
.499	2	8	111-424	**48.30**
.501	2	8	111-426	**48.30**

G3 TOOLING

see Section G

DIRECT COOLANT END MILL HOLDERS

NOW 3 COOLANT OPTIONS ALL IN ONE!

Features:
- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- Premium Balanced up to 30,000 rpm
- All Ground Body
- 100% Forged Construction



Coolant thru slots for directing coolant onto the tool.

O-Ring Seal for Non Direct Coolant Operations.

QUALITY IMPORT

Chucking Reamers HSS

For general purpose reaming of almost any metal, in drill presses, turret lathes or screw machines.

- Cutting ends are ground with a 45° chamfer for easy hole entry
- Built for machine use, with shorter, deeper flutes than hand reamers
- Right Hand Spiral
- Right Hand Cut
- H7 Tolerance



Straight Flute

- Used for general purpose reaming

Spiral Flute

- Cut with smoother, chatter-free action than straight flute reamers
- Used on more difficult-to-ream materials and holes with irregularities such as keyways
- Easy to guide in the work

Flute Dia. (in.)	Decimal Equiv. (in.)	Flute Length	Overall Length	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
1/8	.1250	7/8	3-1/2	110-105	**14.90**	110-107	**12.10**
9/64	.1460	1	4	110-110	**18.60**	110-112	**18.70**
5/32	.1562	1	4	110-115	**18.60**	110-117	**16.90**
11/64	.1719	1-1/8	4-1/2	110-120	**18.60**	110-122	**18.70**
3/16	.1875	1-1/8	4-1/2	110-125	**18.60**	110-127	**16.90**
13/64	.2031	1-1/4	5	110-130	**21.50**	110-132	**22.50**
7/32	.2187	1-1/4	5	110-135	**21.10**	110-137	**21.90**
15/64	.2344	1-1/2	6	110-140	**21.50**	110-142	**22.50**
1/4	.2500	1-1/2	6	110-145	**20.10**	110-147	**19.70**
17/64	.2656	1-1/2	6	110-150	**23.90**	110-152	**25.10**
9/32	.2812	1-1/2	6	110-155	**23.90**	110-157	**25.10**
19/64	.2969	1-1/2	6	110-160	**23.90**	110-162	**16.40**
5/16	.3125	1-1/2	6	110-165	**22.40**	110-167	**23.50**
21/64	.3281	1-1/2	6	110-170	**26.70**	110-172	**28.30**
11/32	.3437	1-1/2	6	110-175	**26.70**	110-177	**28.30**
23/64	.3594	1-3/4	7	110-180	**26.70**	110-182	**28.30**
3/8	.3750	1-3/4	7	110-185	**26.20**	110-187	**25.10**
25/64	.3906	1-3/4	7	110-190	**29.90**	110-192	**29.60**
13/32	.4062	1-3/4	7	110-195	**29.90**	110-197	**30.80**
27/64	.4219	1-3/4	7	110-200	**29.90**	110-202	**32.40**
7/16	.4375	1-3/4	7	110-205	**29.50**	110-207	**29.50**
29/64	.4531	1-3/4	7	110-210	**33.50**	110-212	**36.10**
15/32	.4687	1-3/4	7	110-215	**33.50**	110-217	**35.10**
31/64	.4844	2	8	110-220	**31.90**	110-222	**36.10**
1/2	.5000	2	8	110-225	**30.50**	110-227	**32.40**
33/64	.5156	2	8	110-230	**46.90**	110-232	**47.60**
17/32	.5312	2	8	110-235	**39.90**	110-237	**40.00**
35/64	.5469	2	8	110-240	**49.30**	110-242	**50.00**
9/16	.5625	2	8	110-245	**40.70**	110-247	**39.00**
37/64	.5781	2	8	110-250	**54.50**	110-252	**56.40**
19/32	.5937	2	8	110-255	**45.00**	110-257	**45.50**
39/64	.6094	2	8	110-260	**55.70**	110-262	**56.20**
5/8	.6250	2-1/4	9	110-265	**43.10**	110-267	**45.50**
41/64	.6406	2-1/4	9	110-270	**66.00**	110-272	**63.10**
21/32	.6562	2-1/4	9	110-275	**50.30**	110-277	**52.30**
11/16	.6875	2-1/4	9	110-280	**50.30**	110-282	**51.70**
23/32	.7187	2-1/4	9	110-285	**57.10**	110-287	**59.70**
3/4	.7500	2-1/2	9-1/2	110-290	**56.20**	110-292	**57.30**
25/32	.7812	2-1/2	9-1/2	110-295	**64.40**	110-297	**67.10**
13/16	.8125	2-1/2	9-1/2	110-300	**64.40**	110-302	**67.10**
27/32	.8437	2-1/2	9-1/2	110-305	**72.10**	110-307	**76.00**
7/8	.8750	2-5/8	10	110-310	**72.10**	110-312	**74.50**
29/32	.9062	2-5/8	10	110-315	**80.00**	110-317	**125.70**
15/16	.9375	2-5/8	10	110-320	**80.00**	110-322	**83.80**
31/32	.9687	2-5/8	10	110-325	**90.50**	110-327	**94.30**
1	1.0000	2-3/4	10-1/2	110-330	**90.50**	110-332	**92.30**
1-1/16	1.0625	2-3/4	10-1/2	110-335	**104.20**	110-337	**108.70**
1-1/8	1.1250	2-7/8	11	110-340	**114.60**	110-342	**116.10**
1-3/16	1.1875	2-7/8	11	110-345	**126.00**	110-347	**130.80**
1-1/4	1.2500	3	11-1/2	110-350	**139.80**	110-352	**143.90**
1-5/16	1.3150	3	11-1/2	110-355	**153.60**	110-357	**166.70**
1-3/8	1.3750	3-1/4	12	110-360	**168.40**	110-362	**172.80**
1-7/16	1.4375	3-1/4	12	110-365	**182.10**	110-367	**206.70**
1-1/2	1.5000	3-1/2	12-1/2	110-370	**195.50**	110-372	**202.40**

MADE IN USA QUALITY IMPORT

Standard Metric Reamers HSS

- High Speed Steel
- 129 series made in USA



Dia. (mm)	Decimal Equiv. (in.)	Flutes	Flute Length (in.)	Overall Length (in.)	Shank Dia. (in.)	Straight Code No.	Price $	Spiral Code No.	Price $
1.00	.0394	4	1/2	2-1/2	.0390	129-261	**27.40**	–	
1.50	.0591	4	1/2	2-1/2	.0585	129-263	**26.90**	129-264	**30.60**
2.00	.0787	4	3/4	3	.0771	129-265	**21.40**	129-266	**24.70**
2.50	.0984	4	7/8	3-1/2	.0928	143-050	**11.40**	129-267	**24.90**
3.00	.1181	4	7/8	3-1/2	.1120	143-051	**11.40**	129-268	**25.80**
3.50	.1378	4	1	4	.1350	143-053	**15.70**	129-269	**30.60**
4.00	.1575	6	1-1/8	4-1/2	.1530	143-054	**15.70**	129-270	**30.60**
4.50	.1772	6	1-1/8	4-1/2	.1755	143-055	**20.90**	129-271	**32.70**
5.00	.1969	6	1-1/4	5	.1895	143-056	**20.90**	129-272	**36.70**
5.50	.2165	6	1-1/4	5	.2075	129-273	**32.30**	129-274	**36.70**
6.00	.2362	6	1-1/2	6	.2329	143-057	**22.10**	129-275	**39.90**
6.50	.2559	6	1-1/2	6	.2485	129-276	**34.50**	129-277	**39.90**
7.00	.2756	6	1-1/2	6	.2485	143-058	**23.20**	129-278	**44.20**
7.50	.2953	6	1-1/2	6	.2792	129-279	**38.40**	129-280	**44.20**
8.00	.3150	6	1-1/2	6	.2792	143-059	**23.20**	129-281	**44.20**
8.50	.3346	6	1-1/2	6	.2792	129-282	**41.50**	129-283	**47.30**
9.00	.3543	6	1-3/4	7	.3105	143-060	**26.30**	129-284	**47.80**
9.50	.3740	6	1-3/4	7	.3105	129-285	**39.40**	129-286	**45.40**
10.00	.3937	6	1-3/4	7	.3105	143-061	**27.20**	129-287	**51.90**
10.50	.4134	6	1-3/4	7	.3730	129-288	**46.90**	129-289	**53.80**
11.00	.4331	6	1-3/4	7	.3730	143-062	**29.10**	129-290	**53.80**
11.50	.4528	6	1-3/4	7	.3730	129-291	**51.00**	129-292	**58.70**
12.00	.4724	6	2	8	.4355	143-063	**32.40**	129-293	**58.70**
12.50	.4921	6	2	8	.4355	129-294	**51.00**	129-295	**58.70**
13.00	.5118	6	2	8	.4355	143-064	**35.70**	129-296	**72.60**
13.50	.5315	6	2	8	.4355	129-297	**63.20**	129-298	**72.60**
14.00	.5512	6	2	8	.4355	143-065	**40.90**	129-299	**69.90**
14.50	.5709	6	2	8	.4355	129-300	**60.90**	129-301	**69.90**
15.00	.5906	6	2	8	.4355	143-066	**43.30**	129-302	**69.90**
15.50	.6102	8	2-1/4	9	.5620	129-303	**71.00**	129-304	**81.70**
16.00	.6299	8	2-1/4	9	.5620	143-067	**48.30**	129-305	**81.70**
16.50	.6496	8	2-1/4	9	.5620	129-306	**71.00**	129-307	**81.70**
17.00	.6693	8	2-1/4	9	.5620	143-068	**54.50**	129-308	**92.20**
17.50	.6890	8	2-1/4	9	.5620	129-309	**86.20**	129-310	**99.00**
18.00	.7087	8	2-1/4	9	.5620	143-069	**55.90**	129-311	**99.00**
18.50	.7283	8	2-1/2	9-1/2	.6245	129-312	**89.60**	129-313	**102.90**
19.00	.7480	8	2-1/2	9-1/2	.6245	143-070	**62.10**	129-314	**114.00**
19.50	.7677	8	2-1/2	9-1/2	.6245	129-315	**101.00**	129-316	**109.80**
20.00	.7874	8	2-1/2	9-1/2	.6245	143-071	**71.40**	129-317	**117.50**
20.50	.8071	8	2-1/2	9-1/2	.6245	129-318	**102.20**	129-319	**117.50**
21.00	.8268	8	2-1/2	9-1/2	.6245	143-072	**172.40**	129-320	**117.50**
21.50	.8465	8	2-5/8	10	.7495	129-321	**121.00**	129-322	**137.00**
22.00	.8661	8	2-5/8	10	.7495	143-073	**85.20**	129-323	**137.00**
22.50	.8858	8	2-5/8	10	.7495	129-324	**125.20**	129-325	**139.90**
23.00	.9055	8	2-5/8	10	.7495	143-074	**195.40**	129-326	**139.90**
23.50	.9252	8	2-5/8	10	.7495	129-327	**133.10**	129-328	**149.90**
24.00	.9449	8	2-5/8	10	.7495	143-075	**94.90**	129-329	**149.90**
24.50	.9646	8	2-5/8	10	.7495	129-330	**133.10**	129-331	**149.90**
25.00	.9843	8	2-3/4	10-1/2	.8745	129-332	**142.50**	129-333	**159.00**
25.50	1.0039	10	2-3/4	10-1/2	.8745	129-334	**150.50**	129-335	**168.00**

Taper Shank Chucking Reamers HSS - Fractional

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

- High Speed Steel
- Made in USA
- Right hand cut



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	.2500	1-1/2	6	1	6	129-431	**46.00**	129-464	**52.70**
9/32	.2812	1-1/2	6	1	6	129-432	**50.00**	129-465	**52.70**
5/16	.3125	1-1/2	6	1	6	129-433	**47.70**	129-466	**52.70**
11/32	.3438	1-1/2	6	1	6	129-434	**50.30**	129-467	**55.80**
3/8	.3750	1-3/4	7	1	6	129-435	**53.80**	129-468	**55.80**
13/32	.4062	1-3/4	7	1	6	129-436	**55.50**	129-469	**58.30**
7/16	.4375	1-3/4	7	1	6	129-437	**55.50**	129-470	**58.30**
15/32	.4688	1-3/4	7	1	6	129-438	**61.30**	129-471	**64.00**
1/2	.5000	2	8	1	6	129-439	**60.20**	129-472	**62.70**
17/32	.5312	2	8	1	6	129-440	**67.10**	129-473	**73.40**
9/16	.5625	2	8	1	8	129-441	**65.60**	129-474	**73.30**
19/32	.5938	2	8	1	8	129-442	**72.90**	129-475	**79.50**
5/8	.6250	2-1/4	9	2	8	129-443	**71.10**	129-476	**78.30**
21/32	.6562	2-1/4	9	2	8	129-444	**78.30**	129-477	**86.00**
11/16	.6875	2-1/4	9	2	8	129-445	**77.60**	129-478	**86.00**
23/32	.7188	2-1/4	9	2	8	129-446	**88.20**	129-479	**96.60**
3/4	.7500	2-1/2	9-1/2	2	8	129-447	**86.50**	129-480	**96.20**
25/32	.7812	2-1/2	9-1/2	2	10	129-448	**100.80**	129-481	**110.50**
13/16	.8125	2-1/2	9-1/2	2	10	129-449	**100.80**	129-482	**110.50**
27/32	.8438	2-1/2	9-1/2	2	10	129-450	**115.10**	129-483	**126.50**
7/8	.8750	2-5/8	10	2	10	129-451	**113.20**	129-484	**126.50**
29/32	.9062	2-5/8	10	2	10	129-452	**125.20**	129-485	**138.30**
15/16	.9375	2-5/8	10	3	10	129-453	**125.20**	129-486	**138.30**
31/32	.9687	2-5/8	10	3	10	129-454	**139.50**	129-487	**155.00**
1	1.0000	2-3/4	10-1/2	3	10	129-455	**138.30**	129-488	**153.80**
1-1/16	1.0625	2-3/4	10-1/2	3	12	129-456	**155.00**	129-489	**170.40**
1-1/8	1.1250	2-7/8	11	3	12	129-457	**168.00**	129-490	**188.10**
1-3/16	1.1875	2-7/8	11	3	12	129-458	**188.10**	129-491	**205.00**
1-1/4	1.2500	3	11-1/2	4	12	129-459	**203.70**	129-492	**225.10**
1-5/16	1.3125	3	11-1/2	4	12	129-460	**222.80**	129-493	**246.30**
1-3/8	1.3750	3-1/4	12	4	12	129-461	**241.50**	129-494	**266.80**
1-7/16	1.4375	3-1/4	12	4	12	129-462	**261.00**	129-495	**290.60**
1-1/2	1.5000	3-1/2	12-1/2	4	12	129-463	**278.80**	129-496	**308.60**

QUALITY IMPORT

Taper Shank Chucking Reamers HSS

- High Speed Steel
- Straight flute
- Spiral flute



Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	M.T. Shank	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
1/4	1-1/2	6	1	110-405	**37.50**	110-407	**32.30**
9/32	1-1/2	6	1	110-410	**39.30**	110-412	**34.90**
5/16	1-1/2	6	1	110-415	**37.50**	110-417	**33.40**
11/32	1-1/2	6	1	110-420	**40.80**	110-422	**37.00**
3/8	1-3/4	7	1	110-425	**37.50**	110-427	**37.70**
13/32	1-3/4	7	1	110-430	**66.50**	110-432	**59.10**
7/16	1-3/4	7	1	110-435	**41.50**	110-437	**59.10**
15/32	1-3/4	7	1	110-440	**73.90**	110-442	**66.50**
1/2	2	8	1	110-445	**81.50**	110-447	**42.10**
17/32	2	8	1	110-450	**52.90**	110-452	**76.30**
9/16	2	8	1	110-455	**89.20**	110-457	**76.30**
19/32	2	8	1	110-460	**89.20**	110-462	**84.40**
5/8	2-1/4	9	2	110-465	**56.40**	110-467	**51.50**
21/32	2-1/4	9	2	110-470	**61.10**	110-472	**89.40**
11/16	2-1/4	9	2	110-475	**61.90**	110-477	**89.40**
23/32	2-1/4	9	2	110-480	**69.50**	110-482	**101.60**

Flute Dia. (in.)	Flute Length (in.)	Overall Length (in.)	M.T. Shank	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
3/4	2-1/2	9-1/2	2	110-485	**69.10**	110-487	**62.70**
25/32	2-1/2	9-1/2	2	110-490	**79.50**	110-492	**73.00**
13/16	2-1/2	9-1/2	2	110-495	**79.50**	110-497	**114.10**
27/32	2-1/2	9-1/2	2	110-500	**90.90**	110-502	**132.30**
7/8	2-5/8	10	2	110-505	**90.90**	110-507	**82.10**
29/32	2-5/8	10	2	110-510	**99.40**	110-512	**142.60**
15/16	2-5/8	10	3	110-515	**99.40**	110-517	**90.50**
31/32	2-5/8	10	3	110-520	**111.70**	110-522	**172.70**
1	2-3/4	10-1/2	3	110-525	**110.80**	110-527	**102.60**
1-1/16	2-3/4	10-1/2	3	110-530	**125.90**	110-532	**115.20**
1-1/8	2-7/8	11	3	110-535	**139.00**	110-537	**124.70**
1-3/16	2-7/8	11	3	110-540	**236.40**	110-542	**215.80**
1-1/4	3	11-1/2	4	110-545	**166.20**	110-547	**151.10**
1-5/16	3	11-1/2	4	110-550	**289.00**	110-552	**269.30**
1-3/8	3-1/4	12	4	110-555	**197.10**	110-557	**178.80**
1-7/16	3-1/4	12	4	110-560	**235.70**	110-562	**307.10**
1-1/2	3-1/2	12-1/2	4	110-565	**227.90**	110-567	**206.90**

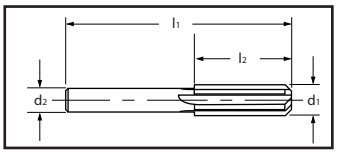
Diameter Tolerances:	D/P – Dowel pin reamers made to minus tolerance. All other reamers made to a plus tolerance	
Thru 1/2"	1/2" Thru 5/8"	5/8" Thru 1"
+.0002 +.005 mm	+.0002" +.005 mm	+.0005" +.012 mm
-.0000" - .0 mm	-.0000" -.000 mm	+.001" +.0025 mm
This tolerance table applies unless otherwise indicated throughout the catalog		

MICROGRAIN carbide

MADE IN USA

Solid Carbide Chucking Reamers





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

(d_1) Reamer Dia.	Decimal Equiv.	(l_2) Flute Length	(l_1) Overall Length	(d_2) Shank Dia.	Code No.	Price $
56	.0465	3/8	1-1/2	.0410	170-941	**57.70**
3/64	.0469	3/8	1-1/2	.0410	170-942	**57.70**
55	.0520	3/8	1-1/2	.0520	170-943	**57.70**
54	.0550	3/8	1-1/2	.0520	170-944	**28.50**
53	.0595	3/8	1-1/2	.0520	170-945	**57.70**
1/16	.0625	3/8	1-1/2	.0520	170-800	**60.80**
52	.0635	3/8	1-1/2	.0520	170-946	**60.80**
51	.0670	1/2	1-3/4	.0625	170-947	**60.80**
50	.0700	1/2	1-3/4	.0625	170-948	**60.80**
49	.0730	1/2	1-3/4	.0625	170-949	**60.80**
48	.0760	1/2	1-3/4	.0625	170-950	**60.80**
5/64	.0781	1/2	1-3/4	.0625	170-951	**60.80**
47	.0785	1/2	1-3/4	.0625	170-952	**60.80**
46	.0810	1/2	2	.0781	170-953	**61.90**
45	.0820	1/2	2	.0781	170-954	**61.90**
44	.0860	1/2	2	.0781	170-955	**61.90**
43	.0890	1/2	2	.0781	170-956	**61.90**
42	.0935	1/2	2	.0781	170-957	**61.90**
3/32	.0938	1/2	2	.0781	170-802	**61.90**
41	.0960	5/8	2-1/4	.0938	170-958	**62.50**
40	.0980	5/8	2-1/4	.0938	170-959	**62.50**
39	.0995	5/8	2-1/4	.0938	170-960	**62.50**
38	.1015	5/8	2-1/4	.0938	170-961	**62.50**
37	.1040	5/8	2-1/4	.0938	170-962	**62.50**
36	.1065	5/8	2-1/4	.0938	170-963	**62.50**
7/64	.1094	5/8	2-1/4	.0938	170-964	**62.50**
35	.1100	5/8	2-1/4	.0938	170-965	**62.50**
34	.1110	5/8	2-1/4	.0938	170-966	**62.50**
33	.1130	5/8	2-1/4	.0938	170-967	**62.50**
32	.1160	5/8	2-1/4	.1094	170-968	**64.00**
31	.1200	5/8	2-1/4	.1094	170-969	**64.00**
1/8	.1250	5/8	2-1/4	.1094	170-804	**64.00**
30	.1285	5/8	2-1/4	.1094	170-970	**64.00**
29	.1360	3/4	2-1/2	.1250	170-971	**67.60**
28	.1405	3/4	2-1/2	.1250	170-972	**67.60**
9/64	.1406	3/4	2-1/2	.1250	170-973	**67.60**
27	.1440	3/4	2-1/2	.1250	170-974	**67.60**
26	.1470	3/4	2-1/2	.1406	170-975	**67.60**
25	.1495	3/4	2-1/2	.1406	170-976	**67.60**
24	.1520	3/4	2-1/2	.1406	170-977	**67.60**
23	.1540	3/4	2-1/2	.1406	170-978	**67.60**
5/32	.1562	3/4	2-1/2	.1406	170-806	**67.60**
22	.1570	3/4	2-1/2	.1406	170-979	**67.60**
21	.1590	3/4	2-1/2	.1406	170-980	**67.60**
20	.1610	7/8	2-3/4	.1562	170-981	**74.10**
19	.1660	7/8	2-3/4	.1562	170-982	**74.10**
18	.1695	7/8	2-3/4	.1562	170-983	**74.10**
11/64	.1719	7/8	2-3/4	.1562	170-984	**74.10**
17	.1730	7/8	2-3/4	.1562	170-985	**74.10**
16	.1770	7/8	2-3/4	.1719	170-986	**79.70**
15	.1800	7/8	2-3/4	.1719	170-987	**79.70**
14	.1820	7/8	2-3/4	.1719	170-988	**79.70**
13	.1850	7/8	2-3/4	.1719	170-989	**73.90**
3/16	.1875	7/8	2-3/4	.1719	170-808	**79.70**
12	.1890	7/8	2-3/4	.1719	170-990	**79.70**
11	.1910	7/8	2-3/4	.1875	170-991	**79.70**
10	.1935	7/8	2-3/4	.1875	170-992	**79.70**
9	.1960	1	3	.1875	170-993	**88.60**
8	.1990	1	3	.1875	170-994	**88.60**
7	.2010	1	3	.1875	170-995	**88.60**
13/64	.2031	1	3	.1875	170-996	**88.60**
6	.2040	1	3	.1875	170-997	**88.60**
5	.2055	1	3	.1875	170-998	**88.60**
4	.2090	1	3	.1875	170-999	**88.60**
3	.2130	1	3	.1875	171-000	**88.60**
7/32	.2188	1	3	.1875	171-001	**88.60**
2	.2210	1	3	.1875	171-002	**92.50**
1	.2280	1	3	.2188	171-003	**92.50**
A	.2340	1	3	.2188	171-004	**92.50**
15/64	.2344	1	3	.2188	171-005	**92.50**
B	.2380	1	3	.2188	171-006	**99.10**
C	.2420	1	3	.2188	171-007	**99.10**
D	.2460	1	3	.2188	171-008	**99.10**
1/4	.2500	1	3	.2188	170-810	**99.10**
E	.2500	1-1/8	3-1/4	.2188	171-009	**92.50**
F	.2570	1-1/8	3-1/4	.2500	171-010	**106.10**
G	.2610	1-1/8	3-1/4	.2500	171-011	**106.10**
17/64	.2656	1-1/8	3-1/4	.2500	171-012	**106.10**
H	.2660	1-1/8	3-1/4	.2500	171-013	**106.10**
I	.2720	1-1/8	3-1/4	.2500	171-014	**106.10**
J	.2770	1-1/8	3-1/4	.2500	171-015	**106.10**
K	.2810	1-1/8	3-1/4	.2500	171-016	**106.10**
9/32	.2812	1-1/8	3-1/4	.2500	171-017	**106.10**
L	.2900	1-1/8	3-1/4	.2812	171-018	**110.40**
M	.2950	1-1/8	3-1/4	.2812	171-019	**110.40**
19/64	.2969	1-1/8	3-1/4	.2812	171-020	**110.40**
N	.3030	1-1/8	3-1/4	.2812	171-021	**112.30**
5/16	.3125	1-1/8	3-1/4	.2812	170-812	**112.30**
O	.3160	1-1/8	3-1/4	.3125	171-022	**123.30**
P	.3230	1-1/4	3-1/2	.3125	171-023	**137.10**
21/64	.3281	1-1/4	3-1/2	.3125	171-024	**137.10**
Q	.3320	1-1/4	3-1/2	.3125	171-025	**137.10**
R	.3390	1-1/4	3-1/2	.3125	171-026	**137.10**
11/32	.3438	1-1/4	3-1/2	.3125	171-028	**137.10**
S	.3480	1-1/4	3-1/2	.3125	171-029	**147.60**
T	.3580	1-1/4	3-1/2	.3125	171-030	**147.60**
23/64	.3594	1-1/4	3-1/2	.3125	171-031	**147.60**
U	.3680	1-1/4	3-1/2	.3594	171-032	**154.30**
3/8	.3750	1-1/4	3-1/2	.3594	170-814	**144.30**
V	.3770	1-1/4	3-1/2	.3594	171-033	**154.30**
W	.3860	1-1/4	3-1/2	.3594	171-034	**154.30**
25/64	.3906	1-1/4	3-1/2	.3750	171-035	**172.70**
X	.3970	1-1/4	3-1/2	.3750	171-036	**172.70**
Y	.4040	1-1/4	3-1/2	.3750	171-037	**187.50**
13/32	.4062	1-1/4	3-1/2	.3750	171-038	**187.50**
Z	.4130	1-1/4	3-1/2	.3750	171-039	**187.50**
27/64	.4219	1-3/8	3-3/4	.3750	171-040	**209.90**
7/16	.4375	1-3/8	3-3/4	.3750	171-041	**209.90**
29/64	.4531	1-3/8	3-3/4	.4375	171-042	**248.90**
15/32	.4688	1-3/8	3-3/4	.4375	171-043	**248.90**
31/64	.4844	1-1/2	4	.4375	171-044	**279.70**
1/2	.5000	1-1/2	4	.4375	170-816	**279.70**

Diameter Tolerances:			
d_1	d_1	d_2	No. of Flutes
.0465-.2500	+.0001/+.0004	+.000/-.001	4
.2570-.5000	+.0001/+.0005	+.000/-.001	6

Taper Pin Reamers HSS

- Straight flute
- Spiral flute
- Taper 1/4" per foot



Size	Small End Dia.	Large End Dia.	Flute Length	O.A.L.	Straight Flute Code No.	Straight Flute Price $	Spiral Flute Code No.	Spiral Flute Price $
3/0	.1029	.1302	1-5/16	2-5/16	109-505	**31.00**	109-605	**33.20**
2/0	.1137	.1462	1-9/16	2-9/16	109-510	**28.10**	109-610	**29.90**
0	.1287	.1638	1-11/16	2-15/16	109-515	**26.20**	109-615	**26.90**
1	.1447	.1798	1-11/16	2-15/16	109-520	**28.10**	109-620	**29.90**
2	.1605	.2008	1-15/16	3-3/16	109-525	**24.30**	109-625	**27.30**
3	.1813	.2294	2-5/16	3-11/16	109-530	**28.10**	109-630	**29.90**
4	.2071	.2604	2-9/16	4-1/16	109-535	**31.00**	109-635	**29.20**
5	.2409	.2994	2-13/16	4-5/16	109-540	**34.60**	109-640	**36.80**
6	.2773	.354	3-11/16	5-7/16	109-545	**43.50**	109-645	**46.70**
7	.3297	.422	4-7/16	6-5/16	109-550	**56.40**	109-650	**60.60**
8	.3971	.505	5-3/16	7-3/16	109-555	**82.30**	109-655	**87.70**
9	.4805	.6066	6-1/16	8-5/16	109-560	**104.90**	109-660	**95.30**
10	.5799	.7216	6-13/16	9-5/16	109-565	**123.00**	109-665	**133.60**

QUALITY IMPORT

Taper Bridge Reamers HSS

- Straight flute
- Spiral flute



Full Dia.	Approx. Point Dia.	Flute Length	O.A.L.	Taper No.	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
5/16	11/64	4-3/8	8-1/4	2	109-303	**56.70**	109-431	**67.60**
13/32	7/32	4-3/8	8-1/4	2	109-304	**56.70**	109-432	**52.80**
7/16	17/64	4-3/8	8-1/4	2	109-305	**56.70**	109-433	**94.00**
15/32	9/32	5-1/8	9	2	109-307	**65.30**	109-434	**59.20**
1/2	5/16	5-1/8	9	2	109-310	**60.00**	109-435	**105.40**
17/32	11/32	5-1/8	9	2	109-312	**70.70**	109-436	**114.60**
9/16	3/8	5-1/8	9	2	109-315	**65.20**	109-437	**114.60**
5/8	25/64	6-1/8	10	2	109-320	**73.70**	109-438	**132.60**
11/16	13/32	7-1/8	11-3/4	3	109-325	**88.40**	109-439	**158.80**
3/4	15/32	7-3/8	12	3	109-330	**131.60**	109-440	**170.90**
13/16	35/64	7-3/8	12	3	109-335	**146.80**	109-441	**185.70**
7/8	39/64	7-3/8	12	3	109-340	**183.40**	109-442	**205.70**
15/16	43/64	7-3/8	12	3	109-345	**197.60**	109-443	**212.30**
1	47/64	7-3/8	12	3	109-350	**230.20**	109-444	**235.30**
1-1/16	13/16	7-3/8	12	3	109-355	**253.70**	109-445	**259.10**
1-1/8	55/64	7-3/8	12	3	109-360	**288.00**	109-446	**288.30**
1-3/16	59/64	7-3/8	12	3	109-365	**302.00**	109-447	**320.40**
1-1/4	63/64	7-3/8	13	4	109-370	**354.10**	109-448	**337.80**
1-5/16	1-1/16	7-3/8	13	4	109-375	**413.70**	109-449	**388.40**
1-3/8	1-1/8	7-3/8	13	4	109-380	**457.50**	109-450	**420.50**
1-7/16	1-1/8	7-3/8	13	4	109-385	**515.80**		
1-1/2	1-1/4	7-3/8	13	4	109-390	**527.40**	109-452	**511.50**
1-9/16	1-1/4	7-3/8	13	4	109-395	**711.20**		
1-5/8	1-1/4	7-3/8	13	4	109-400	**586.30**	109-454	**711.20**
1-11/16	1-3/8	7-3/8	13	4	109-405	**591.40**		
1-3/4	1-7/16	7-3/8	13	4	109-410	**671.80**		
1-13/16	1-7/16	7-3/8	13	4	109-415	**686.00**		
1-7/8	1-1/2	7-3/8	13	4	109-420	**734.80**		
1-15/16	1-1/2	7-3/8	13	4	109-425	**789.20**		
2	1-3/4	7-3/8	13	4	109-430	**905.70**		

Taper Pin Reamers HSS - Hand

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

- Taper 1/4" per foot
- High Speed Steel
- 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

MADE IN USA



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	.0497	.0666	13/16	1-13/16	5/64	4	129-560	**66.00**	129-577	**67.80**
6/0	.0611	.0806	15/16	1-15/16	3/32	4	129-561	**61.40**	129-578	**67.80**
5/0	.0719	.0966	1-3/16	2-3/16	7/64	4	129-562	**59.90**	129-579	**67.00**
4/0	.0869	.1142	1-5/16	2-5/16	1/8	4	129-563	**59.90**	129-580	**67.00**
3/0	.1029	.1302	1-5/16	2-5/16	9/64	4	129-564	**59.90**	129-581	**67.00**
2/0	.1137	.1462	1-9/16	2-9/16	5/32	4	129-565	**53.80**	129-582	**57.20**
0	.1287	.1638	1-11/16	2-15/16	11/64	6	129-566	**52.80**	129-583	**56.30**
1	.1447	.1798	1-11/16	2-15/16	3/16	6	129-567	**51.20**	129-584	**57.10**
2	.1605	.2008	1-15/16	3-3/16	13/64	6	129-568	**51.20**	129-585	**57.10**
3	.1813	.2294	2-5/16	3-11/16	15/64	6	129-569	**51.20**	129-586	**57.10**
4	.2071	.2604	2-9/16	4-1/16	17/64	6	129-570	**57.10**	129-587	**62.20**
5	.2409	.2994	2-13/16	4-5/16	5/16	6	129-571	**61.40**	129-588	**66.50**
6	.2773	.3540	3-11/16	5-7/16	23/64	6	129-572	**74.20**	129-589	**81.90**
7	.3297	.4220	4-7/16	6-5/16	13/32	6	129-573	**95.40**	129-590	**103.40**
8	.3971	.5050	5-3/16	7-3/16	7/16	6	129-574	**122.00**	129-591	**133.60**
9	.4805	.6066	6-1/16	8-5/16	9/16	8	129-575	**145.50**	129-592	**158.30**
10	.5799	.7216	6-13/16	9-5/16	5/8	8	129-576	**159.80**	129-593	**175.60**

MADE IN USA

Taper Pin Reamers HSS - Helical Flute

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

- Taper 1/4" per foot
- High Speed Steel
- Straight shank



Size No.	Small End Dia.	Large End Dia.	Flute Length	Overall Length	Shank Dia.	No. of Flutes	Code No.	Price $
7/0	.0497	.0666	13/16	1-13/16	5/64	2	129-597	**66.80**
6/0	.0611	0806	15/16	1-15/16	3/32	2	129-598	**66.80**
5/0	.0719	.0966	1-3/16	2-3/16	7/64	3	129-599	**61.10**
4/0	.0869	.1142	1-5/16	2-5/16	1/8	3	129-600	**61.10**
3/0	.1029	.1302	1-5/16	2-5/16	9/64	3	129-601	**61.10**
2/0	.1137	.1462	1-9/16	2-9/16	5/32	3	129-602	**56.10**
0	.1287	.1638	1-11/16	2-15/16	11/64	3	129-603	**57.10**
1	.1447	.1798	1-11/16	2-15/16	3/16	3	129-604	**57.90**
2	.1605	.2008	1-15/16	3-3/16	13/64	3	129-605	**65.60**
3	.1813	.2294	2-5/16	3-11/16	15/64	3	129-606	**67.80**
4	.2071	.2604	2-9/16	4-1/16	17/64	3	129-607	**76.40**
5	.2409	.2994	2-13/16	4-5/16	5/16	3	129-608	**83.40**
6	.2773	.3540	3-11/16	5-7/16	23/64	3	129-609	**98.10**
7	.3297	.4220	4-7/16	6-5/16	13/32	3	129-610	**120.90**
8	.3971	.5050	5-3/16	7-3/16	7/16	3	129-611	**141.80**
9	.4805	.6066	6-1/16	8-5/16	9/16	4	129-612	**153.10**
10	.5799	.7216	6-13/16	9-5/16	5/8	4	129-613	**194.20**

Taper Shank Jobber Reamers HSS



Dia.	Decimal Equiv.	Flute Length	Overall Length	Morse Taper No.	No. of Flutes	Code No.	Price $
1/4	.2500	2	5-3/16	1	6	129-530	**93.50**
9/32	.2812	2	5-3/16	1	6	129-531	**96.20**
5/16	.3125	2-1/4	5-1/2	1	6	129-532	**96.80**
11/32	.3438	2-1/4	5-1/2	1	6	129-533	**103.70**
3/8	.3750	2-1/2	5-13/16	1	6	129-534	**109.20**
13/32	.4062	2-1/2	5-13/16	1	6	129-535	**112.90**
7/16	.4375	2-3/4	6-1/8	1	6	129-536	**117.00**
15/32	.4688	2-3/4	6-1/8	1	6	129-537	**121.40**
1/2	.5000	3	6-7/16	1	6	129-538	**126.80**
17/32	.5312	3	6-7/16	1	6	129-539	**133.60**
9/16	.5625	3-1/4	6-3/4	1	8	129-540	**140.70**
19/32	.5938	3-1/4	6-3/4	1	8	129-541	**144.40**
5/8	.6250	3-1/2	7-9/16	2	8	129-542	**146.80**
21/32	.6562	3-1/2	7-9/16	2	8	129-543	**153.80**
11/16	.6875	3-7/8	8	2	8	129-544	**163.80**
23/32	.7188	3-7/8	8	2	8	129-545	**166.90**
3/4	.7500	4-3/16	8-3/8	2	8	129-546	**171.30**
13/16	.8125	4-9/16	8-13/16	2	10	129-547	**192.10**
7/8	.8750	4-7/8	9-3/16	2	10	129-548	**214.80**
15/16	.9375	5-1/8	10	3	10	129-549	**236.00**
1	1.0000	5-7/16	10-3/8	3	10	129-550	**258.90**
1-1/16	1.0625	5-5/8	10-5/8	3	12	129-551	**292.90**
1-1/8	1.1250	5-13/16	10-7/8	3	12	129-552	**322.60**
1-3/16	1.1875	6	11-1/8	3	12	129-553	**351.10**
1-1/4	1.2500	6-1/8	12-9/16	4	12	129-554	**369.20**
1-5/16	1.3125	6-1/4	12-11/16	4	12	129-555	**489.80**
1-3/8	1.3750	6-5/16	12-13/16	4	12	129-556	**552.70**
1-7/16	1.4375	6-7/16	13	4	12	129-557	**646.80**
1-1/2	1.5000	6-1/2	13-1/8	4	12	129-558	**737.40**

QUALITY IMPORT

Jobber Reamers HSS

- High Speed Steel
- Taper Shank
- Straight Flute



Flute Dia.	Decimal Equiv.	Flute Length	Overall Length	Morse Taper	Code No.	Price $
1/4	.2500	2	5-3/16	1	110-580	**46.40**
9/32	.2812	2	5-3/16	1	110-582	**58.10**
5/16	.3125	2-1/4	5-1/2	1	110-584	**48.40**
11/32	.3438	2-1/4	5-1/2	1	110-586	**58.10**
3/8	.3750	2-1/2	5-13/16	1	110-588	**100.70**
13/32	.4062	2-1/2	5-13/16	1	110-590	**69.50**
7/16	.4375	2-3/4	6-1/8	1	110-592	**69.50**
15/32	.4688	2-3/4	6-1/8	1	110-605	**69.50**
1/2	.5000	3	6-7/16	1	110-610	**76.00**
17/32	.5313	3	6-7/16	1	110-615	**65.70**
9/16	.5625	3-1/4	6-3/4	1	110-620	**85.60**
19/32	.5938	3-1/4	6-3/4	1	110-625	**85.60**
5/8	.6250	3-1/2	7-9/16	2	110-630	**136.40**
21/32	.6562	3-1/2	7-9/16	2	110-635	**133.50**
11/16	.6875	3-7/8	8	2	110-640	**141.00**
23/32	.7188	3-7/8	8	2	110-645	**141.00**
3/4	.7500	4-3/16	8-3/8	2	110-650	**120.50**
13/16	.8125	4-9/16	8-13/16	2	110-655	**107.20**
7/8	.8750	4-7/8	9-3/16	2	110-660	**151.20**
15/16	.9375	5-1/8	10	3	110-665	**198.80**
1	1.0005	5-7/16	10-3/8	3	110-670	**137.30**
1-1/8	1.1250	5-13/16	10-7/8	3	110-680	**173.90**
1-3/16	1.1875	6	11-1/8	3	110-685	**278.50**
1-5/16	1.3125	6-1/4	12-11/16	4	110-695	**334.30**
1-3/8	1.3750	6-5/16	12-13/16	4	110-700	**361.00**
1-7/16	1.4375	6-7/16	13	4	110-705	**268.60**
1-1/2	1.5000	6-1/2	13-1/8	4	110-710	**291.60**

Taper Pipe Reamers HSS

- High Speed Steel
- 3/4 in/ft, right-hand cut
- Straight flute
- Spiral flute



Size	Large End Dia.	Small End Dia.	Flute Length	O.A.L.	Straight Flute Code No.	Price $	Spiral Flute Code No.	Price $
1/16	.291	.245	3/4	2	109-666	**29.70**	109-678	**35.90**
1/8	.362	.316	3/4	2-1/8	109-667	**29.70**	109-679	**35.90**
1/4	.472	.406	1-1/16	2-7/16	109-668	**43.70**	109-680	**52.50**
3/8	.606	.540	1-1/16	2-9/16	109-669	**62.00**	109-681	**74.70**
1/2	.751	.665	1-3/8	3-1/8	109-670	**82.10**	109-682	**98.80**
3/4	.962	.876	1-3/8	3-1/4	109-671	**117.60**	109-683	**59.60**
1	1.212	1.103	1-3/4	3-3/4	109-672	**141.20**	109-684	**170.30**
1-1/4	1.553	1.444	1-3/4	4	109-673	**231.40**	109-685	**277.00**
1-1/2	1.793	1.684	1-3/4	4-1/4	109-674	**354.10**	109-686	**391.10**
2	1.268	2.159	1-3/4	4-1/2	109-675	**472.40**	109-687	**521.40**
2-1/2	2.772	2.561	2-5/8	5-1/2	109-676	**792.90**	109-688	**869.20**
3	3.380	3.202	2-3/4	6	109-677	**1,075.20**	109-689	**1,183.80**

QUALITY IMPORT

Hand Reamers HSS

- Helical & straight flute



Flute Dia.	Overall Length	Flute Length	Helical Flute Code No.	Price $	Straight Flute Code No.	Price $
1/8	3	1-1/2	109-700	**56.50**	109-800	**55.20**
5/32	3-1/4	1-5/8	109-702	**61.90**	109-802	**60.00**
3/16	3-1/2	1-3/4	109-704	**67.10**	109-804	**61.90**
7/32	3-3/4	1-7/8	109-706	**67.10**	109-806	**62.10**
1/4	4	2	109-708	**67.10**	109-808	**62.10**
9/32	4-1/4	2-1/8	109-710	**71.60**	109-810	**67.10**
5/16	4-1/2	2-1/4	109-712	**71.60**	109-812	**67.10**
11/32	4-3/4	2-3/8	109-714	**86.20**	109-814	**76.10**
3/8	5	2-1/2	109-716	**86.20**	109-816	**76.10**
13/32	5-1/4	2-5/8	109-718	**95.10**	109-818	**81.20**
7/16	5-1/2	2-3/4	109-720	**95.10**	109-820	**81.20**
15/32	5-3/4	2-7/8	109-722	**64.60**	109-822	**95.10**
31/64	6	3	109-724	**97.20**	109-824	**95.10**
1/2	6	3	109-726	**104.90**	109-826	**95.10**
17/32	6-1/4	3-1/8	109-728	**118.60**	109-828	**106.30**
9/16	6-1/2	3-1/4	109-730	**118.60**	109-830	**106.30**
19/32	6-3/4	3-3/8	109-732	**128.20**	109-832	**113.50**
5/8	7	3-1/2	109-734	**128.20**	109-834	**113.50**
21/32	7-3/8	3-11/16	109-736	**138.40**	109-836	**123.10**
11/16	7-3/4	3-7/8	109-738	**138.40**	109-838	**123.10**
23/32	8-1/8	4-1/16	109-740	**147.70**	109-840	**133.30**
3/4	8-3/8	4-3/16	109-742	**147.70**	109-842	**133.30**
25/32	8-3/4	4-3/8	109-744	**157.80**	109-844	**143.10**
13/16	9-1/8	4-9/16	109-746	**157.80**	109-846	**143.10**
27/32	9-3/8	4-11/16	109-748	**172.40**	109-848	**157.80**
7/8	9-3/4	4-7/8	109-750	**172.40**	109-850	**157.80**
29/32	10	5	109-752	**196.70**	109-852	**177.60**
15/16	10-1/4	5-1/8	109-754	**196.70**	109-854	**177.60**
31/32	10-5/8	5-5/16	109-756	**214.00**	109-856	**192.50**
1	10-7/8	5-7/16	109-758	**214.00**	109-858	**192.50**
1-1/16	11-1/4	5-5/8	109-760	**233.90**	109-860	**214.00**
1-1/8	1-5/8	5-13/16	109-762	**258.40**	109-862	**236.40**
1-3/16	12	6	109-764	**290.90**	109-864	**265.80**
1-1/4	12-1/4	6-1/8	109-766	**322.60**	109-866	**290.90**
1-5/16	12-1/2	6-1/4	109-768	**352.30**	109-868	**319.70**
1-3/8	12-5/8	6-5/16	109-770	**384.10**	109-870	**344.30**
1-7/16	12-7/8	6-7/16	109-772	**222.50**	109-872	**378.80**
1-1/2	13	6-1/2	109-774	**452.60**	109-874	**410.30**

Shell Reamer Arbors

- Straight shank
- Taper shank

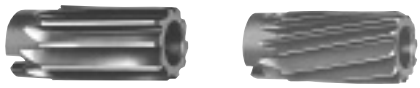


Size	Reamer Range	O.A.L.	Straight Shank Dia.	Straight Shank Code No.	Price $	Taper Shank M.T.	Taper Shank Code No.	Price $
4	21/32–25/32	9	1/2	400-380	**125.90**	2	400-360	**154.40**
5	13/16–1-1/32	9-1/2	5/8	400-382	**139.70**	2	400-362	**166.10**
6	1-1/16–1-9/32	10	3/4	400-384	**156.10**	3	400-364	**187.10**
7	1-5/16–1-5/8	11	7/8	400-386	**168.80**	3	400-366	**199.80**
8	1-11/16–2	12	1-1/8	400-388	**188.20**	4	400-368	**226.20**
9	2-1/16–2-1/2	13	1-3/8	400-390	**222.00**	4	400-370	**267.90**
10	2-9/16–3	14	1-5/8	400-392	**360.50**	5	400-372	**395.70**
11	3-1/16–3-1/2	15	2	400-394	**483.60**	5	400-374	**513.10**
12	3-9/16–4	16	2-1/8	400-396	**596.10**	5	400-376	**469.00**

QUALITY IMPORT

Shell Reamers HSS

- Straight flute
- Spiral flute



Flute Dia.	Overall Length	Hole Dia.	Fits Arbor No.	Straight Flute Code No.	Price $	Spiral Flute Code No.	Price $
3/4	2-1/4	3/8	4	108-005	**127.10**	109-005	**158.10**
13/16	2-1/2	1/2	5	108-010	**130.00**	109-010	**153.20**
7/8	2-1/2	1/2	5	108-015	**130.00**	109-015	**157.20**
15/16	2-1/2	1/2	5	108-020	**154.80**	109-020	**159.10**
1	2-1/2	1/2	5	108-025	**128.40**	109-025	**128.40**
1-1/16	2-3/4	5/8	6	108-030	**135.40**	109-030	**130.20**
1-1/8	2-3/4	5/8	6	108-035	**123.40**	109-035	**138.70**
1-3/16	2-3/4	5/8	6	108-040	**131.20**	109-040	**148.80**
1-1/4	2-3/4	5/8	6	108-045	**204.80**	109-045	**136.40**
1-5/16	3	3/4	7	108-050	**219.50**	109-050	**148.40**
1-3/8	3	3/4	7	108-055	**160.30**	109-055	**158.40**
1-7/16	3	3/4	7	108-060	**164.90**	109-060	**168.70**
1-1/2	3	3/4	7	108-065	**174.50**	109-065	**172.80**
1-9/16	3	3/4	7	108-070	**191.80**	109-070	**189.90**
1-5/8	3	3/4	7	108-075	**206.80**	109-075	**204.00**
1-11/16	3-1/2	1	8	108-080	**223.50**	109-080	**221.20**
1-3/4	3-1/2	1	8	108-085	**244.40**	109-085	**241.70**
1-13/16	3-1/2	1	8	108-090	**260.90**	109-090	**258.40**
1-7/8	3-1/2	1	8	108-095	**278.90**	109-095	**276.40**
1-15/16	3-1/2	1	8	108-100	**294.40**	109-100	**291.60**
2	3-1/2	1	8	108-105	**314.90**	109-105	**311.10**
2-1/16	3-3/4	1-1/4	9	108-110	**331.60**	109-110	**394.50**
2-1/8	3-3/4	1-1/4	9	108-115	**349.60**	109-115	**415.10**
2-3/16	3-3/4	1-1/4	9	108-120	**442.10**	109-120	**436.80**
2-1/4	3-3/4	1-1/4	9	108-125	**384.30**	109-125	**498.70**
2-5/16	3-3/4	1-1/4	9	108-130	**483.10**	109-130	**479.20**
2-3/8	3-3/4	1-1/4	9	108-135	**417.60**	109-135	**497.30**
2-7/16	3-3/4	1-1/4	9	108-140	**522.90**	109-140	**515.10**
2-1/2	3-3/4	1-1/4	9	108-145	**453.50**	109-145	**448.40**
2-9/16	4	1-1/2	10	108-150	**476.70**	109-150	**566.70**
2-5/8	4	1-1/2	10	108-155	**507.60**	109-155	**599.90**
2-11/16	4	1-1/2	10	108-160	**616.70**	109-160	**610.20**
2-3/4	4	1-1/2	10	108-165	**678.30**	109-165	**671.80**
2-13/16	4	1-1/2	10	108-170	**711.60**	109-170	**703.90**
2-7/8	4	1-1/2	10	108-175	**754.00**	109-175	**746.40**
2-15/16	4	1-1/2	10	108-180	**792.60**	109-180	**786.20**
3	4	1-1/2	10	108-185	**701.40**	109-185	**697.60**
3-1/16	4-1/2	1-3/4	11	108-190	**730.80**	109-190	**720.70**
3-1/8	4-1/2	1-3/4	11	108-195	**765.60**	109-195	**912.00**
3-3/16	4-1/2	1-3/4	11	108-200	**797.60**	109-200	**940.30**
3-1/4	4-1/2	1-3/4	11	108-205	**836.20**	109-205	**990.50**
3-5/16	4-1/2	1-3/4	11	108-210	**1,034.00**	109-210	**1,019.80**
3-3/8	4-1/2	1-3/4	11	108-215	**1,080.30**	109-215	**1,066.10**
3-7/16	4-1/2	1-3/4	11	108-220	**935.20**	109-220	**1,106.00**
3-1/2	4-1/2	1-3/4	11	108-225	**960.90**	109-225	**950.70**
3-9/16	5	2	12	108-230	**1,202.30**	109-230	**1,184.20**
3-5/8	5	2	12	108-235	**1,259.90**	109-235	**1,245.90**
3-11/16	5	2	12	108-240	**1,301.10**	109-240	**1,115.60**
3-3/4	5	2	12	108-245	**1,378.20**	109-245	**1,364.10**
3-13/16	5	2	12	108-250	**1,428.30**	109-250	**1,410.30**
3-7/8	5	2	12	108-255	**1,295.90**	109-255	**1,478.30**
3-15/16	5	2	12	108-260	**1,577.20**	109-260	**1,560.60**
4	5	2	12	108-265	**1,391.10**	109-265	**1,650.40**

Brown and Sharpe Taper Reamers HSS

Finishing
For final finishing of Brown and Sharpe standard taper holes.
Used for removing nicks or burrs in machine spindles.



- High Speed Steel
- Straight shank
- Straight flute

Size	Small End Dia.	Large End Dia.	Shank Dia.	Flute Length	O.A.L.	Code No.	Price $
1	.1974	.3176	9/32	2-7/8	4-3/4	129-637	**105.20**
2	.2474	.3781	11/32	3-1/8	5-1/8	129-638	**118.00**
3	.3099	.4510	13/32	3-3/8	5-1/2	129-639	**124.80**
4	.3474	.5017	7/16	3-11/16	5-7/8	129-640	**130.80**
5	.4474	.6145	9/16	4	6-3/8	129-641	**147.40**
6	.4974	.6808	5/8	4-3/8	6-7/8	129-642	**155.30**
7	.5974	.8011	3/4	4-7/8	7-1/2	129-643	**168.90**
8	.7474	.9770	13/16	5-1/2	8-1/8	129-644	**224.00**
9	.8974	1.1530	1	6-1/8	8-7/8	129-645	**284.70**
10	1.0420	1.3376	1-1/8	6-7/8	9-3/4	129-646	**374.30**

Taper Pipe Reamers HSS

Used prior to tapping with American Standard taper pipe taps.



- High Speed Steel
- Straight shank
- Left hand spiral
- Right hand cut
- Taper 3/4" per foot

Size	Large End Dia.	Small End Dia.	Flute Length	Shank Dia.	Square Size	O.A.L.	Code No.	Price $
1/8	.362	.316	3/4	.4375	.328	2-1/8	129-647	**79.20**
1/4	.472	.406	1-1/16	.5625	.421	2-7/16	129-648	**90.70**
3/8	.606	.540	1-1/16	.7000	.531	2-9/16	129-649	**101.80**
1/2	.751	.665	1-3/8	.6875	.515	3-1/8	129-650	**127.60**
3/4	.962	.876	1-3/8	.9063	.679	3-1/4	129-651	**177.60**
1	1.212	1.103	1-3/4	1.1250	.843	3-3/4	129-652	**258.90**
1-1/4	1.553	1.444	1-3/4	1.3125	.984	4	129-653	**436.10**
1-1/2	1.793	1.684	1-3/4	1.5000	1.125	4-1/4	129-654	**550.80**
2	2.268	2.159	1-3/4	1.8750	1.406	4-1/2	129-655	**735.50**

Morse Taper Reamers HSS

Finishing
Straight shank, straight flute reamers. Used for final finishing or for removing burrs and nicks in machine spindles, reaming morse taper sockets.



- High Speed Steel
- Straight or taper shank
- Straight flute

Taper No.	Small End Dia.	Large End Dia.	Shank Dia.	Flute Length	O.A.L.	Straight Shank Code No.	Straight Shank Price $	Taper Shank Code No.	Taper Shank Price $
0	.2503	.3674	5/16	2-1/4	3-3/4	129-656	**92.70**	129-662	**126.10**
1	.3674	.5170	7/16	3	5	129-657	**119.20**	129-663	**141.70**
2	.5696	.7444	5/8	3-1/2	6	129-658	**140.70**	129-664	**171.50**
3	.7748	.9881	7/8	4-1/4	7-1/4	129-659	**186.50**	129-665	**237.10**
4	1.0167	1.2893	1-1/8	5-1/4	8-1/2	129-660	**304.10**	129-666	**374.20**
5	1.4717	1.8005	1-1/2	6-1/4	9-3/4	129-661	**525.70**	129-667	**737.30**

Expansion Chucking Reamers HSS

High Speed Steel
An economical high production reamer, expansion feature permits reamer to be resharpened many times to its original diameter, saving on replacement costs.



Dia.	Flute Length	O.A.L.	Shank Dia.	Morse Taper	Flutes	Straight Shank Code No.	Straight Shank Price $	Taper Shank Code No.	Taper Shank Price $
3/8	3/4	7	5/16	1	8	129-336	**136.40**	129-369	**156.40**
13/32	3/4	7	5/16	1	8	129-337	**145.40**	129-370	**165.60**
7/16	7/8	7	3/8	1	6	129-338	**145.40**	129-371	**165.60**
15/32	7/8	7	3/8	1	6	129-339	**150.90**	129-372	**169.60**
1/2	1	8	7/16	1	6	129-340	**153.50**	129-373	**172.90**
17/32	1	8	7/16	1	6	129-341	**160.10**	129-374	**179.70**
9/16	1-1/8	8	7/16	1	6	129-342	**161.20**	129-375	**176.50**
19/32	1-1/8	8	7/16	1	6	129-343	**163.70**	129-376	**183.00**
5/8	1-1/4	9	9/16	2	6	129-344	**168.70**	129-377	**230.20**
21/32	1-1/4	9	9/16	2	6	129-345	**175.40**	129-378	**194.70**
11/16	1-1/4	9	9/16	2	6	129-346	**176.60**	129-379	**195.80**
23/32	1-1/4	9	9/16	2	6	129-347	**188.00**	129-380	**208.90**
3/4	1-3/8	9-1/2	5/8	2	6	129-348	**194.60**	129-381	**215.40**
25/32	1-3/8	9-1/2	5/8	2	6	129-349	**205.90**	129-382	**225.20**
13/16	1-3/8	9-1/2	5/8	2	6	129-350	**213.80**	129-383	**228.60**
27/32	1-3/8	9-1/2	5/8	2	6	129-351	**225.20**	129-384	**241.90**
7/8	1-1/2	10	3/4	2	6	129-352	**231.70**	129-385	**251.40**
29/32	1-1/2	10	3/4	2	6	129-353	**241.60**	129-386	**264.60**
15/16	1-1/2	10	3/4	3	6	129-354	**252.90**	129-387	**271.10**
31/32	1-1/2	10	3/4	3	6	129-355	**264.30**	129-388	**282.50**
1	1-5/8	10-1/2	7/8	3	8	129-356	**278.80**	129-389	**298.80**
1-1/32	1-5/8	10-1/2	7/8	3	8	129-357	**295.10**	129-390	**310.20**
1-1/16	1-5/8	10-1/2	7/8	3	8	129-358	**308.20**	129-391	**325.10**
1-3/32	1-5/8	10-1/2	7/8	3	8	129-359	**322.80**	129-392	**339.50**
1-1/8	1-3/4	11	7/8	3	8	129-360	**337.20**	129-393	**351.30**
1-5/32	1-3/4	11	7/8	3	8	129-361	**341.70**	129-394	**365.80**
1-3/16	1-3/4	11	1	3	8	129-362	**355.00**	129-395	**380.40**
1-7/32	1-3/4	11	1	3	8	129-363	**368.00**	129-396	**395.10**
1-1/4	1-7/8	11-1/2	1	4	8	129-364	**382.60**	129-397	**413.30**
1-5/16	1-7/8	11-1/2	1	4	8	129-365	**395.50**	129-398	**429.40**
1-3/8	2	12	1	4	8	129-366	**410.00**	129-399	**447.30**
1-7/16	2	12	1-1/4	4	10	129-367	**426.30**	129-400	**473.50**
1-1/2	2-1/8	12-1/2	1-1/4	4	10	129-368	**444.20**	129-401	**489.70**

Adjustable Blade Reamers HSS

- High Speed Steel



Size	Size Range	Overall Length	Code No.	Price $
8/A	1/4-9/32	3-1/2	109-900	**43.60**
7/A	9/32-5/16	3-3/4	109-902	**43.60**
6/A	5/16-11/32	4	109-904	**43.60**
5/A	11/32-3/8	4-1/4	109-906	**43.60**
4/A	3/8-13/32	4-1/2	109-908	**58.00**
3/A	13/32-7/16	4-3/4	109-910	**58.00**
2/A	7/16-15/32	5	109-912	**58.00**
A	15/32-17/32	5-1/4	109-914	**66.60**
B	17/32-19/32	5-3/4	109-916	**66.60**
C	19/32-21/32	6-1/4	109-918	**66.60**
D	21/32-23/32	6-3/4	109-920	**69.30**
E	23/32-25/32	7-1/4	109-922	**69.30**
F	25/32-27/32	7-3/4	109-924	**69.30**
G	27/32-15/16	8-1/4	109-926	**95.30**
H	15/16-1.1/16	8-3/4	109-928	**95.30**
I	1.1/16-1.3/16	10	109-930	**106.10**
J	1.3/16-1.11/32	11	109-932	**117.90**
K	1.11/32-1.1/2	12	109-934	**134.90**
L	1.1/2-1.13/16	13	109-936	**202.30**
M	1.13/16-2.7/32	15	109-938	**252.20**
N	2.7/32-2.3/4	17	109-940	**397.30**
O	2.3/4-3.11/32	19	109-942	**426.60**

Speeds & Feeds - 3 & 5 X D Premium Class Sub-Micrograin Carbide Drills - Non-Coolant Fed

PC243, PC245

Hardness	<130 HB		<180 HB		<300 HB		Tensile Strength: 400 - 700N/mm^2		Tensile Strength: 700 - 850N/mm^2		Tensile Strength: <1,000N/mm^2	
Work Material	Aluminum		Cast Iron Alloys				Structural Steel, Case Hardened Steel, Free Cutting Steel, Tempered Steel					
Cutting Speed	180 m/min		210 m/min		125 m/min		110 m/min		105 m/min		100 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)
3.0	19,100	.160	22,280	.125	13,260	.125	11,670	.100	11,140	.125	10,610	.100
3.5	16,710	.180	19,500	.140	11,610	.140	10,210	.110	9,750	.140	9,290	.110
4.0	14,320	.200	16,710	.160	9,950	.160	8,750	.130	8,360	.160	7,960	.130
4.5	12,890	.200	15,040	.160	8,960	.160	7,880	.130	7,520	.160	7,170	.130
5.0	11,460	.200	13,370	.160	7,960	.160	7,000	.130	6,680	.160	6,370	.130
5.5	10,510	.225	12,260	.180	7,300	.180	6,420	.140	6,130	.180	5,840	.140
6.0	9,550	.250	11,140	.200	6,630	.200	5,840	.160	5,570	.200	5,310	.160
6.5	8,950	.265	10,450	.210	6,220	.210	5,480	.170	5,220	.210	4,980	.170
7.0	8,360	.280	9,750	.230	5,800	.230	5,110	.180	4,880	.230	4,650	.180
7.5	7,760	.300	9,060	.240	5,390	.240	4,750	.190	4,530	.240	4,310	.190
8.0	7,160	.315	8,360	.250	4,970	.250	4,380	.200	4,180	.250	3,980	.200
8.5	6,800	.335	7,940	.270	4,720	.270	4,160	.210	3,970	.270	3,780	.210
9.0	6,450	.360	7,520	.280	4,480	.280	3,940	.230	3,760	.280	3,580	.230
9.5	6,090	.380	7,100	.300	4,230	.300	3,720	.240	3,550	.300	3,380	.240
10.0	5,730	.400	6,680	.320	3,980	.320	3,500	.250	3,340	.320	3,180	.250
10.5	5,490	.400	6,400	.320	3,820	.320	3,360	.250	3,200	.320	3,050	.250
11.0	5,250	.400	6,130	.320	3,650	.320	3,210	.250	3,070	.320	2,920	.250
11.5	5,010	.400	5,850	.320	3,490	.320	3,070	.250	2,930	.320	2,780	.250
12.0	4,770	.400	5,570	.320	3,320	.320	2,920	.250	2,790	.320	2,650	.250
12.5	4,600	.415	5,370	.330	3,200	.330	2,820	.260	2,690	.330	2,560	.260
13.0	4,430	.425	5,170	.340	3,080	.340	2,710	.270	2,590	.340	2,460	.270
13.5	4,260	.440	4,970	.350	2,960	.350	2,610	.270	2,490	.350	2,370	.270
14.0	4,090	.450	4,770	.360	2,840	.360	2,500	.280	2,390	.360	2,270	.280
14.5	3,960	.465	4,620	.370	2,750	.370	2,420	.290	2,320	.370	2,200	.290
15.0	3,840	.475	4,480	.380	2,670	.380	2,350	.300	2,240	.380	2,130	.300
15.5	3,710	.490	4,330	.390	2,580	.390	2,270	.310	2,170	.390	2,060	.310
16.0	3,580	.500	4,180	.400	2,490	.400	2,190	.320	2,090	.400	1,990	.320
16.5	3,490	.515	4,075	.415	2,428	.415	2,135	.325	2,038	.415	1,940	.325
17.0	3,400	.530	3,970	.430	2,370	.430	2,080	.340	1,990	.430	1,890	.340
17.5	3,310	.550	3,865	.440	2,303	.440	2,025	.345	1,933	.440	1,840	.345
18.0	3,220	.565	3,760	.450	2,240	.450	1,970	.360	1,880	.450	1,790	.360
18.5	3,130	.580	3,655	.465	2,178	.465	1,915	.370	1,828	.465	1,740	.370
19.0	3,040	.595	3,550	.480	2,120	.480	1,860	.380	1,780	.480	1,690	.380
19.5	2,950	.615	3,445	.490	2,053	.490	1,805	.390	1,723	.490	1,640	.390
20.0	2,860	.630	3,340	.500	1,990	.500	1,750	.400	1,670	.500	1,590	.400

continued

Hardness	Tensile Strength: <1,200N/mm^2		Tensile Strength: <820N/mm^2		<30 HRc		<60 HRc	
Work Material	High Alloyed Steel		Stainless Steel		Special Alloys		Hardened Steel	
Cutting Speed	55 m/min		45 m/min		25 m/min		25 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)
3.0	5,840	.080	4,770	.065	2,650	.065	2,650	.040
3.5	5,110	.090	4,180	.070	2,320	.070	2,320	.045
4.0	4,380	.100	3,580	.080	1,990	.080	1,990	.050
4.5	3,940	.100	3,220	.080	1,790	.080	1,790	.050
5.0	3,500	.100	2,860	.080	1,590	.080	1,590	.050
5.5	3,210	.115	2,630	.090	1,460	.090	1,460	.055
6.0	2,920	.125	2,390	.100	1,330	.100	1,330	.065
6.5	2,740	.135	2,240	.105	1,250	.105	1,250	.065
7.0	2,560	.145	2,090	.115	1,160	.115	1,160	.070
7.5	2,370	.150	1,940	.120	1,080	.120	1,080	.075
8.0	2,190	.160	1,790	.125	990	.125	990	.080
8.5	2,080	.170	1,700	.135	940	.135	940	.085
9.0	1,970	.180	1,610	.145	900	.145	900	.090
9.5	1,860	.190	1,520	.150	850	.150	850	.095
10.0	1,750	.200	1,430	.160	800	.160	800	.100
10.5	1,680	.200	1,370	.160	770	.160	770	.100
11.0	1,610	.200	1,310	.160	730	.160	730	.100
11.5	1,530	.200	1,250	.160	700	.160	700	.100
12.0	1,460	.200	1,190	.160	660	.160	660	.100
12.5	1,410	.220	1,150	.165	640	.165	640	.105
13.0	1,360	.240	1,110	.170	620	.170	620	.105
13.5	1,300	.260	1,060	.175	590	.175	590	.110
14.0	1,250	.280	1,020	.180	570	.180	570	.110
14.5	1,210	.275	990	.185	550	.185	550	.115
15.0	1,170	.265	960	.190	540	.190	540	.120
15.5	1,130	.260	930	.195	520	.195	520	.120
16.0	1,090	.250	900	.200	500	.200	500	.125
16.5	1,060	.260	880	.205	490	.205	490	.130
17.0	1,040	.265	860	.215	480	.215	480	.135
17.5	1,010	.275	830	.220	460	.220	460	.140
18.0	990	.280	810	.225	450	.225	450	.145
18.5	960	.290	790	.230	440	.230	440	.145
19.0	930	.300	770	.240	430	.240	430	.150
19.5	910	.305	740	.245	410	.245	410	.155
20.0	880	.315	720	.250	400	.250	400	.160

Speeds & Feeds - 3, 5 & 8 X D Premium Class Sub-Micrograin Carbide Drills - Coolant Fed

PC253, PC255, PC258

Hardness	<130 HB		<180 HB		<300 HB		Tensile Strength: 400 - 700N/mm^2		Tensile Strength: 700 - 850N/mm^2		Tensile Strength: <1,000N/mm^2	
Work Material	Aluminum		Cast Iron Alloys				Structural Steel, Case Hardened Steel, Free Cutting Steel, Tempered Steel					
Cutting Speed	220 m/min		210 m/min		125 m/min		110 m/min		105 m/min		100 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)
3.0	19,100	.160	22,280	.125	13,260	.125	11,670	.100	11,671	.125	11,141	.100
3.5	16,710	.180	19,495	.143	11,605	.143	10,210	.113	10,213	.143	9,748	.113
4.0	14,320	.200	16,710	.160	9,950	.160	8,750	.125	8,754	.160	8,356	.125
4.5	12,890	.200	15,040	.160	8,955	.160	7,875	.125	7,878	.160	7,520	.125
5.0	11,460	.200	13,370	.160	7,960	.160	7,000	.125	7,003	.160	6,685	.125
5.5	10,505	.225	12,255	.180	7,295	.180	6,420	.143	6,419	.180	6,128	.143
6.0	9,550	.250	11,140	.200	6,630	.200	5,840	.160	5,836	.200	5,570	.160
6.5	8,953	.266	10,445	.213	6,215	.213	5,475	.170	5,471	.213	5,222	.170
7.0	8,355	.283	9,750	.225	5,800	.225	5,110	.180	5,106	.225	4,874	.180
7.5	7,758	.299	9,055	.238	5,385	.238	4,745	.190	4,742	.238	4,526	.190
8.0	7,160	.315	8,360	.250	4,970	.250	4,380	.200	4,377	.250	4,178	.200
8.5	6,803	.336	7,940	.266	4,723	.266	4,160	.213	4,158	.266	3,969	.213
9.0	6,445	.358	7,520	.283	4,475	.283	3,940	.225	3,939	.283	3,760	.225
9.5	6,088	.379	7,100	.299	4,228	.299	3,720	.238	3,720	.299	3,551	.238
10.0	5,730	.400	6,680	.315	3,980	.315	3,500	.250	3,501	.315	3,342	.250
10.5	5,490	.400	6,403	.315	3,815	.315	3,355	.250	3,356	.315	3,203	.250
11.0	5,250	.400	6,125	.315	3,650	.315	3,210	.250	3,210	.315	3,064	.250
11.5	5,010	.400	5,848	.315	3,485	.315	3,065	.250	3,064	.315	2,924	.250
12.0	4,770	.400	5,570	.315	3,320	.315	2,920	.250	2,918	.315	2,785	.250
12.5	4,600	.413	5,370	.326	3,200	.326	2,815	.258	2,814	.326	2,686	.258
13.0	4,430	.425	5,170	.338	3,080	.338	2,710	.265	2,709	.338	2,586	.265
13.5	4,260	.438	4,970	.349	2,960	.349	2,605	.273	2,605	.349	2,487	.273
14.0	4,090	.450	4,770	.360	2,840	.360	2,500	.280	2,501	.360	2,387	.280
14.5	3,963	.463	4,623	.370	2,753	.370	2,423	.289	2,423	.370	2,313	.289
15.0	3,835	.475	4,475	.380	2,665	.380	2,345	.298	2,345	.380	2,238	.298
15.5	3,708	.488	4,328	.390	2,578	.390	2,268	.306	2,267	.390	2,164	.306
16.0	3,580	.500	4,180	.400	2,490	.400	2,190	.315	2,188	.400	2,089	.315
16.5	3,490	.516	4,075	.413	2,428	.413	2,135	.326	2,134	.413	2,037	.326
17.0	3,400	.533	3,970	.425	2,365	.425	2,080	.336	2,079	.425	1,984	.336
17.5	3,310	.549	3,865	.438	2,303	.438	2,025	.347	2,024	.438	1,932	.347
18.0	3,220	.565	3,760	.450	2,240	.450	1,970	.358	1,970	.450	1,880	.358
18.5	3,130	.581	3,655	.463	2,178	.463	1,915	.368	1,915	.463	1,828	.368
19.0	3,040	.598	3,550	.475	2,115	.475	1,860	.379	1,860	.475	1,776	.379
19.5	2,950	.614	3,445	.488	2,053	.488	1,805	.389	1,805	.488	1,723	.389
20.0	2,860	.630	3,340	.500	1,990	.500	1,750	.400	1,751	.500	1,671	.400

continued

Hardness	Tensile Strength: <1,200N/mm^2		Tensile Strength: <820N/mm^2		<30 HRc		<60 HRc	
Work Material	High Alloyed Steel		Stainless Steel		Special Alloys		Hardened Steel	
Cutting Speed	55 m/min		45 m/min		25 m/min		25 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)
3.0	5,836	.080	4,775	.063	3,714	.063	3,714	.040
3.5	5,106	.090	4,178	.072	3,249	.072	3,249	.045
4.0	4,377	.100	3,581	.080	2,785	.080	2,785	.050
4.5	3,939	.100	3,223	.080	2,507	.080	2,507	.050
5.0	3,501	.100	2,865	.080	2,228	.080	2,228	.050
5.5	3,210	.113	2,626	.090	2,043	.090	2,043	.057
6.0	2,918	.125	2,387	.100	1,857	.100	1,857	.063
6.5	2,735	.134	2,238	.106	1,741	.106	1,741	.067
7.0	2,553	.143	2,089	.113	1,625	.113	1,625	.072
7.5	2,371	.151	1,940	.119	1,509	.119	1,509	.076
8.0	2,188	.160	1,791	.125	1,393	.125	1,393	.080
8.5	2,079	.170	1,701	.134	1,323	.134	1,323	.085
9.0	1,970	.180	1,611	.143	1,253	.143	1,253	.090
9.5	1,860	.190	1,522	.151	1,184	.151	1,184	.095
10.0	1,751	.200	1,432	.160	1,114	.160	1,114	.100
10.5	1,678	.200	1,373	.160	1,068	.160	1,068	.100
11.0	1,605	.200	1,313	.160	1,021	.160	1,021	.100
11.5	1,532	.200	1,253	.160	975	.160	975	.100
12.0	1,459	.200	1,194	.160	928	.160	928	.100
12.5	1,407	.220	1,151	.165	895	.165	895	.103
13.0	1,355	.240	1,108	.170	862	.170	862	.105
13.5	1,303	.260	1,066	.175	829	.175	829	.108
14.0	1,251	.280	1,023	.180	796	.180	796	.110
14.5	1,211	.273	991	.185	771	.185	771	.114
15.0	1,172	.265	959	.190	746	.190	746	.118
15.5	1,133	.258	927	.195	721	.195	721	.121
16.0	1,094	.250	895	.200	696	.200	696	.125
16.5	1,067	.258	873	.206	679	.206	679	.129
17.0	1,039	.266	850	.213	661	.213	661	.134
17.5	1,012	.274	828	.219	644	.219	644	.138
18.0	985	.283	806	.225	627	.225	627	.143
18.5	957	.291	783	.231	609	.231	609	.147
19.0	930	.299	761	.238	592	.238	592	.151
19.5	903	.307	739	.244	574	.244	574	.156
20.0	875	.315	716	.250	557	.250	557	.160

Speeds & Feeds for Solid Carbide Jobber Drills

Work Material	Steels						Austenitic Stainless		Cast Irons				Non-Ferrous			
	Low Carbon Steels		Alloy Steels (up to 35 Rc) 4140		Alloy Steels (36-45 Rc) 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	.025	15,925	.025	14,335	.025	12,740	.025	27,075	.025	17,520	.025	38,220	.006	38,220	.006
1.5	11,680	.050	10,615	.050	9,555	.050	8,495	.050	18,050	.050	11,680	.050	25,480	.013	25,480	.013
2.0	8,760	.051	10,618	.051	9,558	.051	8,493	.051	13,535	.051	8,760	.051	25,480	.028	25,480	.028
2.5	7,005	.063	7,964	.063	7,169	.063	6,369	.063	10,830	.063	7,005	.063	19,110	.039	19,110	.039
3.0	5,840	.076	5,310	.076	4,780	.076	4,245	.076	9,025	.076	5,840	.076	12,740	.050	12,740	.050
3.5	5,005	.089	4,550	.089	4,095	.089	3,640	.089	7,735	.089	5,005	.089	10,920	.051	10,920	.051
4.0	4,380	.101	3,980	.101	3,585	.101	3,185	.101	6,770	.101	4,380	.101	9,555	.052	9,555	.052
4.5	3,895	.114	3,540	.114	3,185	.114	2,830	.114	6,015	.114	3,895	.114	8,495	.063	8,495	.063
5.0	3,505	.127	3,185	.127	2,865	.127	2,550	.127	5,415	.127	3,505	.127	7,645	.064	7,645	.064
5.5	3,185	.139	2,895	.139	2,605	.139	2,315	.139	4,920	.139	3,185	.139	6,950	.070	6,950	.070
6.0	2,920	.152	2,655	.152	2,390	.152	2,125	.152	4,510	.152	2,920	.152	6,370	.076	6,370	.076
6.5	2,695	.158	2,450	.158	2,205	.158	1,960	.158	4,165	.158	2,695	.158	5,880	.079	5,880	.079
7.0	2,505	.165	2,275	.165	2,050	.165	1,820	.165	3,870	.165	2,505	.165	5,460	.082	5,460	.082
7.5	2,335	.171	2,125	.171	1,910	.171	1,700	.171	3,610	.171	2,335	.171	5,095	.085	5,095	.085
8.0	2,190	.178	1,990	.178	1,790	.178	1,595	.178	3,385	.178	2,190	.178	4,780	.089	4,780	.089
8.5	2,060	.184	1,875	.184	1,685	.184	1,500	.184	3,185	.184	2,060	.184	4,495	.092	4,495	.092
9.0	1,945	.190	1,770	.190	1,595	.190	1,415	.190	3,010	.190	1,945	.190	4,245	.095	4,245	.095
9.5	1,845	.197	1,675	.197	1,510	.197	1,340	.197	2,850	.197	1,845	.197	4,025	.098	4,025	.098
10.0	1,750	.203	1,595	.203	1,435	.203	1,275	.203	2,705	.203	1,750	.203	3,820	.101	3,820	.101
10.5	1,670	.216	1,515	.216	1,365	.216	1,215	.216	2,580	.216	1,670	.216	3,640	.114	3,640	.114
11.0	1,595	.229	1,450	.229	1,305	.229	1,160	.229	2,460	.229	1,595	.229	3,475	.127	3,475	.127
11.5	1,525	.241	1,385	.241	1,245	.241	1,110	.241	2,355	.241	1,525	.241	3,325	.139	3,325	.139
12.0	1,460	.254	1,325	.254	1,195	.254	1,060	.254	2,255	.254	1,460	.254	3,185	.152	3,185	.152

Speeds & Feeds for HSS TiAlN Tip Jobber Drills

Carbon Steels (0.4 to 0.7% Carbon) 30 HRC

Size	Speed (ft/min)	RPM	Drill Feed (in/rev)
1/16"	33 - 49	2004 - 3006	0.0013
5/64"	33 - 49	1603 - 2405	0.0016
3/32"	33 - 49	1336 - 2004	0.0019
7/64"	33 - 49	1145 - 1718	0.0022
1/8"	33 - 49	1002 - 1503	0.0025
9/64"	33 - 49	891 - 1336	0.0028
5/32"	33 - 49	802 - 1203	0.0031
11/64"	33 - 49	729 - 1093	0.0034
3/16"	33 - 49	668 - 1002	0.0038
13/64"	33 - 49	617 - 925	0.0041
7/32"	33 - 49	573 - 859	0.0044
15/64"	33 - 49	534 - 802	0.0047
1/4"	33 - 49	501 - 752	0.0050
17/64"	33 - 49	472 - 707	0.0053
9/32"	33 - 49	445 - 668	0.0056
19/64"	33 - 49	422 - 633	0.0059
5/16"	33 - 49	401 - 601	0.0063
21/64"	33 - 49	382 - 573	0.0066
11/32"	33 - 49	364 - 547	0.0069
23/64"	33 - 49	349 - 523	0.0072
3/8"	33 - 49	334 - 501	0.0075
25/64"	33 - 49	321 - 481	0.0078
13/32"	33 - 49	308 - 463	0.0081
27/64"	33 - 49	297 - 445	0.0084
7/16"	33 - 49	286 - 429	0.0088
29/64"	33 - 49	276 - 415	0.0091
15/32"	33 - 49	267 - 401	0.0094
31/64"	33 - 49	259 - 388	0.0097
1/2"	33 - 49	251 - 376	0.0100

High Alloy Tool Steels Up To 36 HRC

Speed (ft/min)	RPM	Drill Feed (in/rev)
33 - 49	2004 - 3006	0.0013
33 - 49	1603 - 2405	0.0016
33 - 49	1336 - 2004	0.0019
33 - 49	1145 - 1718	0.0022
33 - 49	1002 - 1503	0.0025
33 - 49	891 - 1336	0.0028
33 - 49	802 - 1203	0.0031
33 - 49	729 - 1093	0.0034
33 - 49	668 - 1002	0.0038
33 - 49	617 - 925	0.0041
33 - 49	573 - 859	0.0044
33 - 49	534 - 802	0.0047
33 - 49	501 - 752	0.0050
33 - 49	472 - 707	0.0053
33 - 49	445 - 668	0.0056
33 - 49	422 - 633	0.0059
33 - 49	401 - 601	0.0063
33 - 49	382 - 573	0.0066
33 - 49	364 - 547	0.0069
33 - 49	349 - 523	0.0072
33 - 49	334 - 501	0.0075
33 - 49	321 - 481	0.0078
33 - 49	308 - 463	0.0081
33 - 49	297 - 445	0.0084
33 - 49	286 - 429	0.0088
33 - 49	276 - 415	0.0091
33 - 49	267 - 401	0.0094
33 - 49	259 - 388	0.0097
33 - 49	251 - 376	0.0100

Martensitic Stainless Steels (400 series) up to 24 HRC

Speed (ft/min)	RPM	Drill Feed (in/rev)
39 - 52	2405 - 3207	0.0013
39 - 52	1924 - 2565	0.0016
39 - 52	1603 - 2138	0.0019
39 - 52	1374 - 1832	0.0022
39 - 52	1203 - 1603	0.0025
39 - 52	1069 - 1425	0.0028
39 - 52	962 - 1283	0.0031
39 - 52	875 - 1166	0.0034
39 - 52	802 - 1069	0.0038
39 - 52	740 - 987	0.0041
39 - 52	687 - 916	0.0044
39 - 52	641 - 855	0.0047
39 - 52	601 - 802	0.0050
39 - 52	566 - 755	0.0053
39 - 52	534 - 713	0.0056
39 - 52	506 - 675	0.0059
39 - 52	481 - 641	0.0063
39 - 52	458 - 611	0.0066
39 - 52	437 - 583	0.0069
39 - 52	418 - 558	0.0072
39 - 52	401 - 534	0.0075
39 - 52	385 - 513	0.0078
39 - 52	370 - 493	0.0081
39 - 52	356 - 475	0.0084
39 - 52	344 - 458	0.0088
39 - 52	332 - 442	0.0091
39 - 52	321 - 428	0.0094
39 - 52	310 - 414	0.0097
39 - 52	301 - 401	0.0100

Austenitic Stainless Steels (300 series) up to 32 HRC

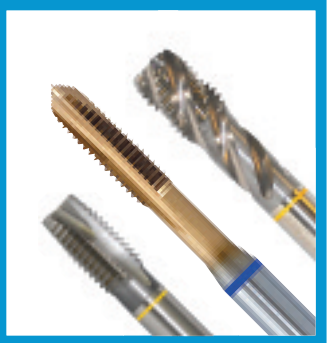
Speed (ft/min)	RPM	Drill Feed (in/rev)
13 - 20	802 - 1203	0.0005
13 - 20	641 - 962	0.0006
13 - 20	534 - 802	0.0007
13 - 20	458 - 687	0.0008
13 - 20	401 - 601	0.0009
13 - 20	356 - 534	0.0011
13 - 20	321 - 481	0.0012
13 - 20	292 - 437	0.0013
13 - 20	267 - 401	0.0014
13 - 20	247 - 370	0.0015
13 - 20	229 - 344	0.0016
13 - 20	214 - 321	0.0018
13 - 20	200 - 301	0.0019
13 - 20	189 - 283	0.0020
13 - 20	178 - 267	0.0021
13 - 20	169 - 253	0.0022
13 - 20	160 - 241	0.0023
13 - 20	153 - 229	0.0025
13 - 20	146 - 219	0.0026
13 - 20	139 - 209	0.0027
13 - 20	134 - 200	0.0028
13 - 20	128 - 192	0.0029
13 - 20	123 - 185	0.0030
13 - 20	119 - 178	0.0032
13 - 20	115 - 172	0.0033
13 - 20	111 - 166	0.0034
13 - 20	107 - 160	0.0035
13 - 20	103 - 155	0.0036
13 - 20	100 - 150	0.0038

Recommended Drilling Conditions Parabolic Drills

Material	Typical Grades	Hardness (HRC)	Speed SFM	Size	1mm	2mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	14mm	16mm
Carbon Steels	1020 1025 1040 1045 1050 1055 1060 1090	<25	80-100	rpm	7960	3980	2650	1990	1590	1330	990	800	660	570	500
				FEED ipr	0.0008	0.0016	0.0032	0.0035	0.0043	0.005	0.006	0.0078	0.009	0.0095	0.010
Alloy Steels	1435 4140 4615 5140	<25	65-80	rpm	6370	3180	2120	1590	1270	1060	800	640	530	450	400
				FEED ipr	0.0008	0.0016	0.0032	0.0035	0.0043	0.006	0.007	0.0083	0.01	0.01	0.011
Tool Steels	A2 A6 L7 01 02 06	<35	50-55	rpm	4770	2390	1590	1190	950	800	600	480	400	340	300
				FEED ipr	0.0008	0.0016	0.002	0.0024	0.0028	0.0032	0.0035	0.0043	0.005	0.006	0.0078
High Speed	M1, M2 D2, P20														
Cast Irons	SOFT	**<15**	115-135	rpm	11780	5890	3930	2940	2360	1960	1470	1180	980	840	740
				FEED ipr	0.0008	0.0032	0.0032	0.0039	0.0047	0.006	0.007	0.009	0.01	0.011	0.012
	HARD	<23	65-85	rpm	7000	3500	2330	1750	1400	1170	880	700	580	500	440
				FEED ipr	0.0008	0.0032	0.0032	0.0039	0.0047	0.006	0.007	0.009	0.01	0.011	0.012
	MALLEABLE	<23	80-100	rpm	5890	4300	2860	2150	1720	1430	1070	860	720	610	540
				FEED ipr	0.0008	0.002	0.0032	0.0032	0.0035	0.0039	0.005	0.006	0.007	0.0085	0.009
Aluminum Alloys, Cast			200-215	rpm	19740	9870	6580	4930	3950	3290	2470	1970	1640	1410	1230
				FEED ipr	0.0008	0.0032	0.0032	0.0043	0.006	0.007	0.0083	0.01	0.011	0.012	0.0136
STAINLESS STEELS															
Ferretic, Martensitic 13-25% Cr	430F 405 434 436 442 443 446 449 409	<28	55-65	rpm	5410	2710	1800	1350	1080	900	680	540	450	390	340
				FEED ipr	0.0008	0.0016	0.002	0.0024	0.0032	0.0039	0.005	0.006	0.007	0.008	0.009
Austenitic Ni > 8%, 18-25% Cr	201 202 301 302 303 304 304L 305 321 347 348	<28	50-60	rpm	4470	2390	1590	1190	950	800	600	480	400	340	300
				FEED ipr	0.0008	0.0024	0.0032	0.0035	0.0047	0.006	0.007	0.009	0.01	0.0106	0.011
Austenitic Ni < 8%, 18-25% Cr	302B 309 309S 310 310S 314 316 316L 317 318 329 330	<20	30-40	rpm	2860	1430	950	720	570	480	360	290	240	200	180
				FEED ipr	0.0008	0.0016	0.002	0.0024	0.0032	0.0039	0.005	0.006	0.007	0.008	0.009
Martensitic quenched & tempered > 0.12% C	416 416F 410 414 422 431 420 501 440A 440B 440C	<45	50-60	rpm	4770	2390	1590	1190	950	800	600	480	400	340	300
				FEED ipr	0.0008	0.0016	0.002	0.0024	0.0032	0.0039	0.005	0.006	0.007	0.008	0.009













TAPS & DIES

Sowa High Performance Tap Selection C2-3

Blue RING Taps, HSSE-V3 up to 25 HRc

Spiral Point Taps C4
Spiral Flute Taps C5
Blue-Gold HSSE-V3 Spiral Point & Spiral Flute Taps C6
+ .005” Spiral Point Taps C7

Yellow Ring Taps, HSSE-V3 up to 35 HRc

Spiral Point Taps - Steam Oxide & Bright Finish C8-9
Spiral Flute Taps - Steam Oxide & Bright Finish C10-11
UN8 DIN Length ANSI Shank Taps C12
DIN Length ANSI Shank Spiral Point & Spiral Flute Taps C12
4” & 6” O.A.L. Spiral Point & Spiral Flute Taps C12-13
NPT Spiral Flute Pipe Taps C13

Orange Ring Taps, HSSE-V3 up to 35 HRc for Stainless Steel

Spiral Point Taps C13-14
Spiral Flute Taps C14

Red Ring Taps, Powdered Metal up to 48 HRc

Spiral Point Taps C15
Spiral Flute Taps C15

Spiral Flute Taps For Aluminum C16
S.T.I. 45º Spiral Flute Taps C16
Roll Form Taps C16
Hand Taps C17
NPT Taps, Regular Pipe, 6" O.A.L. & Interrupted Thread C18

General Purpose Taps

Hand Taps C19
NPT Taps C19
Metric Spiral Point Taps C20
Tap & Die Sets C20
Hand Tap Sets C20
Tap & Drill Sets C21
Adjustable Tap Wrench C21
‘T’ Ratchet Type Tap Wrench C21
Screw Extractors C21
Adjustable Round Split Dies C22-23
Die Stocks C23
Hex Dies C23-24

Tapping Speed Guide, Conversion Table,
ANSI Tap Dimensions, Tap/Drill Charts C25-30

Sowa
High Performance Taps

Made In Japan

We have taken the guess work out of your tap selection!

HSSE-V3 ANSI SHANK Blue Ring Pg. C4

For general ductile materials including:
:: LOW AND MEDIUM CARBON STEEL
:: BRASS
:: COPPER AND CAST IRON
:: ALUMINUM



HSSE-V3 ANSI SHANK Yellow Ring Pg. C8

For tough materials including:
::HIGH CARBON STEEL
:: HIGH ALLOY
:: TITANIUM
:: ALUMINUM



HSSE-V3 ANSI SHANK Orange Ring Pg. C13

For STAINLESS STEEL
as well as:
:: LOW CARBON STEELS
:: MEDIUM CARBON STEELS
:: ALLOYED HIGH CARBON



P-HSS ANSI SHANK Red Ring Pg. C15

For high tensile materials including:
:: TOOL STEELS
:: TITANIUM
:: NICKEL ALLOYS



HSSE-V3 ANSI SHANK Green Series Pg. C16

For ALUMINUM:
:: PURE/LOW
:: DIE CAST



Sowa
High Performance Taps

Made In Japan

Recommended Cutting Conditions

Blue Ring HSSE-V3 Soft Steels up to 25HRC

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Low Carbon	1018, 1010, 1035	Normalized	<25	20-50
Medium Carbon	1045, 1050, 1065	Normalized	<25	20-40
Aluminum	Unalloyed, Cast	–	–	30-80
Brass/Bronze	–	–	–	30-80
Copper	–	–	–	25-60
Cast Iron	–	As Cast	<15	20-40

Yellow Ring HSSE-V3 Steels and other materials up to 35HRC

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

Orange Ring HSSE-V3 for Stainless Steel and other materials

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 Copper			<25	20-30

Red Ring P-HSS for materials up to 48HRC

Materials Main Group	Materials Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Tool Steels	01, A-2, D-2, H-13, P-20,	Hardened	<48	10-20
High Strength	4140, 4340, 50100	Hardened	<48	15-20
Nickel Alloys	Inconel, Hastaloy, Waspaloy,	Annealed	<42	5-20
	Astraloy, Rene, Monel	and Hardened		
Titanium	6 AL 4	Annealed/hardened	<42	8-15

Green Series HSSE-V3 for Aluminum and other materials

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

Blue Ring HSSE-V3 Spiral Point Taps - Inch



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

HSSE-V3 | STEAM OXIDE | HOLE TYPE

- Used in general machine tapping applications for mild carbon steels such as 1018, 1010, 1035, 1045, 1050 and 1065
- Up to 25 HRc

• 4.5 Pitch lead (Intermediate)

Tap	Threads Per Inch	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
4	40	2	H2	1-7/8	.433	119-700	**12.10**
6	32	3	H3	2	.512	119-701	**10.80**
6	40	3	H2	2	.512	119-722	**10.80**
8	32	3	H3	2-1/8	.512	119-702	**11.40**
10	24	2	H3	2-3/8	.512	119-703	**11.40**
10	24	3	H3	2-3/8	.512	119-704	**11.40**
10	32	2	H3	2-3/8	.512	119-723	**11.40**
10	32	3	H3	2-3/8	.512	119-724	**11.40**
12	24	3	H3	2-3/8	.512	119-705	**12.80**
1/4	20	2	H3	2-1/2	.630	119-706	**12.80**
1/4	20	3	H3	2-1/2	.630	119-707	**12.80**
1/4	28	2	H3	2-1/2	.630	119-725	**12.80**
1/4	28	3	H3	2-1/2	.630	119-726	**12.80**
5/16	18	2	H3	2-23/32	.748	119-708	**15.30**
5/16	18	3	H3	2-23/32	.748	119-709	**15.30**
5/16	24	2	H3	2-23/32	.748	119-727	**15.30**
5/16	24	3	H3	2-23/32	.748	119-728	**15.30**
3/8	16	2	H3	2-15/16	.748	119-710	**17.50**
3/8	16	3	H3	2-15/16	.748	119-711	**17.50**
3/8	24	2	H3	2-15/16	.748	119-729	**17.50**
3/8	24	3	H3	2-15/16	.748	119-730	**17.50**
7/16	14	3	H3	3-5/32	.866	119-712	**23.00**
7/16	20	3	H3	3-5/32	.866	119-731	**23.00**
1/2	13	3	H3	3-3/8	.945	119-713	**25.60**
1/2	20	3	H3	3-3/8	.945	119-732	**25.60**
5/8	11	3	H3	3-13/16	1.102	119-714	**39.90**
5/8	18	3	H3	3-13/16	1.102	119-733	**39.90**
3/4	10	3	H3	4-1/4	1.220	119-715	**66.60**
3/4	16	3	H3	4-1/4	1.220	119-734	**66.60**
7/8	9	3	H4	4-11/16	1.339	119-716	**88.50**
7/8	14	3	H4	4-11/16	1.339	119-735	**88.50**
1	8	3	H4	5-1/8	1.496	119-717	**118.80**
1	12	3	H4	5-1/8	1.496	119-736	**118.80**
1-1/8	7	4	H4	5-7/16	1.732	119-718	**168.10**
1-1/8	12	4	H4	5-7/16	1.732	119-737	**168.10**
1-1/4	7	4	H4	5-3/4	1.732	119-719	**195.70**
1-1/4	12	4	H4	5-3/4	1.732	119-738	**195.70**
1-3/8	6	4	H4	6-1/16	2.000	119-720	**257.30**
1-3/8	12	4	H4	6-1/16	2.000	119-739	**257.30**
1-1/2	6	4	H4	6-3/8	2.000	119-721	**330.00**
1-1/2	12	4	H4	6-3/8	2.000	119-740	**330.00**

Blue Ring HSSE-V3 Spiral Point Taps - Metric



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

HSSE-V3 | STEAM OXIDE | HOLE TYPE

- Used in general machine tapping applications for mild carbon steels such as 1018, 1010, 1035, 1045, 1050 and 1065
- Up to 25 HRc

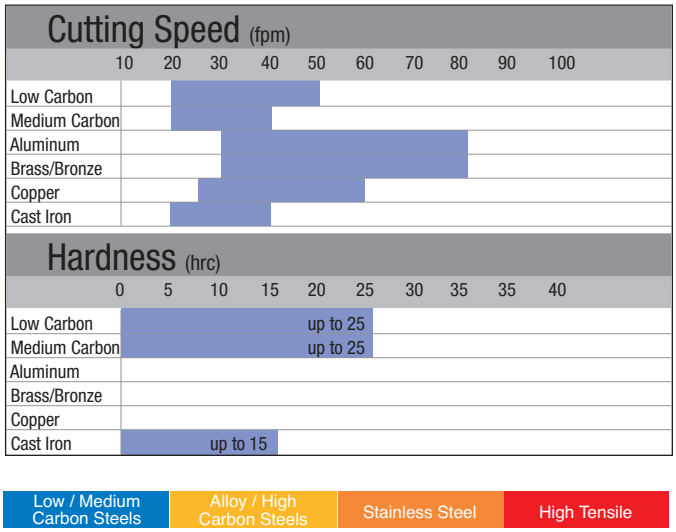
• 4.5 Pitch lead (Intermediate)

Tap	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
M2 x .4	2	D3	1-3/4	.433	119-750	**12.10**
M2.5 x .45	2	D3	1-13/16	.512	119-751	**12.10**
M3 x .5	3	D3	1-15/16	.433	119-752	**10.80**
M3.5 x .6	3	D4	2	.512	119-753	**10.80**
M4 x .7	3	D4	2-1/8	.512	119-754	**11.40**
M4.5 x .75	3	D4	2-3/8	.512	119-755	**11.40**
M5 x .8	3	D4	2-3/8	.512	119-756	**11.40**
M6 x 1	3	D5	2-1/2	.630	119-757	**12.80**
M7 x 1	3	D5	2-23/32	.630	119-758	**15.30**
M8 x 1	3	D5	2-23/32	.748	119-759	**15.30**
M8 x 1.25	3	D5	2-23/32	.748	119-760	**15.30**
M10 x 1.25	3	D5	2-15/16	.748	119-761	**17.50**
M10 x 1.5	3	D6	2-15/16	.748	119-762	**17.50**
M12 x 1.25	3	D5	3-3/8	.945	119-763	**25.60**
M12 x 1.75	3	D6	3-3/8	.945	119-764	**25.60**
M14 x 1.5	3	D6	3-19/32	.984	119-765	**33.90**
M14 x 2	3	D7	3-19/32	.984	119-766	**33.90**
M16 x 1.5	3	D6	3-13/16	1.102	119-767	**39.90**
M16 x 2	3	D7	3-13/16	1.102	119-768	**39.90**
M18 x 1.5	3	D6	4-1/32	1.102	119-769	**66.60**
M18 x 2.5	3	D7	4-1/32	1.102	119-770	**66.60**
M20 x 1.5	3	D5	4-15/32	1.220	119-771	**77.50**
M20 x 2.5	3	D6	4-15/32	1.220	119-772	**77.50**
M22 x 1.5	3	D6	4-11/16	1.339	119-773	**88.50**
M22 x 2.5	3	D6	4-11/16	1.339	119-774	**88.50**
M24 x 1.5	3	D5	4-29/32	1.339	119-775	**118.80**
M24 x 3	3	D7	4-29/32	1.339	119-776	**118.80**
M27 x 1.5	4	D7	5-1/8	1.181	119-777	**168.10**
M27 x 3	4	D7	5-1/8	1.181	119-778	**168.10**
M30 x 1.5	4	D7	5-7/16	1.378	119-779	**195.70**
M30 x 3.5	4	D7	5-7/16	1.378	119-780	**195.70**

Cutting Conditions

Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Low Carbon	1018, 1010, 1035	Normalized	<25	20-50
Medium Carbon	1045, 1050, 1065	Normalized	<25	20-40
Aluminum	Unalloyed, Cast	–	–	30-80
Brass/Bronze	–	–	–	30-80
Copper	–	–	–	25-60
Cast Iron	–	As Cast	<15	20-40



Blue Ring HSSE-V3 Spiral Flute Taps - Inch



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



- Used in general machine tapping applications for mild carbon steels such as 1018, 1010, 1035, 1045, 1050 and 1065
- Up to 25 HRc

• 2.5 Pitch lead (Bottoming)

Tap	Threads Per Inch	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
4	40	2	H2	1-7/8	.433	119-800	**12.80**
6	32	3	H3	2	.512	119-801	**12.10**
8	32	3	H3	2-1/8	.512	119-802	**12.10**
10	24	3	H3	2-3/8	.512	119-803	**12.80**
10	32	3	H3	2-3/8	.512	119-817	**12.80**
1/4	20	3	H3	2-3/8	.630	119-804	**13.10**
1/4	28	3	H3	2-1/2	.630	119-818	**13.10**
5/16	18	3	H3	2-1/2	.748	119-805	**17.10**
5/16	24	3	H3	2-23/32	.748	119-819	**17.10**
3/8	16	3	H3	2-23/32	.748	119-806	**20.00**
3/8	24	3	H3	2-15/16	.748	119-820	**20.00**
7/16	14	3	H3	2-15/16	.866	119-807	**26.60**
7/16	20	3	H3	2-15/16	.866	119-830	**26.60**
1/2	13	3	H3	3-3/8	.945	119-808	**34.00**
1/2	20	3	H3	3-3/8	.945	119-821	**34.00**
5/8	11	4	H3	3-13/16	1.102	119-809	**43.20**
5/8	18	4	H3	3-13/16	1.102	119-822	**43.20**
3/4	10	4	H3	4-1/4	1.220	119-810	**73.50**
3/4	16	4	H3	4-1/4	1.220	119-823	**73.50**
7/8	9	4	H4	4-11/16	1.339	119-811	**98.50**
7/8	14	4	H4	4-11/16	1.339	119-824	**98.50**
1	8	4	H4	5-1/8	1.496	119-812	**133.10**
1	12	4	H4	5-1/8	1.496	119-825	**133.10**
1-1/8	7	4	H4	5-7/16	1.732	119-813	**168.10**
1-1/8	12	4	H4	5-7/16	1.732	119-826	**168.10**
1-1/4	7	4	H4	5-3/4	1.732	119-814	**195.70**
1-1/4	12	4	H4	5-3/4	1.732	119-827	**195.70**
1-3/8	6	4	H4	6-1/16	2.000	119-815	**257.30**
1-3/8	12	4	H4	6-1/16	2.000	119-828	**257.30**
1-1/2	6	4	H4	6-3/8	2.000	119-816	**330.00**
1-1/2	12	4	H4	6-3/8	2.000	119-829	**330.00**

Blue Ring HSSE-V3 Spiral Flute Taps - Metric



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



- Used in general machine tapping applications for mild carbon steels such as 1018, 1010, 1035, 1045, 1050 and 1065
- Up to 25 HRc

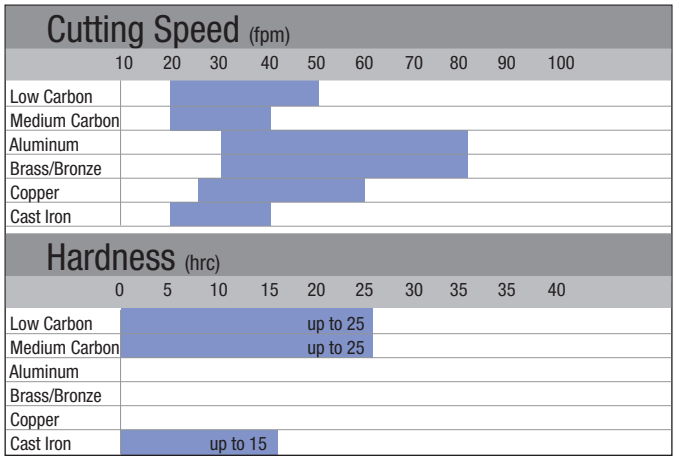
• 2.5 Pitch lead (Bottoming)

Tap	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
M3 x .5	3	D3	1-15/16	.433	119-840	**12.10**
M3.5 x .6	3	D4	2	.512	119-841	**12.10**
M4 x .7	3	D4	2-1/8	.512	119-842	**12.10**
M5 x .8	3	D4	2-3/8	.512	119-843	**12.80**
M6 x 1	3	D5	2-1/2	.630	119-844	**13.10**
M7 x 1	3	D5	2-23/32	.630	119-845	**17.10**
M8 x 1	3	D5	2-23/32	.748	119-846	**17.10**
M8 x 1.25	3	D5	2-23/32	.748	119-847	**17.10**
M10 x 1.25	3	D5	2-15/16	.748	119-848	**20.00**
M10 x 1.5	3	D6	2-15/16	.748	119-849	**20.00**
M12 x 1.25	3	D5	3-3/8	.945	119-850	**34.00**
M12 x 1.75	3	D6	3-3/8	.945	119-851	**34.00**
M14 x 1.5	3	D6	3-19/32	.984	119-852	**39.80**
M14 x 2	3	D7	3-19/32	.984	119-853	**39.80**
M16 x 1.5	3	D6	3-13/16	1.102	119-854	**43.20**
M16 x 2	3	D7	3-13/16	1.102	119-855	**43.20**
M18 x 1.5	4	D6	4-1/32	1.102	119-856	**73.50**
M18 x 2.5	4	D7	4-1/32	1.102	119-857	**73.50**
M20 x 1.5	4	D5	4-15/32	1.220	119-858	**86.20**
M20 x 2.5	4	D6	4-15/32	1.220	119-859	**86.20**
M22 x 1.5	4	D6	4-11/16	1.339	119-860	**98.50**
M22 x 2.5	4	D6	4-11/16	1.339	119-861	**98.50**
M24 x 1.5	4	D5	4-29/32	1.339	119-862	**133.10**
M24 x 3	4	D7	4-29/32	1.339	119-863	**133.10**
M27 x 1.5	4	D7	5-1/8	1.181	119-864	**168.10**
M27 x 3	4	D7	5-1/8	1.181	119-865	**168.10**
M30 x 1.5	4	D7	5-7/16	1.378	119-866	**195.70**
M30 x 3.5	4	D7	5-7/16	1.378	119-867	**195.70**

Cutting Conditions

Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Low Carbon	1018, 1010, 1035	Normalized	<25	20-50
Medium Carbon	1045, 1050, 1065	Normalized	<25	20-40
Aluminum	Unalloyed, Cast	–	–	30-80
Brass/Bronze	–	–	–	30-80
Copper	–	–	–	25-60
Cast Iron	–	As Cast	<15	20-40



Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

Blue-Gold HSSE-V3 Spiral Point Taps - Inch

Blue Gold Titanium Nitride



Taps can provide an increase in tool life of 2 to 6 times depending on the application.

• The extremely hard and durable surface and high lubricity delivers long tool life, reduces friction and galling allowing higher speeds for higher productivity and less down time.



• 4.5 Pitch lead (Intermediate)

Tap	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
4-40	2	H2	1-7/8	.433	119-870	**21.60**
6-32	3	H3	2	.512	119-871	**20.30**
8-32	3	H3	2-1/8	.512	119-872	**20.80**
10-24	3	H3	2-3/8	.512	119-873	**22.00**
10-32	3	H3	2-3/8	.512	119-883	**22.00**
1/4-20	3	H3	2-1/2	.630	119-874	**23.70**
1/4-28	3	H3	2-1/2	.630	119-884	**23.70**
5/16-18	3	H3	2-23/32	.748	119-875	**31.70**
5/16-24	3	H3	2-23/32	.748	119-885	**31.70**
3/8-16	3	H3	2-15/16	.748	119-876	**35.50**
3/8-24	3	H3	2-15/16	.748	119-886	**35.50**
7/16-14	3	H3	3-5/32	.866	119-877	**52.70**
7/16-20	3	H3	3-5/32	.866	119-887	**52.70**
1/2-13	3	H3	3-3/8	.945	119-878	**55.70**
1/2-20	3	H3	3-3/8	.945	119-888	**55.70**
9/16-18	3	H3	3-19/32	1.006	119-889	**69.20**
5/8-11	3	H3	3-13/16	1.102	119-879	**84.00**
5/8-18	3	H3	3-13/16	1.102	119-890	**84.00**
3/4-10	3	H3	4-1/4	1.220	119-880	**161.30**
7/8-9	3	H4	4-11/16	1.339	119-881	**223.10**
1-8	3	H4	5-1/8	1.496	119-882	**261.10**

Blue-Gold HSSE-V3 Spiral Flute Taps - Inch

Blue Gold Titanium Nitride



Taps can provide an increase in tool life of 2 to 6 times depending on the application.

• The extremely hard and durable surface and high lubricity delivers long tool life, reduces friction and galling allowing higher speeds for higher productivity and less down time.



• 2.5 Pitch lead (Bottoming)

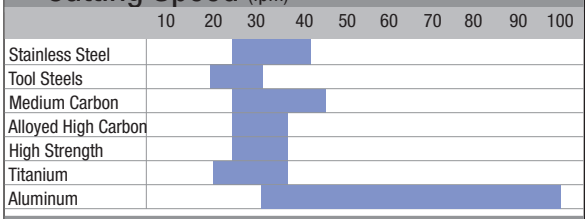
Tap	No. of Flutes	Thread Limits	Overall Length (in.)	Thread Length	Code No.	Price $
4-40	2	H2	1-7/8	.256	119-900	**23.60**
6-32	3	H3	2	.315	119-901	**22.80**
8-32	3	H3	2-1/8	.315	119-902	**22.80**
10-24	3	H3	2-3/8	.413	119-903	**24.00**
10-32	3	H3	2-3/8	.413	119-913	**24.00**
1/4-20	3	H3	2-1/2	.492	119-904	**24.20**
1/4-28	3	H3	2-1/2	.492	119-914	**24.20**
5/16-18	3	H3	2-23/32	.551	119-905	**34.70**
5/16-24	3	H3	2-23/32	.551	119-915	**34.70**
3/8-16	3	H3	2-15/16	.630	119-906	**38.00**
3/8-24	3	H3	2-15/16	.630	119-916	**38.00**
7/16-14	3	H3	3-5/32	.709	119-907	**56.90**
7/16-20	3	H3	3-5/32	.709	119-917	**56.90**
1/2-13	3	H3	3-3/8	.768	119-908	**65.60**
1/2-20	3	H3	3-3/8	.768	119-918	**65.60**
9/16-18	3	H3	3-19/32	.827	119-919	**75.80**
5/8-11	4	H3	3-13/16	.906	119-909	**87.20**
5/8-18	4	H3	3-13/16	.906	119-920	**87.20**
3/4-10	4	H3	4-1/4	.827	119-910	**168.60**
7/8-9	4	H4	4-11/16	1.102	119-911	**235.80**
1-8	4	H4	5-1/8	1.260	119-912	**279.00**

Cutting Conditions

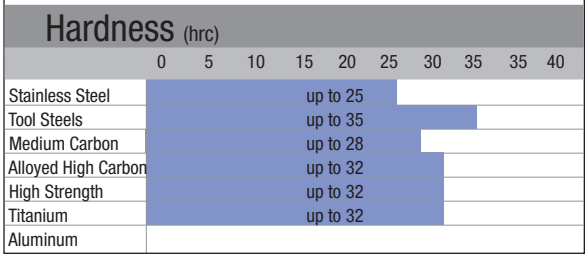
Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series, 300 Series, 17-4, 15-5 AM286 400 Series	Annealed Annealed Annealed Annealed Annealed	<28 <28 <25 <25 <29	25-40 25-40 20-30 20-30 25-40
Tool Steels	01, A-2,D-2 H-13,P-20	Annealed	<35	20-30
Medium Carbon	1030, 1035 1038,1040 1045, 1050	Normalized	<28	25-45
Alloyed High Carbon	1065, 1070, 1080, 1090 1095, 1561, 1572	Normalized	<32	25-35
High Strength	4140, 4340	Normalized	<32	25-35
Titanium	Commercially Pure	Annealed	<32	20-35
Aluminum	Cast, Wrought	-	-	40-100

Cutting Speed (fpm)



Hardness (hrc)



Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

HSSE-V3 + .005" Spiral Point Taps - Inch

- Steam oxide
- ANSI



Features a unique free-cutting design with a special tempering and geometry which contributes to extra tool life.



• 4.5 Pitch lead (Intermediate)

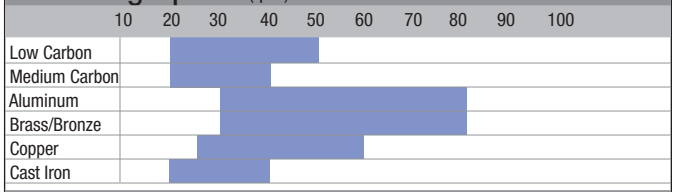
Tap	Threads per Inch	No. of Flutes	Overall Length (in.)	Thread Length	Code No.	Price $
6	32	3	2	.512	119-925	**10.80**
8	32	3	2-1/8	.512	119-926	**11.40**
10	32	3	2-3/8	.512	119-939	**13.50**
1/4	20	3	2-1/2	.630	119-927	**12.80**
1/4	28	3	2-1/2	.630	119-934	**12.80**
5/16	18	3	2-23/32	.748	119-928	**15.30**
5/16	24	3	2-23/32	.748	119-935	**15.30**
3/8	16	3	2-15/16	.748	119-929	**17.50**
3/8	24	3	2-15/16	.748	119-936	**17.50**
7/16	14	3	3-5/32	.866	119-930	**23.00**
7/16	20	3	3-5/32	.866	119-937	**23.00**
1/2	13	3	3-3/8	.945	119-931	**25.60**
1/2	20	3	3-3/8	.945	119-938	**25.60**
5/8	11	3	3-13/16	1.102	119-932	**39.90**
3/4	10	3	4-1/4	1.220	119-933	**66.60**

Cutting Conditions

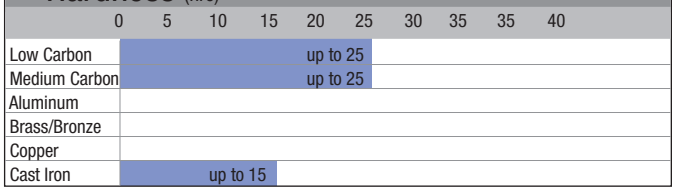
Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Low Carbon	1018, 1010, 1035	Normalized	<25	20-50
Medium Carbon	1045, 1050, 1065	Normalized	<25	20-40
Aluminum	Unalloyed, Cast	–	–	30-80
Brass/Bronze	–	–	–	30-80
Copper	–	–	–	25-60
Cast Iron	–	As Cast	<15	20-40

Cutting Speed (fpm)



Hardness (hrc)



COMBO OFFER

Code No.: 500-228
Price: $ 286.00



Noga Standard Holder DG1033

- 11" reach
- Noga central locking mechanism with Noga designed spring loaded bearing
- Powerful On/Off magnetic base
- 80kg/f
- Dial gauge holder is three dimensional

Coolant Proof Dial Indicator

Travel: 0-0.4"
Dial: 0-50
Graduation: 0.0005"

- Water resistant
- Reverse counter
- Stainless Steel components
- Rotating bezel with clamp
- Lugback (1/4" hole)
- Interchangeable point
- Conforms to AGD2 standards

Yellow Ring HSSE-V3 Spiral Point Taps - Steam Oxide Finish

HSSE-V3% Vanadium

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

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.

- Standard limits of H2, H3, H4 apply to Bright Finish taps as appropriate





Standard Limits H2, H3, H4

• 4.5 Pitch lead (Intermediate)

Inch

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Steam Oxide Code No.	H2 Limit Price $	Steam Oxide Code No.	H3 Limit Price $	Steam Oxide Code No.	H4 Limit Price $	Steam Oxide Code No.	H5 Limit Price $	Steam Oxide Code No.	H6 Limit Price $	Steam Oxide Code No.	H7 Limit Price $
2-56	2	1-3/4	.433	122-550	**12.80**										
3-48	2	1-13/16	.512	122-552	**12.80**										
4-40	2	1-7/8	.433	123-296	**12.80**										
4-40	2	1-7/8	.433			122-554	**12.80**								
6-32	3	2	.512			123-300	**11.40**			122-556	**11.40**			122-650	**11.40**
6-40	3	2	.512			123-334	**11.40**								
8-32	3	2-1/8	.512			123-302	**12.10**			122-558	**12.10**			122-652	**12.10**
10-24	3	2-3/8	.512			123-304	**12.50**			122-560	**12.50**			122-654	**12.50**
10-32	3	2-3/8	.512			123-338	**12.50**			122-562	**12.50**			122-656	**12.50**
12-24	3	2-3/8	.512			123-306	**13.50**								
1/4-20	3	2-1/2	.630			123-308	**14.10**			122-564	**14.10**			122-658	**14.10**
1/4-28	3	2-1/2	.630			123-342	**14.10**			122-566	**14.10**			122-660	**14.10**
5/16-18	3	2-23/32	.748			123-310	**17.10**			122-568	**17.10**			122-662	**17.10**
5/16-24	3	2-23/32	.748			123-344	**17.10**			122-570	**17.10**			122-664	**17.10**
3/8-16	3	2-15/16	.748			123-312	**20.70**			122-572	**20.70**			122-666	**20.70**
3/8-24	3	2-15/16	.748			123-346	**20.70**			122-574	**20.70**			122-668	**20.70**
7/16-14	3	3-5/32	.866			123-314	**27.00**			122-576	**27.00**				
7/16-20	3	3-5/32	.866			123-348	**27.00**			122-578	**27.00**				
1/2-13	3	3-3/8	.945			123-316	**30.10**			122-580	**30.10**			122-670	**30.10**
1/2-20	3	3-3/8	.945			123-350	**30.10**			122-582	**30.10**				
5/8-11	3	3-13/16	1.102			123-318	**47.30**			122-584	**47.30**				
5/8-18	3	3-13/16	1.102			123-352	**47.30**								
3/4-10	3	4-1/4	1.220			123-320	**79.20**			122-586	**79.20**				
3/4-16	3	4-1/4	1.220			123-353	**79.20**								
7/8-9	3	4-11/16	1.339					123-321	**110.50**						
7/8-14	3	4-11/16	1.339					123-359	**110.50**						
1-8	4	5-1/8	1.496					123-323	**148.40**			122-588	**148.40**		
1-12	4	5-1/8	1.496					123-361	**148.40**						
1-14	4	5-1/8	1.496					123-360	**148.40**						
1-1/8-7	4	5-7/16	1.732					123-364	**210.30**						
1-1/8-12	4	5-7/16	1.732					123-365	**210.30**						
1-1/4-7	4	5-3/4	1.732					123-367	**244.60**			122-590	**244.60**		
1-1/4-12	4	5-3/4	1.732					123-369	**244.60**						
1-3/8-6	4	6-1/16	2.000					123-371	**321.70**			122-592	**321.60**		
1-3/8-12	4	6-1/16	2.000					123-373	**321.60**						
1-1/2-6	4	6-3/8	2.000					123-363	**412.50**			122-594	**412.50**		
1-1/2-12	4	6-3/8	2.000					123-375	**412.50**						

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Steam Oxide Code No.	Price $
M2 x .4	2	D3	1-3/4	.433	123-502	**12.80**
M2.5 x .45	2	D3	1-13/16	.512	123-504	**12.80**
M3 x .5	3	D3	1-15/16	.433	123-505	**11.40**
M3.5 x .6	3	D4	2	.512	123-506	**11.40**
M4 x .7	3	D4	2-1/8	.512	123-507	**12.10**
M4.5 x .75	3	D4	2-3/8	.512	123-508	**12.50**
M5 x .8	3	D4	2-3/8	.512	123-509	**12.50**
M6 x 1	3	D5	2-1/2	.630	123-510	**14.10**
M7 x 1	3	D5	2-23/32	.630	123-511	**17.10**
M8 x 1	3	D5	2-23/32	.748	123-512	**17.10**
M8 x 1.25	3	D5	2-23/32	.748	123-513	**17.10**
M10 x 1.25	3	D5	2-15/16	.748	123-516	**20.70**
M10 x 1.5	3	D6	2-15/16	.748	123-515	**20.70**
M12 x 1.25	3	D5	3-3/8	.945	123-518	**30.10**
M12 x 1.75	3	D6	3-3/8	.945	123-517	**30.10**
M14 x 1.5	3	D7	3-19/32	.984	123-519	**40.10**
M14 x 2	3	D6	3-19/32	.984	123-520	**40.10**
M16 x 1.5	3	D6	3-13/16	1.102	123-522	**47.30**
M16 x 2	3	D7	3-13/16	1.102	123-521	**47.30**
M18 x 1.5	4	D6	4-1/32	1.102	123-523	**79.20**
M18 x 2.5	4	D7	4-1/32	1.102	123-524	**79.20**
M20 x 1.5	4	D5	4-15/32	1.220	123-525	**94.90**
M20 x 2.5	4	D6	4-15/32	1.220	123-526	**94.90**
M22 x 1.5	4	D6	4-11/16	1.339	123-527	**110.50**
M22 x 2.5	4	D6	4-11/16	1.339	123-528	**110.50**
M24 x 1.5	4	D5	4-29/32	1.339	123-529	**148.40**
M24 x 3	4	D7	4-29/32	1.339	123-530	**148.40**
M27 x 1.5	4	D7	5-1/8	1.181	123-531	**210.30**
M27 x 3	4	D7	5-1/8	1.181	123-532	**210.30**
M30 x 1.5	4	D7	5-7/16	1.378	123-533	**244.60**
M30 x 3.5	4	D7	5-7/16	1.378	123-534	**244.60**

Cutting Conditions

Materials

Main Group	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
Aluminum	Cast, Wrought	-	-	30-90

Yellow Ring HSSE-V3 Spiral Point Taps - Bright Finish



HSSE-V3 | BRIGHT | HOLE TYPE

HSSE-V3% Vanadium

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

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.

Inch

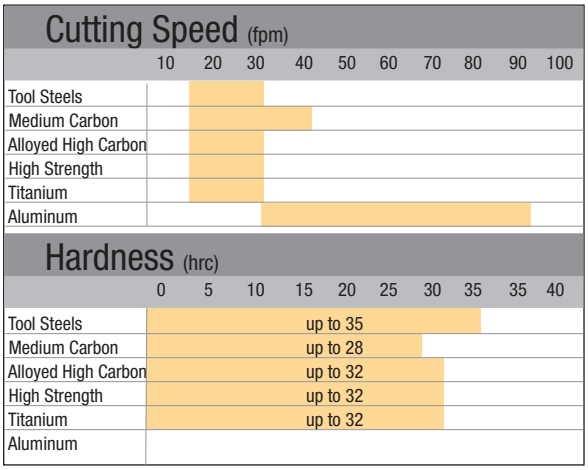
Standard Limits H2, H3, H4

• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Bright Code No.	H2 Limit Price $	Bright Code No.	H3 Limit Price $	Bright Code No.	H4 Limit Price $
2-56	2	1-3/4	.433	122-550B	**12.80**				
3-48	2	1-13/16	.512	122-552B	**12.80**				
4-40	2	1-7/8	.433	123-296B	**12.80**				
4-40	2	1-7/8	.433			122-554B	**12.80**		
6-32	3	2	.512			123-300B	**11.40**		
6-40	3	2	.512			123-334B	**11.40**		
8-32	3	2-1/8	.512			123-302B	**12.10**		
10-24	3	2-3/8	.512			123-304B	**12.50**		
10-32	3	2-3/8	.512			123-338B	**12.50**		
12-24	3	2-3/8	.512			123-306B	**13.50**		
1/4-20	3	2-1/2	.630			123-308B	**14.10**		
1/4-28	3	2-1/2	.630			123-342B	**14.10**		
5/16-18	3	2-23/32	.748			123-310B	**17.10**		
5/16-24	3	2-23/32	.748			123-344B	**17.10**		
3/8-16	3	2-15/16	.748			123-312B	**20.70**		
3/8-24	3	2-15/16	.748			123-346B	**20.70**		
7/16-14	3	3-5/32	.866			123-314B	**27.00**		
7/16-20	3	3-5/32	.866			123-348B	**27.00**		
1/2-13	3	3-3/8	.945			123-316B	**30.10**		
1/2-20	3	3-3/8	.945			123-350B	**30.10**		
5/8-11	3	3-13/16	1.102			123-318B	**47.30**		
5/8-18	3	3-13/16	1.102			123-352B	**47.30**		
3/4-10	3	4-1/4	1.220			123-320B	**79.20**		
3/4-16	3	4-1/4	1.220			123-353B	**79.20**		
7/8-9	3	4-11/16	1.339					123-321B	**110.50**
7/8-14	3	4-11/16	1.339					123-359B	**110.50**
1-8	4	5-1/8	1.496					123-323B	**148.40**
1-12	4	5-1/8	1.496					123-361B	**148.40**
1-14	4	5-1/8	1.496					123-360B	**148.40**
1-1/8-7	4	5-7/16	1.732					123-364B	**210.30**
1-1/8-12	4	5-7/16	1.732					123-365B	**210.30**
1-1/4-7	4	5-3/4	1.732					123-367B	**244.60**
1-1/4-12	4	5-3/4	1.732					123-369B	**244.60**
1-3/8-6	4	6-1/16	2.000					123-371B	**321.70**
1-3/8-12	4	6-1/16	2.000					123-373B	**321.60**
1-1/2-6	4	6-3/8	2.000					123-363B	**412.50**
1-1/2-12	4	6-3/8	2.000					123-375B	**412.50**

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Bright Code No.	Price $
M2 x .4	2	D3	1-3/4	.433	123-502B	**12.80**
M2.5 x .45	2	D3	1-13/16	.512	123-504B	**12.80**
M3 x .5	3	D3	1-15/16	.433	123-505B	**11.40**
M3.5 x .6	3	D4	2	.512	123-506B	**11.40**
M4 x .7	3	D4	2-1/8	.512	123-507B	**12.10**



Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Bright Code No.	Price $
M4.5 x .75	3	D4	2-3/8	.512	123-508B	**12.50**
M5 x .8	3	D4	2-3/8	.512	123-509B	**12.50**
M6 x 1	3	D5	2-1/2	.630	123-510B	**14.10**
M7 x 1	3	D5	2-23/32	.630	123-511B	**17.10**
M8 x 1	3	D5	2-23/32	.748	123-512B	**17.10**
M8 x 1.25	3	D5	2-23/32	.748	123-513B	**17.10**
M10 x 1.25	3	D5	2-15/16	.748	123-516B	**20.70**
M10 x 1.5	3	D6	2-15/16	.748	123-515B	**20.70**
M12 x 1.25	3	D5	3-3/8	.945	123-518B	**30.10**
M12 x 1.75	3	D6	3-3/8	.945	123-517B	**30.10**
M14 x 1.5	3	D7	3-19/32	.984	123-519B	**40.10**
M14 x 2	3	D6	3-19/32	.984	123-520B	**40.10**
M16 x 1.5	3	D6	3-13/16	1.102	123-522B	**47.30**
M16 x 2	3	D7	3-13/16	1.102	123-521B	**47.30**
M18 x 1.5	4	D6	4-1/32	1.102	123-523B	**79.20**
M18 x 2.5	4	D7	4-1/32	1.102	123-524B	**79.20**
M20 x 1.5	4	D5	4-15/32	1.220	123-525B	**94.90**
M20 x 2.5	4	D6	4-15/32	1.220	123-526B	**94.90**
M22 x 1.5	4	D6	4-11/16	1.339	123-527B	**110.50**
M22 x 2.5	4	D6	4-11/16	1.339	123-528B	**110.50**
M24 x 1.5	4	D5	4-29/32	1.339	123-529B	**148.40**
M24 x 3	4	D7	4-29/32	1.339	123-530B	**148.40**
M27 x 1.5	4	D7	5-1/8	1.181	123-531B	**210.30**
M27 x 3	4	D7	5-1/8	1.181	123-532B	**210.30**
M30 x 1.5	4	D7	5-7/16	1.378	123-533B	**244.60**
M30 x 3.5	4	D7	5-7/16	1.378	123-534B	**244.60**

Yellow Ring HSSE-V3 Spiral Flute Taps - Steam Oxide Finish



HSSE-V3% Vanadium

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

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.

- Standard limits of H2, H3, H4 apply to Bright Finish taps as appropriate



- 2.5 Pitch lead (Bottoming)

Inch

Standard Limits H2, H3, H4

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Steam Oxide Code No.	H2 Limit Price $	Steam Oxide Code No.	H3 Limit Price $	Steam Oxide Code No.	H4 Limit Price $	Steam Oxide Code No.	H5 Limit Price $	Steam Oxide Code No.	H6 Limit Price $	Steam Oxide Code No.	H7 Limit Price $
2-56	2	1-3/4	.433	122-500	**16.10**										
3-48	2	1-13/16	.512	122-502	**16.10**										
4-40	2	1-7/8	.250	123-362	**14.80**										
4-40	2	1-7/8	.250			122-506	**14.80**								
6-32	3	2	.313	123-366	**14.10**					122-508	**14.10**			122-600	**14.10**
8-32	3	2-1/8	.313	123-368	**14.10**					122-510	**14.10**			122-602	**14.10**
10-24	3	2-3/8	.417			123-370	**14.50**			122-512	**14.50**			122-604	**14.50**
10-32	3	2-3/8	.417			123-382	**14.50**			122-514	**14.50**			122-606	**14.50**
1/4-20	3	2-1/2	.500			123-372	**14.80**			122-516	**14.80**			122-608	**14.80**
1/4-28	3	2-1/2	.500			123-384	**14.80**			122-518	**14.80**			122-610	**14.80**
5/16-18	3	2-23/32	.556			123-374	**20.20**			122-520	**20.20**			122-612	**20.20**
5/16-24	3	2-23/32	.556			123-386	**20.20**			122-522	**20.20**			122-614	**20.20**
3/8-16	3	2-15/16	.625			123-376	**23.40**			122-524	**23.40**			122-616	**23.40**
3/8-24	3	2-15/16	.625			123-388	**23.40**			122-526	**23.40**			122-618	**23.40**
7/16-14	3	3-5/32	.714			123-378	**31.30**			122-528	**31.30**				
7/16-20	3	3-5/32	.714			123-389	**31.30**			122-530	**31.30**				
1/2-13	3	3-3/8	.769			123-380	**40.10**			122-532	**40.10**			122-620	**40.10**
1/2-20	3	3-3/8	.769			123-392	**40.10**			122-534	**40.10**				
5/8-11	4	3-13/16	.909			123-452	**50.80**			122-536	**50.80**				
5/8-18	4	3-13/16	.909			123-462	**50.80**								
3/4-10	4	4-1/4	1.000			123-454	**86.60**			122-538	**86.60**				
3/4-16	4	4-1/4	1.000			123-464	**86.60**								
7/8-9	4	4-11/16	1.111					123-466	**123.10**						
7/8-14	4	4-11/16	1.111					123-468	**123.10**						
1-8	4	5-1/8	1.250					123-469	**166.40**			122-540	**166.40**		
1-12	4	5-1/8	1.250					123-470	**166.40**						
1-14	4	5-1/8	1.250					123-465	**166.40**						
1-1/8-7	4	5-7/16	1.429					123-471	**210.30**						
1-1/8-12	4	5-7/16	1.429					123-472	**210.30**						
1-1/4-7	4	5-3/4	1.429					123-473	**244.60**			122-542	**244.60**		
1-1/4-12	4	5-3/4	1.429					123-474	**244.60**						
1-3/8-6	4	6-1/16	1.667					123-475	**321.60**			122-544	**321.60**		
1-3/8-12	4	6-1/16	1.667					123-476	**321.60**						
1-1/2-6	4	6-3/8	1.667					123-477	**412.50**			122-546	**412.50**		
1-1/2-12	4	6-3/8	1.667					123-478	**412.50**						

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Steam Oxide Code No.	Price $
M3 x .5	3	D3	2-3/8	.197	123-650	**14.10**
M3.5 x .6	3	D4	2-3/8	.236	123-651	**14.10**
M4 x .7	3	D4	2-3/8	.276	123-652	**14.10**
M5 x .8	3	D4	2-3/8	.315	123-654	**14.50**
M6 x 1	3	D5	2-1/2	.394	123-656	**14.80**
M7 x 1	3	D5	2-23/32	.394	123-657	**20.20**
M8 x 1	3	D5	2-23/32	.492	123-659	**20.20**
M8 x 1.25	3	D5	2-23/32	.492	123-658	**20.20**
M10 x 1.25	3	D5	2-15/16	.591	123-661	**23.40**
M10 x 1.5	3	D6	2-15/16	.591	123-660	**23.40**
M12 x 1.25	3	D5	3-3/8	.689	123-663	**40.10**
M12 x 1.75	3	D6	3-3/8	.689	123-662	**40.10**
M14 x 1.5	3	D6	3-19/32	.787	123-665	**46.70**
M14 x 2	3	D7	3-19/32	.787	123-667	**46.70**
M16 x 1.5	3	D6	3-13/16	.787	123-668	**50.80**
M16 x 2	3	D7	3-13/16	.787	123-669	**50.80**
M18 x 1.5	4	D6	4-1/32	.984	123-670	**86.60**
M18 x 2.5	4	D7	4-1/32	.984	123-671	**86.60**
M20 x 1.5	4	D5	4-15/32	.984	123-672	**104.80**
M20 x 2.5	4	D6	4-15/32	.984	123-673	**104.80**
M22 x 1.5	4	D6	4-11/16	.984	123-674	**123.10**
M22 x 2.5	4	D6	4-11/16	.984	123-675	**123.10**
M24 x 1.5	4	D5	4-29/32	1.181	123-676	**166.40**
M24 x 3	4	D7	4-29/32	1.181	123-677	**166.40**
M27 x 1.5	4	D7	5-1/8	1.181	123-678	**210.30**
M27 x 3	4	D7	5-1/8	1.181	123-679	**210.30**
M30 x 1.5	4	D7	5-7/16	1.378	123-680	**244.60**
M30 x 3.5	4	D7	5-7/16	1.378	123-681	**244.60**

Cutting Conditions

Materials

Main Group	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
Aluminum	Cast, Wrought	-	-	30-90

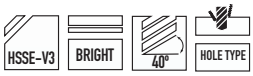
Yellow Ring HSSE-V3 Spiral Flute Taps - Bright Finish

HSSE-V3% Vanadium

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- Up to 35 HRC

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

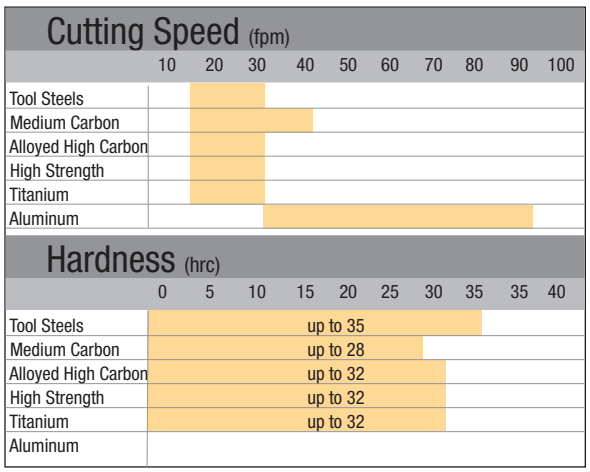
Standard Limits H2, H3, H4

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Bright Code No.	H2 Limit Price $	Bright Code No.	H3 Limit Price $	Bright Code No.	H4 Limit Price $
2-56	2	1-3/4	.433	122-500B	**16.10**				
3-48	2	1-13/16	.512	122-502B	**16.10**				
4-40	2	1-7/8	.250	123-362B	**14.80**				
4-40	2	1-7/8	.250			122-506B	**14.80**		
6-32	3	2	.313	123-366B	**14.10**				
8-32	3	2-1/8	.313	123-368B	**14.10**				
10-24	3	2-3/8	.417			123-370B	**14.50**		
10-32	3	2-3/8	.417			123-382B	**14.50**		
1/4-20	3	2-1/2	.500			123-372B	**14.80**		
1/4-28	3	2-1/2	.500			123-384B	**14.80**		
5/16-18	3	2-23/32	.556			123-374B	**20.20**		
5/16-24	3	2-23/32	.556			123-386B	**20.20**		
3/8-16	3	2-15/16	.625			123-376B	**23.40**		
3/8-24	3	2-15/16	.625			123-388B	**23.40**		
7/16-14	3	3-5/32	.714			123-378B	**31.30**		
7/16-20	3	3-5/32	.714			123-389B	**31.30**		
1/2-13	3	3-3/8	.769			123-380B	**40.10**		
1/2-20	3	3-3/8	.769			123-392B	**40.10**		
5/8-11	4	3-13/16	.909			123-452B	**50.80**		
5/8-18	4	3-13/16	.909			123-462B	**50.80**		
3/4-10	4	4-1/4	1.000			123-454B	**86.60**		
3/4-16	4	4-1/4	1.000			123-464B	**86.60**		
7/8-9	4	4-11/16	1.111					123-466B	**123.10**
7/8-14	4	4-11/16	1.111					123-468B	**123.10**
1-8	4	5-1/8	1.250					123-469B	**166.40**
1-12	4	5-1/8	1.250					123-470B	**166.40**
1-14	4	5-1/8	1.250					123-465B	**166.40**
1-1/8-7	4	5-7/16	1.429					123-471B	**210.30**
1-1/8-12	4	5-7/16	1.429					123-472B	**210.30**
1-1/4-7	4	5-3/4	1.429					123-473B	**244.60**
1-1/4-12	4	5-3/4	1.429					123-474B	**244.60**
1-3/8-6	4	6-1/16	1.667					123-475B	**321.60**
1-3/8-12	4	6-1/16	1.667					123-476B	**321.60**
1-1/2-6	4	6-3/8	1.667					123-477B	**412.50**
1-1/2-12	4	6-3/8	1.667					123-478B	**412.50**

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Bright Code No.	Price $
M3 x .5	3	D3	2-3/8	.197	123-650B	**14.10**
M3.5 x .6	3	D4	2-3/8	.236	123-651B	**14.10**
M4 x .7	3	D4	2-3/8	.276	123-652B	**14.10**
M5 x .8	3	D4	2-3/8	.315	123-654B	**14.50**
M6 x 1	3	D5	2-1/2	.394	123-656B	**14.80**

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Bright Code No.	Price $
M7 x 1	3	D5	2-23/32	.394	123-657B	**20.20**
M8 x 1	3	D5	2-23/32	.492	123-659B	**20.20**
M8 x 1.25	3	D5	2-23/32	.492	123-658B	**20.20**
M10 x 1.25	3	D5	2-15/16	.591	123-661B	**23.40**
M10 x 1.5	3	D6	2-15/16	.591	123-660B	**23.40**
M12 x 1.25	3	D5	3-3/8	.689	123-663B	**40.10**
M12 x 1.75	3	D6	3-3/8	.689	123-662B	**40.10**
M14 x 1.5	3	D6	3-19/32	.787	123-665B	**46.70**
M14 x 2	3	D7	3-19/32	.787	123-667B	**46.70**
M16 x 1.5	3	D6	3-13/16	.787	123-668B	**50.80**
M16 x 2	3	D7	3-13/16	.787	123-669B	**50.80**
M18 x 1.5	4	D6	4-1/32	.984	123-670B	**86.60**
M18 x 2.5	4	D7	4-1/32	.984	123-671B	**86.60**
M20 x 1.5	4	D5	4-15/32	.984	123-672B	**104.80**
M20 x 2.5	4	D6	4-15/32	.984	123-673B	**104.80**
M22 x 1.5	4	D6	4-11/16	.984	123-674B	**123.10**
M22 x 2.5	4	D6	4-11/16	.984	123-675B	**123.10**
M24 x 1.5	4	D5	4-29/32	1.181	123-676B	**166.40**
M24 x 3	4	D7	4-29/32	1.181	123-677B	**166.40**
M27 x 1.5	4	D7	5-1/8	1.181	123-678B	**210.30**
M27 x 3	4	D7	5-1/8	1.181	123-679B	**210.30**
M30 x 1.5	4	D7	5-7/16	1.378	123-680B	**244.60**
M30 x 3.5	4	D7	5-7/16	1.378	123-681B	**244.60**



Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

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 35 HRC



HSSE-V3 | STEAM 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	123-055	**230.20**
1-1/8-8	4	H9	7.087	1.575	123-056	**259.00**
1-1/4-8	4	H9	7.087	1.575	123-079	**431.40**
1-3/8-8	5	H9	7.874	1.654	123-080	**584.70**
1-1/2-8	5	H9	7.874	1.654	123-057	**671.00**
1-3/4-8	6	H9	7.874	1.772	123-058	**1,782.50**
2-8	6	H10	8.858	1.969	123-059	**2,536.60**

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 35 HRC



HSSE-V3 | STEAM OXIDE | HOLE TYPE

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

• 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	.591	124-820	**14.10**
1/4-20	3	H3	3.150	.669	124-822	**16.70**
5/16-18	3	H3	3.543	.669	124-824	**20.40**
3/8-16	3	H3	3.937	.787	124-826	**25.90**
7/16-14	3	H3	3.937	.866	124-828	**32.50**
1/2-13	3	H3	4.331	.984	124-830	**37.10**
5/8-11	3	H3	4.331	1.063	124-832	**56.10**
3/4-10	3	H3	4.921	1.181	124-834	**94.10**

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 35 HRC



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

HSSE-V3 | STEAM 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	.417	124-800	**16.20**
1/4-20	3	H3	3.150	.500	124-802	**17.30**
5/16-18	3	H3	3.543	.556	124-804	**23.80**
3/8-16	3	H3	3.937	.625	124-806	**28.80**
7/16-14	3	H3	3.937	.714	124-808	**37.10**
1/2-13	3	H3	4.331	.769	124-810	**48.00**
5/8-11	4	H3	4.331	.909	124-812	**59.80**
3/4-10	4	H3	4.921	1.000	124-814	**102.10**

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 35 HRC



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 | STEAM OXIDE | LONG | 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"	.433	122-700	**16.10**
6-32	3	H3	4"	.512	122-702	**14.50**
8-32	3	H3	4"	.512	122-704	**15.80**
10-24	3	H3	6"	.512	122-706	**16.00**
10-32	3	H3	6"	.512	122-708	**16.00**
1/4-20	3	H3	6"	.630	122-710	**22.30**
1/4-28	3	H3	6"	.630	122-712	**22.30**
5/16-18	3	H3	6"	.748	122-714	**26.10**
5/16-24	3	H3	6"	.748	122-716	**26.10**
3/8-16	3	H3	6"	.748	122-718	**32.80**
3/8-24	3	H3	6"	.748	122-720	**32.80**
7/16-14	3	H3	6"	.866	122-722	**41.20**
7/16-20	3	H3	6"	.866	122-724	**41.20**
1/2-13	3	H3	6"	.945	122-726	**45.40**
1/2-20	3	H3	6"	.945	122-728	**45.40**
5/8-11	3	H3	6"	1.102	122-730	**68.00**
3/4-10	3	H3	6"	1.220	122-731	**107.80**
7/8-9	3	H4	6"	1.339	122-732	**144.70**
1-8	4	H4	6"	1.496	122-733	**186.60**

Cutting Conditions

Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series, 300 Series, 17-4, 15-5 AM286 400 Series	Annealed Annealed Annealed Annealed Annealed	<28 <28 <25 <25 <29	20-35 20-35 15-25 15-25 20-35
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
Aluminum	Cast, Wrought	-	-	30-90

Cutting Speed (fpm)

	10	20	30	40	50	60	70	80	90	100
Tool Steels		■	■							
Medium Carbon		■	■	■						
Alloyed High Carbon		■	■							
High Strength		■	■							
Titanium		■	■							
Aluminum				■	■	■	■	■	■	

Hardness (hrc)

	0	5	10	15	20	25	30	35	35	40
Tool Steels	■	■	■	■	■	■	■	■		
Medium Carbon	■	■	■	■	■	■	■			
Alloyed High Carbon	■	■	■	■	■	■	■	■		
High Strength	■	■	■	■	■	■	■	■		
Titanium	■	■	■	■	■	■	■	■		
Aluminum										

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 35 HRc



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.



• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	4"	.433	123-060	**18.40**
6-32	3	H3	4"	.512	123-061	**17.40**
8-32	3	H3	4"	.512	123-062	**18.10**
10-24	3	H3	4"	.512	123-063	**18.20**
10-32	3	H3	6"	.512	123-073	**18.20**
1/4-20	3	H3	6"	.630	123-064	**22.90**
1/4-28	3	H3	6"	.630	123-074	**22.90**
5/16-18	3	H3	6"	.748	123-065	**29.50**
5/16-24	3	H3	6"	.748	123-075	**29.50**
3/8-16	3	H3	6"	.748	123-066	**35.90**
3/8-24	3	H3	6"	.748	123-076	**35.90**
7/16-14	3	H3	6"	.866	123-067	**45.90**
7/16-20	3	H3	6"	.866	123-077	**45.90**
1/2-13	3	H3	6"	.945	123-068	**56.90**
1/2-20	3	H3	6"	.945	123-078	**56.90**
5/8-11	4	H3	6"	1.102	123-069	**71.90**
3/4-10	4	H3	6"	1.220	123-070	**116.20**
7/8-9	4	H4	6"	1.339	123-071	**159.10**
1-8	4	H4	6"	1.496	123-072	**207.20**

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 35 HRc





• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/16-27	4	2-1/8	.688	123-400	**25.10**
1/8-27	4	2-1/8	.750	123-402	**28.80**
1/4-18	4	2-7/16	1.063	123-404	**43.10**
3/8-18	4	2-9/16	1.063	123-406	**68.00**
1/2-14	4	3-1/8	1.375	123-410	**114.40**
3/4-14	5	3-1/4	1.375	123-412	**171.80**
1-11-1/2	5	3-3/4	1.750	123-414	**286.20**
1-1/4-11-1/2	5	4	1.750	123-416	**500.50**
1-1/2-11-1/2	5	4-1/4	1.750	123-418	**643.50**
2-11-1/2	5	4-1/2	1.750	123-420	**1,072.30**

Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

Orange Ring HSSE-V3 Spiral Point Taps - Inch



HSSE-V3% Vanadium
- Superior performance in stainless steels
- Up to 35 HRc



• 4.5 Pitch lead (Intermediate)

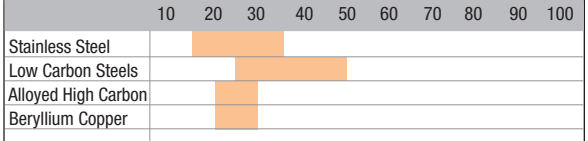
Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
2-56	2	H2	1-3/4	.433	124-926	**12.80**
3-48	2	H2	1-13/16	.512	124-927	**12.80**
4-40	2	H2	1-7/8	.433	124-930	**12.80**
6-32	3	H3	2	.512	124-931	**11.40**
8-32	3	H3	2-1/8	.512	124-932	**12.10**
10-24	3	H3	2-3/8	.512	124-933	**12.50**
10-32	3	H3	2-3/8	.512	124-945	**12.50**
1/4-20	3	H3	2-1/2	.630	124-934	**14.10**
1/4-28	3	H3	2-1/2	.630	124-946	**14.10**
5/16-18	3	H3	2-23/32	.748	124-935	**17.10**
5/16-24	3	H3	2-23/32	.748	124-947	**17.10**
3/8-16	3	H3	2-15/16	.748	124-936	**20.70**
3/8-24	3	H3	2-15/16	.748	124-948	**20.70**
7/16-14	3	H3	3-5/32	.866	124-937	**27.00**
7/16-20	3	H3	3-5/32	.866	124-949	**27.00**
1/2-13	3	H3	3-3/8	.945	124-938	**30.10**
1/2-20	3	H3	3-3/8	.945	124-950	**30.10**
5/8-11	3	H3	3-13/16	1.102	124-939	**47.30**
5/8-18	3	H3	3-13/16	1.102	124-951	**47.30**
3/4-10	3	H3	4-1/4	1.220	124-940	**79.20**
3/4-16	3	H3	4-1/4	1.220	124-952	**79.20**
7/8-9	3	H4	4-11/16	1.339	124-941	**110.50**
7/8-14	3	H4	4-11/16	1.339	124-953	**110.50**
1-8	3	H4	5-1/8	1.496	124-942	**148.40**
1-12	3	H4	5-1/8	1.496	124-954	**148.40**

Cutting Conditions

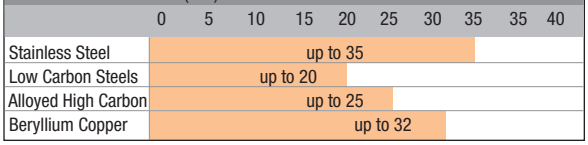
Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series,	Annealed	<28	20-35
	300 Series,	Annealed	<28	20-35
	17-4, 15-5	Annealed	<25	15-25
	AM286	Annealed	<25	15-25
	400 Series	Annealed	<29	20-35
	400 Series	Hardened	<35	15-20
	17-4PH, 15-5	Hardened	<35	15-20
	A286	Hardened	<35	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 Copper	4140, 4340		<32	20-30

Cutting Speed (fpm)



Hardness (hrc)



Orange Ring HSSE-V3 Spiral Point Taps - Metric



HSSE-V3% Vanadium
- Superior performance in stainless steels
- Up to 35 HRc



• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	3	D3	1-15/16	.433	124-955	**11.40**
M4 x .7	3	D4	2-1/8	.512	124-956	**12.10**
M5 x .8	3	D4	2-3/8	.512	124-957	**12.50**
M6 x 1	3	D5	2-1/2	.630	124-958	**14.10**
M8 x 1.25	3	D5	2-23/32	.748	124-959	**17.10**
M10 x 1.25	3	D5	2-15/16	.748	124-960	**20.70**
M10 x 1.5	3	D6	2-15/16	.748	124-961	**20.70**
M12 x 1.75	3	D6	3-3/8	.945	124-962	**30.10**
M14 x 2	3	D6	3-19/32	.984	124-897	**40.10**
M16 x 2	3	D7	3-13/16	1.102	124-899	**47.30**
M18 x 2.5	3	D7	4-1/32	1.102	124-901	**79.20**
M20 x 2.5	3	D6	4-1/4	1.220	124-903	**94.90**
M22 x 2.5	3	D6	4-11/16	1.339	124-905	**110.50**
M24 x 3	3	D7	4-29/32	1.339	124-907	**148.40**

Orange Ring HSSE-V3 Spiral Flute Taps - Metric



HSSE-V3% Vanadium
- Superior performance in stainless steels
- Up to 35 HRc



• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	3	D3	1-15/16	.197	124-988	**14.10**
M4 x .7	3	D4	2-1/8	.276	124-989	**14.10**
M5 x .8	3	D4	2-3/8	.315	124-990	**14.50**
M6 x 1	3	D5	2-1/2	.394	124-991	**14.80**
M8 x 1.25	3	D5	2-23/32	.492	124-992	**20.20**
M10 x 1.25	3	D5	2-15/16	.591	124-993	**23.40**
M10 x 1.5	3	D6	2-15/16	.591	124-994	**23.40**
M12 x 1.75	3	D6	3-3/8	.689	124-995	**40.10**
M14 x 2	3	D7	3-19/32	.787	124-996	**46.70**
M16 x 2	3	D7	3-13/16	.787	124-997	**50.80**
M18 x 2.5	4	D7	4-1/32	.984	124-998	**102.10**
M20 x 2.5	4	D6	4-15/32	.984	124-999	**104.80**
M22 x 2.5	4	D6	4-11/16	.984	124-943	**123.10**
M24 x 3	4	D7	4-29/32	1.181	124-944	**166.40**

Orange Ring HSSE-V3 Spiral Flute Taps - Inch



HSSE-V3% Vanadium
- Superior performance in stainless steels
- Up to 35 HRc



• 2.5 Pitch lead (Bottoming)

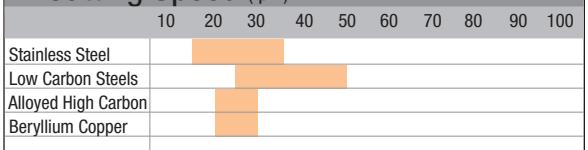
Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
2-56	2	H2	1-3/4	.433	124-928	**16.10**
3-48	2	H2	1-13/16	.512	124-929	**16.10**
4-40	2	H2	1-7/8	.250	124-965	**14.80**
6-32	3	H2	2	.313	124-966	**14.10**
8-32	3	H2	2-1/8	.313	124-967	**14.10**
10-24	3	H3	2-3/8	.417	124-968	**14.50**
10-32	3	H3	2-3/8	.417	124-979	**14.50**
1/4-20	3	H3	2-1/2	.500	124-969	**14.80**
1/4-28	3	H3	2-1/2	.500	124-980	**14.80**
5/16-18	3	H3	2-23/32	.556	124-970	**17.10**
5/16-24	3	H3	2-23/32	.556	124-981	**20.20**
3/8-16	3	H3	2-15/16	.625	124-971	**23.40**
3/8-24	3	H3	2-15/16	.625	124-982	**23.40**
7/16-14	3	H3	3-5/32	.714	124-972	**31.30**
7/16-20	3	H3	3-5/32	.714	124-964	**31.30**
1/2-13	3	H3	3-3/8	.769	124-973	**40.10**
1/2-20	3	H3	3-3/8	.769	124-983	**40.10**
9/16-12	4	H3	3-19/32	.880	124-974	**46.70**
5/8-11	4	H3	3-13/16	.909	124-975	**50.80**
5/8-18	4	H3	3-13/16	.909	124-984	**50.80**
3/4-10	4	H3	4-1/4	1.000	124-976	**86.60**
3/4-16	4	H3	4-1/4	1.000	124-985	**86.60**
7/8-9	4	H4	4-11/16	1.111	124-977	**123.10**
7/8-14	4	H4	4-11/16	1.111	124-986	**123.10**
1-8	4	H4	5-1/8	1.250	124-978	**166.40**
1-12	4	H4	5-1/8	1.250	124-987	**166.40**

Cutting Conditions

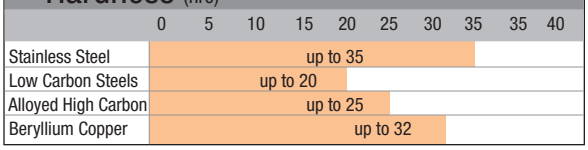
Materials

Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Stainless Steel	200 Series,	Annealed	<28	20-35
	300 Series,	Annealed	<28	20-35
	17-4, 15-5	Annealed	<25	15-25
	AM286	Annealed	<25	15-25
	400 Series	Annealed	<29	20-35
	400 Series	Hardened	<35	15-20
	17-4PH, 15-5	Hardened	<35	15-20
	A286	Hardened	<35	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 Copper	4140, 4340		<32	20-30

Cutting Speed (fpm)



Hardness (hrc)



Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

Red Ring P-HSS Spiral Point Taps - Inch

P-HSS - Powdered Metal
Powdered Metal taps offer superior toughness and lubricity and are made of premium-grade, super hard powder high speed steel. These taps have a special geometry for tougher applications.
• Used for heat resistant materials, titanium alloys as well as other high tensile steels and alloys including tool steel and nickel alloys
• Up to 48 HRc



• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	1-7/8	.433	124-100	**26.80**
5-40	3	H2	1-15/16	.433	124-105	**23.40**
6-32	3	H3	2	.512	124-110	**22.20**
8-32	3	H3	2-1/8	.512	124-115	**22.20**
10-24	3	H3	2-3/8	.512	124-120	**23.40**
10-32	3	H3	2-3/8	.512	124-125	**23.40**
1/4-20	3	H3	2-1/2	.630	124-130	**25.50**
1/4-28	3	H3	2-1/2	.630	124-135	**25.50**
5/16-18	3	H3	2-23/32	.748	124-140	**30.10**
5/16-24	3	H3	2-23/32	.748	124-145	**30.10**
3/8-16	3	H3	2-15/16	.748	124-150	**40.10**
3/8-24	3	H3	2-15/16	.748	124-155	**40.10**
7/16-14	3	H3	3-5/32	.866	124-160	**47.30**
7/16-20	3	H3	3-5/32	.866	124-165	**47.30**
1/2-13	3	H3	3-3/8	.945	124-170	**55.40**
1/2-20	3	H3	3-3/8	.945	124-175	**55.40**
5/8-11	3	H3	3-13/16	1.102	124-180	**113.20**
5/8-18	3	H3	3-13/16	1.102	124-185	**113.20**
3/4-10	4	H3	4-1/4	1.220	124-190	**179.70**
3/4-16	4	H3	4-1/4	1.220	124-195	**179.70**

Red Ring P-HSS Spiral Point Taps - Metric

P-HSS - Powdered Metal
Powdered Metal taps offer superior toughness and lubricity and are made of premium-grade, super hard powder high speed steel. These taps have a special geometry for tougher applications.
• Used for heat resistant materials, titanium alloys as well as other high tensile steels and alloys including tool steel and nickel alloys
• Up to 48 HRc



• 4.5 Pitch lead (Intermediate)

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	3	D3	1-15/16	.433	124-500	**22.20**
M4 x .7	3	D4	2-1/8	.512	124-505	**22.20**
M5 x .8	3	D4	2-3/8	.512	124-510	**23.40**
M6 x 1.0	3	D5	2-1/2	.630	124-515	**25.50**
M8 x 1.25	3	D5	2-23/32	.748	124-520	**30.10**
M10 x 1.25	3	D5	2-15/16	.748	124-525	**40.10**
M10 x 1.5	3	D6	2-15/16	.748	124-530	**40.10**
M12 x 1.75	3	D6	3-3/8	.945	124-535	**55.40**

Red Ring P-HSS Spiral Flute Taps

P-HSS - Powdered Metal
Powdered Metal taps offer superior toughness and lubricity and are made of premium-grade, super hard powder high speed steel. These taps have a special geometry for tougher applications.
• Used for heat resistant materials, titanium alloys as well as other high tensile steels and alloys including tool steel and nickel alloys
• Up to 48 HRc





• 2.5 Pitch lead (Bottoming)

Inch

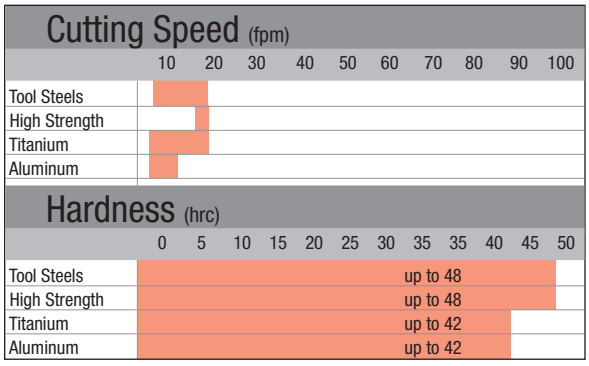
Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	1-7/8	.250	124-250	**26.80**
6-32	3	H3	2	.313	124-255	**22.20**
8-32	3	H3	2-1/8	.313	124-260	**22.20**
10-24	3	H3	2-3/8	.417	124-265	**23.40**
10-32	3	H3	2-3/8	.417	124-270	**23.40**
1/4-20	3	H3	2-1/2	.500	124-275	**25.50**
1/4-28	3	H3	2-1/2	.500	124-280	**25.50**
5/16-18	3	H3	2-23/32	.556	124-285	**30.10**
5/16-24	3	H3	2-23/32	.556	124-290	**30.10**
3/8-16	3	H3	2-15/16	.625	124-295	**40.10**
3/8-24	3	H3	2-15/16	.625	124-300	**40.10**
7/16-14	3	H3	3-5/32	.714	124-305	**47.30**
7/16-20	3	H3	3-5/32	.714	124-310	**47.30**
1/2-13	3	H3	3-3/8	.769	124-315	**55.40**
1/2-20	3	H3	3-3/8	.769	124-320	**55.40**
5/8-11	4	H3	3-13/16	.909	124-325	**113.20**
5/8-18	4	H3	3-13/16	.909	124-330	**113.20**
3/4-10	4	H3	4-1/4	1.000	124-335	**179.70**
3/4-16	4	H3	4-1/4	1.000	124-340	**179.70**

Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	3	D3	1-15/16	.197	124-550	**22.20**
M4 x .7	3	D4	2-1/8	.276	124-555	**22.20**
M5 x .8	3	D4	2-3/8	.315	124-560	**23.40**
M6 x 1.0	3	D5	2-1/2	.394	124-565	**25.50**
M8 x 1.25	3	D5	2-23/32	.492	124-570	**30.10**
M10 x 1.25	3	D5	2-15/16	.591	124-575	**40.10**
M10 x 1.5	3	D6	2-15/16	.591	124-580	**40.10**
M12 x 1.75	3	D6	3-3/8	.689	124-585	**55.40**

Cutting Conditions

Materials: Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Tool Steels	01, A-2,D-2 H-13,P-20	Hardened	<48	10-20
High Strength	4140, 4340 50100	Hardened	<48	15-20
Nickel Alloys	Inconel, Hastaloy, Waspaloy, Rene, Monel	Annealed/ Hardened	<42	5-20
Titanium	6 AL 4	Annealed/ Hardened	<42	8-15

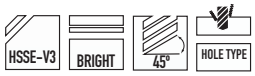


Low / Medium Carbon Steels | Alloy / High Carbon Steels | Stainless Steel | High Tensile

HSSE-V3 Spiral Flute Taps For Aluminum

Aluminum
High performance taps with special geometries & bright finish for Aluminum.
- Bright finish
- 45° Spiral flute





• 2.5 Pitch lead (Bottoming)

Inch

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	H2	1-7/8	.250	124-400	**14.80**
6-32	2	H3	2	.313	124-405	**14.10**
8-32	2	H3	2-1/8	.313	124-415	**14.10**
10-24	2	H3	2-3/8	.417	124-420	**14.50**
10-32	2	H3	2-3/8	.417	124-425	**14.50**
1/4-20	2	H3	2-1/2	.500	124-430	**14.80**
1/4-28	2	H3	2-1/2	.500	124-440	**14.80**
5/16-18	2	H3	2-23/32	.556	124-445	**20.20**
5/16-24	2	H3	2-23/32	.556	124-455	**20.20**
3/8-16	2	H3	2-15/16	.625	124-465	**23.40**
3/8-24	2	H3	2-15/16	.625	124-475	**23.40**

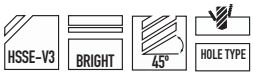
Metric

Tap	No. Flutes	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	2	D3	1-15/16	.197	124-600	**14.10**
M4 x .7	2	D4	2-1/8	.276	124-605	**14.10**
M5 x .8	2	D5	2-3/8	.315	124-610	**14.50**
M6 x 1.0	2	D5	2-1/2	.394	124-615	**14.80**
M8 x 1.25	2	D5	2-23/32	.492	124-620	**20.20**
M10 x 1.25	2	D5	2-15/16	.591	124-625	**23.40**
M10 x 1.5	2	D6	2-15/16	.591	124-630	**23.40**

HSSE-V3 S.T.I. 45º Spiral Flute Taps - Inch

STI taps combine special geometry & surface finish for tapping in Aluminum and other non-ferrous materials for screw thread insert applications.





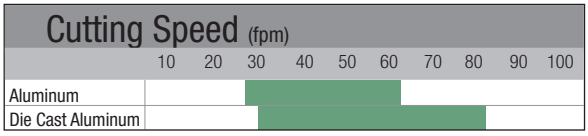
• 2.5 Pitch lead (Bottoming)

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	2	1-7/8	.250	124-050	**14.80**
6-32	2	2	.313	124-052	**14.10**
8-32	2	2-1/8	.313	124-054	**14.10**
10-24	2	2-3/8	.417	124-056	**14.50**
10-32	2	2-3/8	.417	124-058	**14.50**
1/4-20	2	2-1/2	.500	124-060	**14.80**
1/4-28	2	2-1/2	.500	124-062	**14.80**
5/16-18	2	2-23/32	.556	124-064	**20.20**
5/16-24	2	2-23/32	.556	124-066	**20.20**
3/8-16	2	2-15/16	.625	124-068	**23.40**
3/8-24	2	2-15/16	.625	124-070	**23.40**

Cutting Conditions

Materials — Main Group	Cutting Speed (FPM)
Aluminum	25-60
Die Cast Aluminum	30-80

Cutting Speed (fpm)



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
- Bright finish
- Premium High Speed Steel





Inch

Tap	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
4-40	H5	1-7/8	.560	124-650	**28.80**
6-32	H5	2	.480	124-655	**21.60**
8-32	H5	2-1/8	.500	124-660	**16.40**
10-24	H6	2-3/8	.640	124-665	**16.40**
10-32	H6	2-3/8	.640	124-670	**16.40**
1/4-20	H6	2-1/2	.830	124-675	**19.20**
1/4-28	H6	2-1/2	.830	124-680	**19.20**
5/16-18	H7	2-23/32	.930	124-685	**19.40**
5/16-24	H7	2-23/32	.930	124-690	**19.40**
3/8-16	H7	2-15/16	.980	124-695	**26.40**
3/8-24	H7	2-15/16	.980	124-700	**26.40**
1/2-13	H8	2-23/32	.930	124-705	**49.10**
1/2-20	H8	2-15/16	.980	124-710	**49.10**

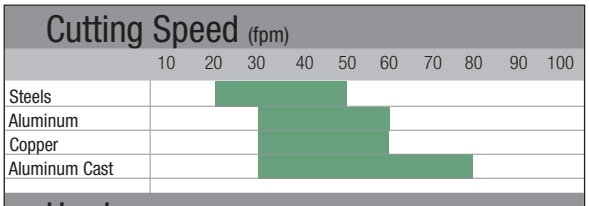
Metric

Tap	Thread Limits	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
M3 x .5	D5	1-15/16	.620	124-750	**21.60**
M4 x .7	D6	2-1/8	.500	124-755	**19.20**
M5 x .8	D7	2-3/8	.640	124-760	**19.20**
M6 x 1.0	D8	2-1/2	.830	124-765	**20.40**
M8 x 1.25	D9	2-23/32	.930	124-770	**22.00**
M10 x 1.5	D10	2-15/16	.980	124-775	**40.90**

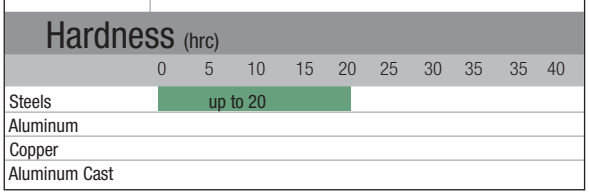
Cutting Conditions

Materials — Main Group	Sub-Group	Condition	Hardness (HRC)	Cutting Speed (FPM)
Steels	Sheet, Low/Medium Carbon and Stainless Steels	Hardened	<20	20-50
Aluminum	Pure/Low			30-60
Copper	Alloyed			30-60
Aluminum Cast Copper Alloys	Die Cast, Zinc Die Cast Brass, Bronze			30-80

Cutting Speed (fpm)



Hardness (hrc)



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	.688	123-032	**4.30**	123-034	**4.30**	123-036	**4.30**
8-32	4	H3	2-1/8	.750	123-038	**4.30**	123-040	**4.30**	123-042	**4.30**
10-24	4	H3	2-3/8	.875	123-044	**4.30**	123-046	**4.30**	123-048	**4.30**
10-32	4	H3	2-3/8	.875	123-104	**4.30**	123-106	**4.30**	123-108	**4.30**
12-24	4	H3	2-3/8	.938	123-050	**4.70**	123-052	**4.70**	123-054	**4.70**
1/4-20	4	H3	2-1/2	1.000	123-116	**5.40**	123-118	**5.40**	123-120	**5.40**
1/4-28	4	H3	2-1/2	1.000	123-200	**5.40**	123-202	**5.40**	123-204	**5.40**
5/16-18	4	H3	2-23/32	1.125	123-122	**7.00**	123-124	**7.00**	123-126	**7.00**
5/16-24	4	H3	2-23/32	1.125	123-206	**7.00**	123-208	**7.00**	123-210	**7.00**
3/8-16	4	H3	2-15/16	1.250	123-128	**9.10**	123-130	**9.10**	123-132	**9.10**
3/8-24	4	H3	2-15/16	1.250	123-212	**9.10**	123-214	**9.10**	123-216	**9.10**
7/16-14	4	H3	3-5/32	1.438	123-134	**10.80**	123-136	**10.80**	123-138	**10.80**
7/16-20	4	H3	3-5/32	1.438	123-218	**10.80**	123-220	**10.80**	123-222	**10.80**
1/2-13	4	H3	3-3/8	1.656	123-140	**13.00**	123-142	**13.00**	123-144	**13.00**
1/2-20	4	H3	3-3/8	1.656	123-224	**13.00**	123-226	**13.00**	123-228	**13.00**
9/16-12	4	H3	3-19/32	1.656	123-146	**18.10**	123-148	**18.10**	123-150	**18.10**
9/16-18	4	H3	3-19/32	1.656	123-230	**18.10**	123-232	**18.10**	123-234	**18.10**
5/8-11	4	H3	3-13/16	1.813	123-152	**21.60**	123-154	**21.60**	123-156	**21.60**
5/8-18	4	H3	3-13/16	1.813	123-236	**21.60**	123-238	**21.60**	123-240	**21.60**
3/4-10	4	H3	4-1/4	2.000	123-158	**28.80**	123-160	**28.80**	123-162	**28.80**
3/4-16	4	H3	4-1/4	2.000	123-242	**28.80**	123-244	**28.80**	123-246	**28.80**
7/8-9	4	H4	4-11/16	2.219	123-164	**39.50**	123-166	**39.50**	123-168	**39.50**
7/8-14	4	H4	4-11/16	2.219	123-248	**39.50**	123-250	**39.50**	123-252	**39.50**
1-8	4	H4	5-1/8	2.500	123-170	**57.40**	123-172	**57.40**	123-174	**57.40**
1-12	4	H4	5-1/8	2.500	123-254	**57.40**	123-256	**57.40**	123-258	**57.40**
1-14	4	H4	5-1/8	2.500	123-260	**57.40**	123-262	**57.40**	123-264	**57.40**
1-1/8-7	4	H4	5-7/16	2.562	123-176	**71.70**	123-178	**71.70**	123-180	**71.70**
1-1/8-12	4	H4	5-7/16	2.562	123-266	**71.70**	123-268	**71.70**	123-270	**71.70**
1-1/4-7	4	H4	5-3/4	2.562	123-272	**86.00**	123-274	**86.00**	123-276	**86.00**
1-1/4-12	6	H4	5-3/4	2.562	123-536	**86.00**	123-538	**86.00**	123-540	**86.00**
1-3/8-6	4	H4	6-1/16	3.000	123-278	**107.40**	123-280	**107.40**	123-282	**107.40**
1-3/8-12	6	H4	6-1/16	3.000	123-542	**107.40**	123-544	**107.40**	123-546	**107.40**
1-1/2-6	4	H4	6-3/8	3.000	123-284	**128.90**	123-286	**128.90**	123-288	**128.90**
1-1/2-12	6	H4	6-3/8	3.000	123-548	**128.90**	123-550	**128.90**	123-552	**128.90**

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 .5	3	D3	1-15/16	5/8	123-479	**8.00**	123-480	**8.00**	123-481	**8.00**
M4 x 7	3	D4	2-1/8	3/4	123-496	**5.80**	123-482	**5.80**	123-483	**5.80**
M5 x .8	3	D4	2-3/8	7/8	123-497	**5.90**	123-484	**5.90**	123-485	**5.90**
M6 x 1.0	4	D5	2-1/2	1	123-498	**7.30**	123-486	**7.30**	123-487	**7.30**
M8 x 1.25	4	D5	2-23/32	1-1/8	123-499	**8.10**	123-488	**8.10**	123-489	**8.10**
M10 x 1.25	4	D5	2-15/16	1-1/4	123-500	**10.30**	123-490	**10.30**	123-491	**10.30**
M10 x 1.5	4	D6	2-15/16	1-1/4	123-501	**10.30**	123-492	**10.30**	123-493	**10.30**
M12 x 1.75	4	D6	3-3/8	1-21/32	123-503	**17.30**	123-494	**17.30**	123-495	**17.30**
M14 x 2.0	4	D7	3-19/32	1-21/32	123-081	**18.10**	123-082	**18.10**	123-083	**18.10**
M16 x 2.0	4	D7	3-13/16	1-13/16	123-084	**21.60**	123-085	**21.60**	123-086	**21.60**
M18 x 2.5	4	D7	4-1/32	1-13/16	123-087	**28.80**	123-088	**28.80**	123-089	**28.80**
M20 x 2.5	4	D6	4-15/32	2	123-090	**35.90**	123-091	**35.90**	123-092	**35.90**
M22 x 2.5	4	D6	4-11/16	2-7/32	123-093	**39.50**	123-094	**39.50**	123-095	**39.50**
M24 x 3.0	4	D7	4-29/32	2-7/32	123-096	**50.20**	123-098	**50.20**	123-097	**50.20**

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	.688	123-430	**20.00**
1/8-27	4	2-1/8	.750	123-432	**22.70**
1/4-18	4	2-7/16	1.063	123-434	**34.00**
3/8-18	4	2-9/16	1.063	123-436	**53.80**
1/2-14	4	3-1/8	1.375	123-438	**90.60**
3/4-14	5	3-1/4	1.375	123-440	**135.80**
1-11-1/2	5	3-3/4	1.750	123-442	**226.20**
1-1/4-11-1/2	5	4	1.750	123-444	**395.70**
1-1/2-11-1/2	7	4-1/4	1.750	123-446	**508.70**
2-11-1/2	7	4-1/2	1.750	123-448	**847.80**

HSS 6" OAL NPT Taps

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

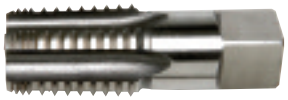


HSS BRIGHT

Tap	No. Flutes	Overall Length (in.)	Thread Length (in.)	Code No.	Price $
1/16-27	4	6"	.688	122-430	**36.00**
1/4-18	4	6"	1.063	122-434	**89.90**
3/8-18	4	6"	1.063	122-436	**146.50**
1/2-14	4	6"	1.375	122-438	**212.90**

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	.750	123-700	**29.50**
1/4-18	4	2-7/16	1.063	123-702	**44.20**
3/8-18	4	2-9/16	1.063	123-704	**69.90**
1/2-14	4	3-1/8	1.375	123-706	**117.60**
3/4-14	5	3-1/4	1.375	123-708	**176.40**
1-11-1/2	5	3-3/4	1.750	123-710	**294.00**

QUALITY IMPORT

HSS Ground Taps

- High Speed hand taps
- High Speed spiral point
- 30° slow spiral ground thread taps

hss



Tap	TPI NC	TPI NF	Taper Code No.	Price $	Plug Code No.	Price $	Bottom Code No.	Price $	Spiral Point Code No.	Price $	Spiral Flute Code No.	Price $
0		80	113-056	**12.80**	113-058	**12.80**	113-060	**12.80**	113-322	**15.90**		
1	64		113-002	**12.00**	113-004	**12.00**	113-006	**12.00**	113-290	**14.20**		
1		72	113-062	**12.00**	113-064	**12.00**	113-066	**12.00**	113-324	**14.20**		
2	56		113-008	**11.30**	113-010	**11.30**	113-012	**11.30**	113-292	**12.00**		
2		64	113-068	**11.30**	113-070	**11.30**	113-072	**11.30**	113-326	**13.60**		
3	48		113-014	**7.90**	113-016	**7.90**	113-018	**7.90**	113-294	**9.70**	113-358	**11.30**
3		56	113-074	**9.00**	113-076	**9.40**	113-078	**8.90**	113-328	**10.70**	113-360	**12.50**
4	40		113-020	**5.50**	113-022	**5.50**	113-024	**5.50**	113-296	**7.80**	113-362	**9.10**
4		48	113-080	**7.10**	113-082	**7.10**	113-084	**7.10**	113-330	**9.00**	113-354	**9.00**
5	40		113-026	**6.70**	113-028	**6.70**	113-030	**6.70**	113-298	**7.80**	113-364	**9.00**
5		44	113-086	**7.10**	113-088	**7.10**	113-090	**7.10**	113-332	**9.00**	113-355	**10.40**
6	32		113-032	**2.70**	113-034	**2.70**	113-036	**2.70**	113-300	**3.60**	113-366	**7.70**
6		40	113-092	**5.40**	113-094	**5.40**	113-096	**5.40**	113-334	**7.50**	113-356	**8.50**
8	32		113-038	**3.00**	113-040	**3.00**	113-042	**3.00**	113-302	**3.90**	113-368	**7.70**
8		36	113-098	**5.40**	113-100	**5.40**	113-102	**5.40**	113-336	**3.90**	113-357	**8.50**
10	24		113-044	**3.30**	113-046	**3.30**	113-048	**3.30**	113-304	**6.00**	113-370	**7.70**
10		32	113-104	**3.30**	113-106	**3.30**	113-108	**3.30**	113-338	**5.90**	113-382	**7.70**
12	24		113-050	**3.30**	113-052	**3.30**	113-054	**3.30**	113-306	**7.50**	113-371	**8.50**
12		28	113-110	**6.30**	113-112	**6.30**	113-114	**6.30**	113-340	**7.50**	113-383	**8.50**
1/4	20		113-116	**4.40**	113-118	**5.10**	113-120	**4.40**	113-308	**6.00**	113-372	**7.70**
1/4		28	113-200	**5.70**	113-202	**5.70**	113-204	**5.70**	113-342	**5.70**	113-384	**7.70**
5/16	18		113-122	**5.70**	113-124	**5.70**	113-126	**5.70**	113-310	**5.80**	113-374	**8.10**
5/16		24	113-206	**5.80**	113-208	**5.80**	113-210	**5.80**	113-344	**7.20**	113-386	**8.10**
3/8	16		113-128	**7.20**	113-130	**7.20**	113-132	**7.20**	113-312	**8.00**	113-376	**9.70**
3/8		24	113-212	**7.70**	113-214	**7.80**	113-216	**7.80**	113-346	**9.00**	113-388	**10.40**
7/16	14		113-134	**8.00**	113-136	**8.00**	113-138	**8.00**	113-314	**14.20**	113-378	**16.30**
7/16		20	113-218	**13.50**	113-220	**13.50**	113-222	**13.50**	113-348	**14.20**	113-390	**16.30**
1/2	13		113-140	**9.90**	113-142	**9.90**	113-144	**9.90**	113-316	**10.00**	113-380	**14.40**
1/2		20	113-224	**9.90**	113-226	**9.90**	113-228	**9.90**	113-350	**16.80**	113-392	**19.50**
9/16	12		113-146	**23.40**	113-148	**23.40**	113-150	**23.40**	113-317	**23.10**		
9/16		18	113-230	**23.40**	113-232	**23.40**	113-234	**23.40**	113-351	**23.10**		
5/8	11		113-152	**15.30**	113-154	**14.80**	113-156	**15.30**	113-318	**15.30**	113-452	**36.80**
5/8		18	113-236	**14.00**	113-238	**13.70**	113-240	**14.00**	113-352	**31.90**	113-462	**36.80**
3/4	10		113-158	**21.50**	113-160	**21.50**	113-162	**21.50**	113-320	**22.30**	113-454	**51.90**
3/4		16	113-242	**21.50**	113-244	**21.50**	113-246	**21.50**	113-353	**62.50**	113-464	**51.90**
7/8	9		113-164	**24.90**	113-166	**24.90**	113-168	**24.90**	113-321	**68.20**		
7/8		14	113-248	**54.10**	113-250	**54.10**	113-252	**54.10**	113-359	**68.20**		
1	8		113-170	**72.00**	113-172	**72.00**	113-174	**72.00**	113-323	**83.60**		
1		12	113-254	**71.50**	113-256	**72.00**	113-258	**71.50**	113-361	**91.90**		
1		14	113-260	**74.50**	113-262	**74.50**	113-264	**74.50**	113-363	**91.90**		
1-1/8	7		113-176	**115.50**	113-178	**115.50**	113-180	**115.50**				
1-1/8		12	113-266	**106.90**	113-268	**124.60**	113-270	**106.90**				
1-1/4	7		113-182	**133.60**	113-184	**152.30**	113-186	**133.60**				
1-1/4		12	113-272	**133.60**	113-274	**154.60**	113-276	**133.60**				
1-3/8	6		113-188	**191.50**	113-190	**191.50**	113-192	**191.50**				
1-3/8		12	113-278	**193.90**	113-280	**193.90**	113-282	**193.90**				
1-1/2	6		113-194	**221.40**	113-196	**221.40**	113-198	**221.40**				
1-1/2		12	113-284	**226.00**	113-286	**226.00**	113-288	**226.00**				

HSS NPT Taps

hss



Tap	No. Flutes	Thread Length (in.)	Overall Length (in.)	Code No.	Price $
1/16-27	4	11/16	2-1/8	113-430	**7.80**
1/8-27	4	3/4	2-1/8	113-432	**9.20**
1/8-27*	4	3/4	2-1/8	113-433*	**6.10**
1/4-18	4	1-1/16	2-7/16	113-434	**13.30**
3/8-18	4	1-1/16	2-9/16	113-436	**13.50**
1/2-14	4	1-3/8	3-1/8	113-438	**21.90**
3/4-14	5	1-3/8	3-1/4	113-440	**33.70**
1-11-1/2	5	1-3/4	3-3/4	113-442	**58.40**
1-1/4-11-1/2	5	1-3/4	4	113-444	**92.40**
1-1/2-11-1/2	7	1-3/4	4-1/4	113-446	**133.30**
2-11-1/2	7	1-3/4	4-1/2	113-448	**239.20**

* Small Shank

Metric Spiral Point Taps

• High Speed spiral point



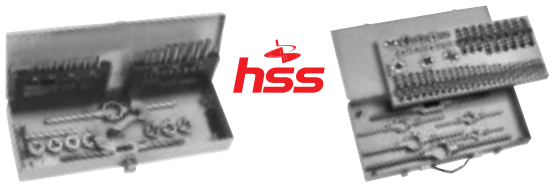
Tap	Code No.	Price $
M1.6 x .35	113-500	**26.70**
M1.8 x .35	113-501	**26.70**
M2 x .4	113-502	**22.30**
M2.2 x .45	113-503	**16.10**
M2.5 x .45	113-504	**17.90**
M3 x .5	113-505	**13.90**
M3.5 x .6	113-506	**13.90**
M4 x .7	113-507	**11.60**
M4.5 x .75	113-508	**13.90**
M5 x .80	113-509	**11.60**
M6 x 1.0	113-510	**11.60**
M6.3 x 1.0	113-511	**12.60**
M7 x 1.0	113-512	**12.60**
M8 x 1.25	113-513	**12.60**
M8 x 1.0	113-514	**13.90**
M10 x 1.5	113-515	**17.40**
M10 x 1.25	113-516	**19.10**
M12 x 1.75	113-517	**29.20**
M12 x 1.25	113-518	**32.30**
M14 x 2.0	113-519	**43.10**
M14 x 1.5	113-520	**43.10**
M16 x 2.0	113-521	**49.60**
M18 x 2.5	113-522	**64.40**
M20 x 2.5	113-523	**71.90**

Tap & Die Sets - Wooden Case



Description	Code No.	Price $
1/4" - 1/2" **NC**, 2 taps per size (Set No. 521)	113-620	**840.80**
1/4" - 1/2" **NF**, 2 taps per size (Set No. 521)	113-622	**850.60**
1/4" - 1/2" **NC**, 3 taps per size (Set No. 521)	113-625	**866.00**
1/4" - 1/2" **NF**, 3 taps per size (Set No. 521)	113-627	**882.20**
Sets consist of the following: • 1/4", 5/16", 3/8", 7/16", 1/2" taps and dies • 1" and 1-1/2" die stocks • #1 and #3 tap wrenches		
1/4" - 3/4" **NC**, 2 taps per size (Set No. 527)	113-630	**982.00**
1/4" - 3/4" **NF**, 2 taps per size (Set No. 527)	113-633	**989.40**
1/4" - 3/4" **NC**, 3 taps per size (Set No. 527)	113-635	**714.30**
1/4" - 3/4" **NF**, 3 taps per size (Set No. 527)	113-637	**1,046.20**
Sets consist of the following: • 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4" taps and dies • 1" and 1-1/2" die stocks • #1 and #3 tap wrenches		
1/4" - 3/4" **NC**, 2 taps per size (Set No. 5)	113-610	**646.00**
1/4" - 3/4" **NF**, 2 taps per size (Set No. 5)	113-612	**653.70**
Sets consists of the following: • 1/4", 5/16", 3/8", 7/16", 1/2", 9/16", 5/8", 3/4" taps & dies • 1" and 1-1/2" dies stocks • #1 and #3 tap wrenches		
1/4" - 1" **NC**, 2 taps per size (Set No. 533)	113-640	**1,308.30**
1/4" - 1" **NF**, 2 taps per size (Set No. 533)	113-643	**1,404.70**
1/4" - 1" **NC**, 3 taps per size (Set No. 533)	113-645	**1,428.80**
1/4" - 1" **NF**, 3 taps per size (Set No. 533)	113-647	**1,574.20**
Sets consist of the following: • 1/4", 5/16", 3/8", 7/16", 1/2", 5/8", 3/4", 1" taps and dies • 1" and 1-1/2" die stocks • #1 and #3 tap wrenches		

Tap & Die Sets - Metal Case



Description	Code No.	Price $
3 - 12 mm, 3 taps per size (Set No. P.V. 12) 29 piece set consists of the following: • 3, 4, 6, 8, 10, 12mm taps (Taper, Plug, Bottom) • 3, 4, 6, 8, 10, 12mm dies • 1 bar type, 1 ratchet type tap wrench • 1 die stock, 1 screw pitch gauge, 1 screw driver	113-600	**324.00**
3-20 mm, 3 taps per size (Set No. P.V. 2) 52 piece set consists of the following: • 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20mm taps (T, P, B) • 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20mm dies • 2 bar type, 2 ratchet type tap wrenches • 2 die stocks, 1 screw pitch gauge, 1 screw driver	113-605	**984.90**

HSS Hand Tap Sets

Includes: 1 pc ea. Taper, Plug & Bottoming in a convenient plastic case.



Tap	TPI	Code No.	Pric000e $
6	32	113-037	**8.10**
8	32	113-043	**8.10**
10	24	113-049	**8.10**
10	32	113-109	**8.10**
12	24	113-055	**8.50**
12	28	113-115	**8.50**
1/4	20	113-121	**12.80**
1/4	28	113-205	**12.80**
5/16	18	113-127	**16.30**
5/16	24	113-211	**16.60**
3/8	16	113-133	**21.90**
3/8	24	113-217	**22.90**
7/16	14	113-139	**23.70**
7/16	20	113-223	**23.70**
1/2	13	113-145	**47.10**
1/2	20	113-229	**47.20**

Blue Ring Tap & Drill Set

Featuring Blue Ring Taps
For general ductile materials including:
• Low and Medium Carbon Steel
• Brass
• Copper and Cast Iron
• Aluminum



Premium HSS Drills with 135º split points

Comes in a metal case.

Description	Code No.	Price $
Blue Ring tap and drill set Set consists of the following **Taps** - 6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13 **Drills** - #36, #29, #25, #21, #7, F, 5/16, U, 27/64	113-721	**234.80**
Metric Blue Ring Spiral Point tap and drill set Set consists of the following **Taps** - M2.5 to M12 **Drills** - #46, 40, 33, 30, 19, 9, H, Q	113-658	**317.70**

Yellow Ring Tap & HSS TiAlN Tip Drill Set

Featuring:
Yellow Ring Taps
For tough materials including:
• High Carbon Steel • High Alloy • Titanium • Aluminum

HSS TiAlN Tip Jobber Drills
• Over 50% more holes drilled than TiN tipped
• 118º split point

Comes in metal case.



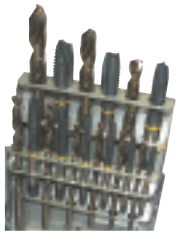
Description	Code No.	Price $
Yellow Ring Tap and HSS TiAlN Tip Drill Set Set consists of the following **Taps** - 6-32, 8-32, 10-24, 10-32, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13 **Drills** - #36, #29, #25, #21, #7, F, 5/16, U, 27/64	113-670	**220.20**

Yellow Ring Tap & Drill Set

Featuring Yellow Ring Taps
For tough materials including:
• High Carbon Steel
• High Alloy
• Titanium
• Aluminum

Premium HSS Drills with 135º split points

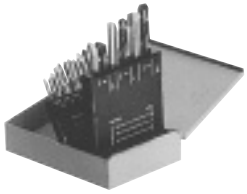
Comes in metal case.



Description	Code No.	Price $
N.C. Yellow Ring Spiral Point tap and drill set Set consists of the following **Taps** - 6-32 to 1/2-13 **Drills** - #36, #29, #25, #21, #7, F, 5/16, U, 27/64	113-651	**220.20**
N.F. Yellow Ring Spiral Point tap and drill set Set consists of the following **Taps** - 6-40 to 1/2-20 **Drills** - #36, #29, #25, #21, #7, F, 5/16, U, 27/64	113-656	**220.20**
Metric Yellow Ring Spiral Point tap and drill set Set consists of the following **Taps** - M2.5 to M12 **Drills** - #46, 40, 33, 30, 19, 9, H, Q	113-657	**180.30**

HSS Tap & Drill Sets

• High Speed Steel taps and drills
• Metal case



Description	Code No.	Price $
NC taps #6-1/2 NC tap and drill set Set consists of the following taps and drills plus metal box **Taps** - 6-32, 8-32, 10-24, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13 **Drills** - #36, #29, #7, F, 5/16, U, 27/64	113-650	**123.60**
NF taps #6-1/2 NF tap and drill set Set consists of the following taps and drills plus metal box **Taps** - 6-40, 8-36, 10-32, 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20 **Drills** - #33, #29, #21, #3, #1, Q, 25/64, 29/64	113-655	**241.80**

Adjustable Tap Wrench

MADE IN GERMANY



Tool No.	For Tap Size	Square	Length (mm)	Code No.	Price $
130/0	M1-8 1/16-1/4	2.0-5.5	130	113-717	**11.90**
130/1	M1-10 1/16-3/8 NPT-1/8	2.0-6.3	188	113-720	**12.90**
130/2	M4-12 5/32-1/2 NPT-1/8	3.0-9.0	280	113-725	**20.80**
130/3	M5-20 7/32-3/4 NPT-1/8-1/2	4.9-12	380	113-730	**37.00**
130/4	M11-27 7/16-1" NPT-1/4-3/4	5.5-16	500	113-735	**70.00**
130/5L	M13-32 1/2-1-1/4 NPT-1/4-1	7-20	700	113-740	**108.80**

Adjustable Tap Wrench - 'T' Ratchet Type

MADE IN GERMANY



Tool No.	For Tap Size	Length (mm)	Code No.	Price $
100/1	M3-10 1/8 - 3/8	85	113-700	**27.30**
100/2	M5-12 7/32 - 1/2	100	113-705	**33.10**
100/10	M3-10 1/8 - 3/8	250	113-710	**44.70**
100/20	M5-12 7/32 - 1/2	300	113-715	**54.50**

Starrett

93 Series Tap Wrenches

• For holding taps, drills, reamers and small tools to be turned by hand
• Body is centered for use on lathe centres or drilling machines to start tap straight
• Jaws conform to the tool being held and are heat treated
• Wrenches have sliding handle which is frictionally held
• Designed to hold square shanks



Cap. Tap Size	Cap. Square Shank	Body Length	Starrett No.	Sowa Code No.	List $
1/16-3/16"	1/16-5/32"	2"	93A	629-100	**44.00**
7/32-7/16"	5/32-1/4"	2 1/2"	93B	629-101	**46.20**
1/4-1/2"	3/16-5/16	3 1/2"	93C	629-102	**60.50**

Screw Extractors

Spiral Flute/ Straight Flute

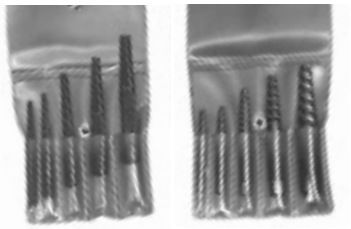
- For Removing broken screws, studs, pipe fittings, etc., without damaging the threads.



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	-	110-950	**4.30**	110-962	**3.20**
2	7/64	1/4 - 5/16	-	110-951	**4.70**	110-963	**3.40**
3	5/32	5/16 - 7/16	-	110-952	**5.70**	110-964	**4.70**
4	7/32	7/16 - 9/16	1/8	110-953	**5.80**	110-965	**4.80**
5	17/64	9/16 - 3/4	1/4	110-954	**7.20**	110-966	**5.20**
6	13/32	3/4 - 1	3/8	110-955	**16.10**		
7	17/32	1 - 1-3/8	1/2	110-956	**25.90**		
8	13/16	1-3/8 - 1-3/4	3/4	110-957	**35.20**		
9	1-1/16	1-3/4 - 2-1/8	1	110-958	**60.80**		
10	1-9/32	2-1/8 - 2-1/2	1-1/4	110-959	**83.50**		
11	1-17/32	2-1/2 - 3	1-1/2	110-960	**126.80**		
12	1-15/16	3 - 3-1/2	2	110-961	**201.60**		

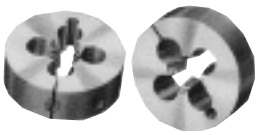
Screw Extractor Sets

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



Description	Spiral Flute Code No.	Price $	Straight Flute Code No.	Price $
5 pc set incl. #1,2,3,4,5	110-967	**29.70**	110-969	**21.30**
4 pc set incl. #6,7,8,9	110-968	**137.10**		
9 pc set incl. #1 thru 9	110-970	**163.30**		

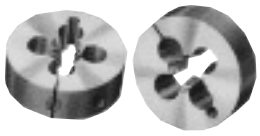
HSS Adjustable Round Split Dies - Inch



Coarse Threads

Size	TPI	Code No.	Price $
13/16" O.D.			
2	56	140-310	**9.70**
3	48	140-315	**17.50**
4	40	140-320	**17.50**
5	40	140-325	**17.50**
6	32	140-330	**17.50**
8	32	140-335	**17.50**
10	24	140-340	**17.50**
12	24	140-345	**17.50**
1/4	20	140-350	**17.50**
5/16	18	140-355	**17.50**
1" O.D.			
6	32	140-360	**21.70**
8	32	140-365	**21.70**
10	24	140-370	**21.70**
12	24	140-375	**21.70**
1/4	20	140-380	**21.70**
5/16	18	140-385	**21.70**
3/8	16	140-390	**21.70**
7/16	14	140-395	**21.70**
1/2	13	140-400	**21.70**
1-1/2" O.D.			
1/4	20	140-405	**36.60**
5/16	18	140-410	**36.60**
3/8	16	140-415	**36.60**
7/16	14	140-420	**36.60**
1/2	13	140-425	**36.60**
9/16	12	140-430	**36.60**
5/8	11	140-435	**36.60**
3/4	10	140-437	**36.60**
2" O.D.			
5/8	11	140-440	**62.50**
3/4	10	140-445	**62.50**
7/8	9	140-450	**62.50**
1	8	140-455	**62.50**

HSS Adjustable Round Split Dies - Inch



Fine Threads

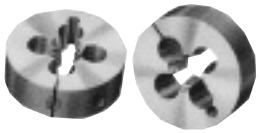
Size	TPI	Code No.	Price $
13/16" O.D.			
0	80	140-460	**50.80**
2	64	140-470	**17.50**
4	48	140-480	**17.50**
5	44	140-485	**17.50**
6	40	140-490	**17.50**
8	36	140-495	**17.50**
10	32	140-500	**17.50**
12	28	140-505	**17.50**
1/4	28	140-510	**17.50**
5/16	24	140-515	**17.50**
1" O.D.			
6	40	140-520	**21.70**
8	36	140-525	**21.70**
10	32	140-530	**21.70**
12	28	140-535	**21.70**
1/4	28	140-540	**21.70**
5/16	24	140-545	**21.70**
3/8	24	140-550	**21.70**
7/16	20	140-555	**21.70**
1/2	20	140-560	**21.70**
1-1/2" O.D.			
1/4	28	140-565	**36.60**
5/16	24	140-570	**36.60**
3/8	24	140-575	**36.60**
7/16	20	140-580	**36.60**
1/2	20	140-585	**36.60**
9/16	18	140-590	**36.60**
5/8	18	140-595	**36.60**
3/4	16	140-597	**36.60**
2" O.D.			
5/8	18	140-600	**62.50**
3/4	16	140-605	**62.50**
7/8	14	140-610	**62.50**
1	14	140-615	**62.50**

QUALITY IMPORT

hss

HSS Adjustable Round Split Dies - Metric

HSS Metric ISO Threads/Right Hand
- High Speed Steel
- Outside diameter in inches



Coarse Threads

Size (mm)	Pitch (mm)	Code No.	Price $
13/16" O.D.			
M1	.25	140-700	**25.90**
M1.2	.25	140-701	**39.40**
M1.8	.35	140-703	**39.40**
M2.5	.45	140-705	**50.80**
M4	.70	140-706	**25.90**
M4	.75	140-707	**25.90**
M5	.8	140-708	**25.90**
1" O.D.			
M2	.4	140-709	**28.30**
M2.2	.45	140-710	**49.60**
M2.3	.4	140-711	**49.60**
M2.5	.45	140-712	**45.40**
M2.6	.45	140-713	**49.60**
M3	.5	140-714	**29.70**
M3.5	.5	140-715	**29.70**
M3.5	.6	140-716	**29.70**
M4	.7	140-717	**29.70**
M4.5	.75	140-718	**29.70**
M5	1	140-719	**29.70**
M5	.8	140-720	**29.70**
M5.5	.9	140-721	**29.70**
M6	1	140-722	**29.70**
M6	1.25	140-723	**29.70**
M6.3	1	140-724	**29.70**
M7	1	140-725	**29.70**
M8	1.25	140-726	**29.70**
M9	1.25	140-727	**29.70**
M10	1.5	140-728	**29.70**
M11	1.5	140-729	**29.70**
1-1/2" O.D.			
M9	1.25	140-730	**46.70**
M10	1.5	140-731	**46.70**
M11	1.5	140-732	**46.70**
M12	1.75	140-733	**46.70**
M14	2	140-734	**46.70**
M16	2	140-735	**46.70**
M18	2.5	140-736	**46.70**
M20	2.5	140-737	**46.70**
2" O.D.			
M18	2.5	140-738	**88.60**
M20	2.5	140-739	**88.60**
M22	2.5	140-740	**88.60**
M24	3	140-741	**88.60**
M27	3	140-742	**88.60**
M30	3.5	140-743	**88.60**
2-1/2" O.D.			
M36	4	140-744	**138.90**
3" O.D.			
M42	4.5	140-745	**227.20**
M45	4.50	140-746	**216.80**
M48	5	140-747	**227.20**

QUALITY IMPORT

hss

HSS Adjustable Round Split Dies - Metric

Fine Threads

Size (mm)	Pitch (mm)	Code No.	Price $
13/16" O.D.			
M4	.5	140-748	**25.90**
1" O.D.			
M4	.5	140-749	**29.70**
M4.5	.5	140-750	**29.70**
M5	.5	140-751	**29.70**
M6	.75	140-752	**29.70**
M6	.5	140-753	**29.70**
M7	.75	140-754	**29.70**
M8	1	140-755	**29.70**
M8	.75	140-756	**29.70**
M10	1.25	140-757	**29.70**
M10	1	140-758	**29.70**
M10	.75	140-759	**29.70**
M12	1	140-760	**29.70**
1-1/2" O.D.			
M9	1	140-761	**46.70**
M10	1.25	140-762	**46.70**
M10	1	140-763	**46.70**
M10	.75	140-764	**46.70**
M11	1	140-765	**46.70**
M12	1.5	140-766	**46.70**
M12	1.25	140-767	**46.70**
M14	1.5	140-768	**46.70**
M14	1.25	140-769	**46.70**
M14	1	140-770	**46.70**
M15	1.5	140-771	**46.70**
M16	1.5	140-772	**46.70**
M16	1	140-773	**46.70**
M17	1.5	140-774	**46.70**
M18	2	140-775	**46.70**
M18	1.5	140-776	**46.70**
M18	1	140-777	**46.70**
M20	1.5	140-778	**46.70**
M20	1	140-779	**46.70**
2" O.D.			
M20	2	140-780	**88.60**
M20	1.5	140-781	**88.60**
M20	1	140-782	**88.60**
M22	2	140-783	**88.60**
M22	1.5	140-784	**88.60**
M22	1	140-785	**88.60**
M24	2	140-786	**88.60**
M24	1.5	140-787	**88.60**
M26	1.5	140-788	**88.60**
M27	2	140-789	**88.60**
M28	1.5	140-790	**88.60**
M30	2	140-791	**88.60**
M30	1.5	140-792	**88.60**
2-1/2" O.D.			
M33	2	140-793	**138.90**
3" O.D.			
M21	3	140-794	**216.80**

Die Stocks

MADE IN GERMANY



Tool No.	(mm)	(in.)	Length (mm)	Code No.	Price $
13/16	20.6 x 6.35	13/16 x 1/4	200	113-750	**10.30**
1	25.4 x 9.5	1 x 3/8	224	113-755	**10.50**
1 1/2	38.1 x 12.7	1-1/2 x 1/2	315	113-760	**28.60**
2	50.8 x 15.9	2 x 5/8	560	113-765	**45.50**

Hex Dies - Inch

ISO Threads/Right Hand
• Carbon Steel



Coarse Threads

Size	TPI	Code No.	Price $
2	56	140-800	**20.90**
4	40	140-801	**20.90**
5	40	140-803	**20.90**
6	32	140-805	**20.90**
8	32	140-807	**20.90**
10	24	140-809	**20.90**
12	24	140-811	**20.90**
1/4	20	140-813	**20.90**
5/16	18	140-815	**22.80**
3/8	16	140-817	**24.10**
7/16	14	140-819	**27.10**
1/2	13	140-821	**28.90**
9/16	12	140-823	**30.80**
5/8	11	140-825	**35.50**
11/16	11	140-827	**39.70**
3/4	10	140-829	**47.10**
7/8	9	140-831	**52.70**
1	8	140-833	**60.40**
1-1/8	7	140-836	**70.50**
1-1/4	7	140-838	**84.80**
1-3/8	6	140-840	**90.50**
1-1/2	6	140-842	**98.00**
1-5/8	5-1/2	140-844	**149.30**
1-3/4	5	140-845	**180.60**
2	4-1/2	140-846	**225.60**
2-1/4	4-1/2	140-847	**362.20**
2-1/2	4	140-848	**422.60**
2-3/4	4	140-849	**422.60**
3	4	140-850	**631.10**
3-1/4	4	140-851	**793.40**
3-1/2	4	140-852	**857.10**
3-3/4	4	140-853	**920.40**
4	4	140-854	**1,018.40**

Fine Threads

Size	TPI	Code No.	Price $
4	48	140-802	**20.90**
5	44	140-804	**20.90**
6	40	140-806	**20.90**
8	36	140-808	**20.90**
10	32	140-810	**20.90**
12	28	140-812	**20.90**
1/4	28	140-814	**20.90**
5/16	24	140-816	**22.80**
3/8	24	140-818	**24.10**
7/16	20	140-820	**27.10**
1/2	20	140-822	**28.90**
9/16	18	140-824	**30.80**
5/8	18	140-826	**35.50**
11/16	16	140-828	**39.70**
3/4	16	140-830	**47.10**
7/8	14	140-832	**52.70**
1	12	140-834	**60.40**
1	14	140-835	**60.40**
1-1/8	12	140-837	**70.50**
1-1/4	12	140-839	**84.80**
1-3/8	12	140-841	**90.50**
1-1/2	12	140-843	**98.00**

Hex Dies - Metric

Metric ISO Threads/Right Hand
• Carbon Steel



Size (mm)	Pitch (mm)	Code No.	Price $
M3	.5	140-864	**19.60**
M3	.6	140-865	**19.60**
M3.5	.5	140-866	**19.60**
M3.5	.6	140-867	**19.60**
M4	.7	140-868	**19.60**
M4	.75	140-869	**19.60**
M4.5	.75	140-870	**19.60**
M5	.8	140-871	**19.60**
M5	.9	140-872	**21.00**
M6	1.00	140-873	**20.50**
M6.3	1.00	140-874	**20.50**
M7	1.00	140-875	**23.10**
M8	.75	140-876	**23.10**
M8	1.00	140-877	**23.10**
M8	1.25	140-878	**23.10**
M9	1.00	140-879	**24.00**
M9	1.25	140-880	**24.00**
M10	1.25	140-881	**27.00**
M10	1.50	140-882	**27.00**
M11	1.50	140-883	**27.00**
M12	1.25	140-884	**29.10**
M12	1.50	140-885	**29.10**
M12	1.75	140-886	**29.10**
M14	1.25	140-887	**30.90**
M14	1.50	140-888	**30.90**
M14	2.00	140-889	**30.90**
M16	1.50	140-890	**35.40**
M16	2	140-891	**35.40**
M18	1.50	140-892	**52.70**
M18	2.00	140-893	**52.70**
M20	1.50	140-894	**52.70**
M20	2.00	140-895	**52.70**
M22	1.50	140-896	**67.70**
M22	2.5	140-897	**67.70**
M24	2.00	140-898	**67.70**
M24	3.00	140-899	**67.70**
M27	2.00	140-900	**75.30**
M27	3.00	140-901	**75.30**
M30	1.50	140-902	**90.90**
M30	2.00	140-903	**90.90**
M30	3.00	140-904	**90.90**
M33	2.00	140-905	**100.20**
M33	3.50	140-906	**100.20**
M36	3.00	140-907	**110.10**
M36	4.00	140-908	**110.10**
M39	3.00	140-909	**120.60**
M39	4.00	140-910	**120.60**
M42	3.00	140-911	**149.80**

NPT Hex Dies - Inch

• Carbon Steel

Size	TPI	Code No.	Price $
1/8	27	140-855	**28.90**
1/4	18	140-856	**43.10**
3/8	18	140-857	**56.70**
1/2	14	140-858	**74.50**
3/4	14	140-859	**96.30**
1	11-1/2	140-860	**126.60**
1-1/4	11-1/2	140-861	**180.60**
1-1/2	11-1/2	140-862	**264.30**
2	11-1/2	140-863	**535.80**

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 BLUE RING			
Low Carbon	1018, 1010, 1035	Normalized	20-50
Medium Carbon	1045, 1050, 1065	Normalized	20-40
Aluminum	Unalloyed, Cast	–	30-80
Brass/Bronze	–	–	30-80
Copper	–	–	25-60
Cast Iron	–	As Cast	20-40
HSSE-V3			
Stainless Steel	200 Series, 300 Series, 17-4, 15-5 AM286 400 Series	Annealed Annealed Annealed Annealed	20-35 20-35 15-25 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
P-HSS			
Stainless Steel	17-4PH, 15-5, 17-7PH, AM350	Hardened	12-20
Tool Steels	01, A-2, D-2, H-13, P-20,	Hardened	10-20
High Strength	4140, 4340, 50100	Hardened	15-20
Nickel Alloys	Inconel, Hastaloy, Waspaloy, Astraloy, Rene, Monel	Annealed and Hardened	5-20
Titanium	6 AL 4	Annealed/ Hardened	8-15
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	.141	.110
1		M1.8	1-11/16	3/8	3/16	.141	.110
2		M2, M2.2	1-3/4	7/16	3/16	.141	.110
3	3/32	M2.5	1-13/16	1/2	3/16	.141	.110
4			1-7/8	9/16	3/16	.141	.110
5	1/8	M3, M3.15	1-15/16	5/8	3/16	.141	.110
6		M3.5	2	11/16	3/16	.141	.110
8	5/32	M4	2-1/8	3/4	1/4	.168	.131
10	3/16	M4.5, M5	2-3/8	7/8	1/4	.194	.152
12	7/32		2-3/8	15/16	9/32	.220	.165
14	1/4	M6, M6.3	2-1/2	1	5/16	.255	.191
	5/16	M7, M8	2-23/32	1-1/8	3/8	.318	.238
	3/8	M10	2-15/16	1-1/4	7/16	.381	.286
	7/16		3-5/32	1-7/16	13/32	.323	.242
	1/2	M12, 12.5	3-3/8	1-21/32	7/16	.367	.275
	9/16	M14	3-19/32	1-21/32	1/2	.429	.322
	5/8	M16	3-13/16	1-13/16	9/16	.480	.360
	11/16	M18	4-1/32	1-13/16	5/8	.542	.406
	3/4		4-1/4	2	11/16	.590	.442
	13/16	M20	4-15/32	2	11/16	.652	.489
	7/8	M22	4-11/16	2-7/32	3/4	.697	.523
	15/16	M24	4-29/32	2-7/32	3/4	.760	.570
	1	M25	5-1/8	2-1/2	13/16	.800	.600
	1-1/16	M27	5-1/8	2-1/2	7/8	.895	.672
	1-1/8		5-7/16	2-9/16	7/8	.896	.672
	1-3/16	M30	5-7/16	2-9/16	1	1.021	.766
	1-1/4		5-3/4	2-9/16	1	1.021	.766
	1-5/16	M33	5-3/4	2-9/16	1-1/16	1.108	.831
	1-3/8		6-1/16	3	1-1/16	1.108	.831
	1-7/16	M36	6-1/16	3	1-1/8	1.233	.925
	1-1/2		6-3/8	3	1-1/8	1.233	.925
	1-5/8	M39	6-11/16	3-3/16	1-1/8	1.305	.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	.3125	.234
1/8	2-1/8	3/4	3/8	.3125	.234
1/8	2-1/8	3/4	3/8	.4375	.328
1/4	2-7/16	1-1/16	7/16	.5625	.421
3/8	2-9/16	1-1/16	1/2	.7000	.531
1/2	3-1/8	1-3/8	5/8	.6875	.515
3/4	3-1/4	1-3/8	11/16	.9063	.679
1	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4	4	1-3/4	15/16	1.3125	.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 .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	.0465	83	.0015	.0480	74
	3/64	.0469	81	.0015	.0484	71
1-64	54	.0550	89	.0015	.0565	81
	53	.0595	67	.0015	.0610	59
1-72	53	.0595	75	.0015	.0610	67
	1/16	.0625	58	.0015	.0640	50
5-56	51	.0670	82	.0017	.0687	74
	50	.0700	69	.0017	.0717	62
	49	.0730	56	.0017	.0747	49
2-64	50	.0700	79	.0017	.0717	70
	49	.0730	64	.0017	.0747	56
3-48	48	.0760	85	.0019	.0779	78
	5/64	.0781	77	.0019	.0800	70
	47	.0785	76	.0019	.0801	69
	46	.0810	67	.0019	.0829	60
	45	.0820	61	.0019	.0839	56
3-56	46	.0810	78	.0019	.0829	69
	45	.0820	73	.0019	.0839	65
	44	.0860	56	.0020	.0880	47
4-40	44	.0860	80	.0020	.0880	74
	43	.0890	71	.0020	.0910	65
	42	.0935	57	.0020	.0955	51
	3/32	.0938	56	.0020	.0958	50
4-48	42	.0935	68	.0020	.0955	61
	3/32	.0938	68	.0020	.0958	60
	41	.0960	59	.0020	.0980	52
5-40	40	.0980	83	.0023	.1003	76
	39	.0995	79	.0023	.1018	71
	38	.1015	72	.0023	.1038	65
	37	.1040	65	.0023	.1063	58
5-44	38	.1015	79	.0023	.1038	72
	37	.1040	71	.0023	.1063	63
	36	.1065	63	.0023	.1088	55
6-32	37	.1040	84	.0023	.1063	78
	36	.1065	78	.0023	.1088	72
	7/64	.1094	70	.0026	.1120	64
	35	.1100	69	.0026	.1126	63
	34	.1110	67	.0026	.1136	60
	33	.1130	62	.0026	.1156	55
6-40	34	.1110	83	.0026	.1136	75
	33	.1130	77	.0026	.1156	69
	32	.1160	68	.0026	.1186	60
8-32	29	.1360	69	.0029	.1389	62
	28	.1405	58	.0029	.1434	51
8-36	29	.1360	78	.0029	.1389	70
	28	.1405	68	.0029	.1434	57
	9/64	.1406	68	.0029	.1435	57
10-24	27	.1440	85	.0032	.1472	79
	26	.1470	79	.0032	.1502	74
	25	.1495	75	.0032	.1527	69
	24	.1520	70	.0032	.1552	64
	23	.1540	67	.0032	.1572	61
	5/32	.1563	62	.0032	.1595	56
	22	.1570	61	.0032	.1602	55
10-32	5/32	.1563	83	.0032	.1595	75
	22	.1570	81	.0032	.1602	73
	21	.1590	76	.0032	.1672	64
	20	.1610	71	.0032	.1642	64
	19	.1660	59	.0032	.1692	51
12-24	11/64	.1719	82	.0035	.1754	75
	17	.1730	79	.0035	.1765	73
	16	.1770	72	.0035	.1805	66
	15	.1800	67	.0035	.1835	60
	14	.1820	63	.0035	.1855	56
12-28	16	.1770	84	.0035	.1805	77
	15	.1800	78	.0035	.1835	70
	14	.1820	73	.0038	.1835	66
	13	.1850	67	.0035	.1885	59
	3/16	.1875	61	.0035	.1970	54

Tap/Drill Chart - Inch - cont'd

Formula: Percentage of Full Thread

Threads Per Inch x Major Dia. of Tap = Drill Dia.
.01299
= Percentage of Full Thread

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

2.0000-1.9219 = .0781 ÷ .01299 = 6.012
Threads Per Inch = x 12
Theoretical Percentage of Full Threads = 72.144

Formula: Tap Drill Size

Major Dia. of Tap - .1299 x Percent of Full Thread
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"

.01299 x 70 = .9093 ÷ 12 = .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	.1960	83	.0038	.1998	77
	8	.1990	79	.0039	.2028	73
	7	.2010	75	.0038	.2048	70
	13/64	.2031	72	.0038	.2068	66
	6	.2040	71	.0038	.2078	65
	5	.2055	69	.0038	.2093	63
	4	.2090	63	.0038	.2128	57
1/4-28	3	.2130	80	.0038	.2168	72
	7/32	.2188	67	.0038	.2226	59
	2	.2210	63	.0038	.2248	55
5/16-18	F	.2570	77	.0038	.2608	72
	G	.2610	71	.0041	.2651	66
	17/64	.2656	65	.0041	.2697	59
	H	.2660	64	.0041	.2701	59
5/16-24	H	.2660	86	.0041	.2701	78
	I	.2720	75	.0041	.2761	67
	J	.2770	66	.0041	.2811	58
3/8-16	5/16	.3125	77	.0044	.3169	72
	O	.3160	73	.0044	.3204	68
	P	.3230	64	.0044	.3274	59
3/8-24	21/64	.3281	87	.0044	.3325	79
	Q	.3320	79	.0044	.3364	71
	R	.3390	67	.0044	.3434	58
7/16-14	T	.3580	86	.0046	.3626	81
	23/64	.3594	84	.0046	.3640	79
	U	.3680	75	.0046	.3726	70
	3/8	.3750	67	.0046	.3796	62
	V	.3770	65	.0046	.3816	61
7/16-20	W	.3860	79	.0046	.3906	72
	25/64	.3906	72	.0046	.3952	65
	X	.3970	62	.0046	.4016	55
1/2-13	27/64	.4219	78	.0047	.4266	73
	7/16	.4375	63	.0047	.4422	58
1/2-20	29/64	.4531	72	.0047	.4578	65
9/16-12	15/32	.4688	87	.0048	.4736	82
	31/64	.4844	72	.0048	.4892	68
9/16-18	1/2	.5000	87	.0048	.5048	80
	33/64	.5156	65	.0048	.5204	58
5/8-11	17/32	.5313	79	.0049	.5362	75
	35/64	.5469	66	.0049	.5618	62
5/8-18	9/16	.5628	87	.0049	.5674	80
	37/64	.5781	65	.0049	.5831	58
3/4-10	41/64	.6406	84	.0050	.6456	80
	21/32	.6563	72	.0050	.6613	68
3/4-16	11/16	.6875	77	.0050	.6925	71
7/8-9	49/64	.7656	76	.0052	.7708	72
	25/32	.7812	65	.0052	.7864	61
7/8-14	51/64	.7969	84	.0052	.8021	79
	13/16	.8125	67	.0052	.8177	62
1-8	55/64	.8594	87	.0059	.8653	83
	7/8	.8750	77	.0059	.8809	73
	57/64	.8906	67	.0059	.8965	64
	29/32	.9063	58	.0059	.9122	54
1-12	29/32	.9063	87	.0059	.9122	81
	59/64	.9219	72	.0060	.9279	67
	15/16	.9375	58	.0060	.9435	52
1-14	59/64	.9219	84	.0060	.9279	78
	15/16	.9375	67	.0060	.9435	61
1-1/8-7	31/21	.9688	84	.0062	.9750	81
	63/64	.9844	76	.0067	.9911	72
	1	1.0000	67	.0070	1.0070	64
	1-1/64	1.0156	59	.0070	1.0226	55
1-1/8-12	1-1/32	1.0313	87	.0071	1.0384	80
	1-3/64	1.0469	72	.0072	1.0541	66
1-1/4-7	1-3/32	1.0938				
	1-7/64	1.1094				
	1-1/8	1.1250				
1-1/4-12	1-5/32	1.1563				
	1-11/64	1.1719				
1-3/8-6	1-3/16	1.1875				
	1-13/64	1.2031				
	1-7/32	1.2188				
	1-15/64	1.2344				
1-3/8-12	1-9/32	1.2813				
	1-19/64	1.2969				
1-1/2-6	1-5/16	1.3125				
	1-21/64	1.3281				
	1-11/32	1.3438				
	1-23/64	1.3594				
1-1/2-12	1-13/32	1.4063				
	1-27/64	1.4219				

Reaming Recommended

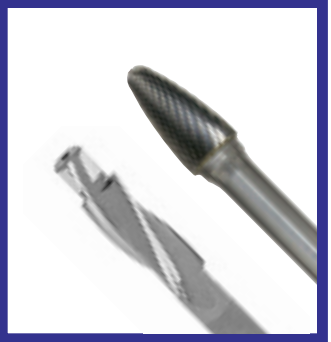
Tap/Drill Chart - Metric

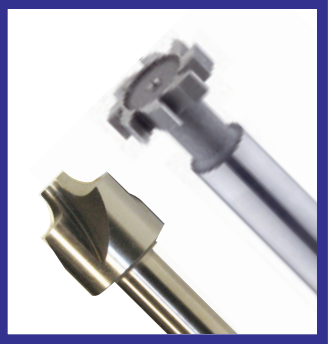
METRIC TAP DRILL SIZES

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

Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill
I.S.O. METRIC COARSE			
1.6	0.35mm	1.25mm	3/64
1.7	0.35mm	1.35mm	55
1.8	0.35mm	1.45mm	54
2	0.40mm	1.60mm	1/16
2.2	0.45mm	1.75mm	50
2.3	0.40mm	1.90mm	49
2.5	0.45mm	2.05mm	46
2.6	0.45mm	2.15mm	44
3	0.5mm	2.50mm	40
3.5	0.60mm	2.90mm	33
4	0.70mm	3.30mm	30
4.5	0.75mm	3.70mm	27
5	0.80mm	4.20mm	19
5.5	0.90mm	4.60mm	15
6	1.00mm	5.00mm	9
7	1.00mm	6.00mm	15/64
8	1.25mm	6.80mm	H
9	1.25mm	7.80mm	5/16
10	1.50mm	8.50mm	Q
11	1.50mm	9.50mm	3/8
12	1.75mm	10.20mm	Y
14	2.00mm	12.00mm	15/32
16	2.00mm	14.00mm	35/64
18	2.50mm	15.50mm	39/64
20	2.50mm	17.50mm	11/16
22	2.50mm	19.50mm	49/64
24	3.00mm	21.00mm	53/64
27	3.00mm	24.00mm	61/64
30	3.50mm	26.50mm	1-3/64
33	3.50mm	29.50mm	1-5/32
36	4.00mm	32.00mm	1-1/4
39	4.00mm	35.00mm	1-3/8

Tap Size	Pitch Form	Tap Drill Size	Alt. Tap Drill
I.S.O. METRIC FINE			
3	0.35mm	2.65mm	37
4	0.35mm	3.65mm	27
4	0.50mm	3.50mm	29
4.5	0.45mm	4.06mm	21
5	0.50mm	4.50mm	16
5	0.70mm	4.30mm	18
5	0.75mm	4.25mm	18
5.5	0.50mm	5.00mm	9
6	0.50mm	5.50mm	7/32
6	0.75mm	5.25mm	5
7	0.75mm	6.25mm	D
8	0.50mm	7.50mm	M
8	1.00mm	7.00mm	J
9	0.50mm	8.50mm	Q
9	1.00mm	8.00mm	O
10	0.50mm	9.50mm	3/8
10	0.75mm	9.25mm	U
10	1.00mm	9.00mm	T
10	1.25mm	8.75mm	11/32
11	1.00mm	10.00mm	X
12	1.00mm	11.00mm	7/16
12	1.25mm	10.75mm	27/64
12	1.50mm	10.50mm	Z
13	1.50mm	11.50mm	29/64
13	1.75mm	11.25mm	7/16
14	1.25mm	12.75mm	1/2
14	1.50mm	12.50mm	31/64
15	1.50mm	13.50mm	17/32
16	1.00mm	15.00mm	19/32
16	1.25mm	14.75mm	37/64
16	1.50mm	14.50mm	9/16
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

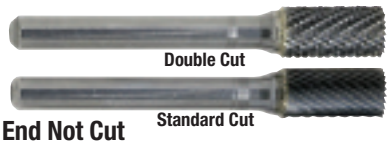
Carbide Burrs & Sets	D2-4
Cut-Off Blades	D5
Brazed Tool Bits	D5-6
HSS & Cobalt Tool Bits	D7-8
Carbide Tipped, HSS & Indexable Boring Bars	D7-9
Precision Boring Heads	D8
Carbide & HSS Mini Bore Tools	D9
Borite “Mini Tool Holders”	D9
Counterbores	D9-10
Annular Cutters	D10-11
Corner Rounding End Mills	D11
T-Slot Cutters, HSS, Cobalt M42 & M42 Roughers	D11
Woodruff Keyseat Cutters	D11
Concave & Convex, Shank Type Cutters	D12
Dovetail Angular Cutters - 45° & 60°	D12
Double Angle, Shank Type Cutters	D12
Plain & Staggered Tooth Milling Cutters	D12-14
Slitting Saws	D14-16
Angle Cutters	D16-17
Concave & Convex Cutters	D17
Shell End Mills	D18
Heavy Duty Plain Milling Cutters	D18
Involute Gear Cutters	D18
Screw Slotting Saws	D18-19
Carbide Saw Blades	D19
Knurling Tools	D20-24
Broaches, Hassay-Savage	D25-38
Noga Deburring System	D39-48

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Solid Carbide Burrs

- Solid carbide burr

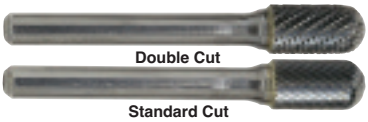


MADE IN USA

MICROGRAIN carbide

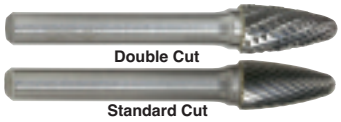
Cylindrical - Square End - End Not Cut

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	170-002	**10.00**	170-001	**9.40**
SA-42	3/32	7/16	1/8	1-1/2	170-004	**10.00**	170-003	**9.40**
SA-43	1/8	9/16	1/8	1-1/2	170-006	**10.00**	170-005	**9.40**
SA-12	1/8	1/2	1/4	2	170-008	**18.60**	170-007	**18.00**
SA-14	3/16	5/8	1/4	2	170-010	**18.60**	170-009	**20.00**
SA-1	1/4	5/8	1/4	2	170-014	**18.50**	170-013	**17.40**
SA-51	1/4	1/2	1/8	2-1/4	170-016	**16.80**	170-015	**16.10**
SA-2	5/16	3/4	1/4	2-1/2	170-020	**22.90**	170-019	**24.60**
SA-3	3/8	3/4	1/4	2-1/2	170-022	**24.90**	170-021	**23.80**
SA-4	7/16	1	1/4	2-3/4	170-024	**37.20**	170-023	**35.30**
SA-5	1/2	1	1/4	2-3/4	170-026	**39.10**	170-025	**37.20**
SA-6	5/8	1	1/4	2-3/4	170-028	**49.30**	170-027	**46.40**
SA-16	3/4	3/4	1/4	2-1/2	170-030	**58.60**	170-029	**63.00**
SA-7	3/4	1	1/4	2-3/4	170-032	**73.60**	170-031	**78.90**
SA-9	1	1	1/4	2-3/4	170-034	**96.00**	170-033	**113.90**



Cylindrical - Radius End

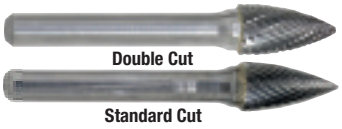
E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SC-41	3/32	7/16	1/8	1-1/2	170-050	**10.00**	170-049	**10.50**
SC-42	1/8	9/16	1/8	1-1/2	170-052	**10.00**	170-051	**9.30**
SC-12	1/8	1/2	1/4	2	170-054	**20.10**	170-053	**20.40**
SC-14	3/16	5/8	1/4	2	170-056	**20.10**	170-055	**20.10**
SC-1	1/4	5/8	1/4	2	170-060	**21.00**	170-059	**20.10**
SC-51	1/4	1/2	1/8	2-15/16	170-062	**16.80**	170-061	**16.10**
SC-2	5/16	3/4	1/4	2-1/2	170-064	**28.50**	170-063	**26.10**
SC-3	3/8	3/4	1/4	2-1/2	170-066	**27.60**	170-065	**26.40**
SC-4	7/16	1	1/4	2-3/4	170-068	**40.10**	170-067	**38.20**
SC-5	1/2	1	1/4	2-3/4	170-070	**43.30**	170-069	**41.40**
SC-6	5/8	1	1/4	2-3/4	170-072	**55.10**	170-071	**52.50**
SC-7	3/4	1	1/4	2-3/4	170-074	**78.70**	170-073	**84.40**



Tree - Radius End

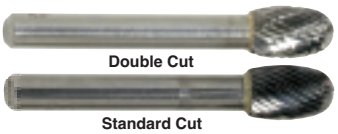
E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SF-42	1/8	1/2	1/8	1-1/2	170-100	**10.00**	170-099	**9.30**
SF-41	1/8	1/4	1/8	1-1/2	170-102	**11.40**	-	-
SF-12	1/8	1/2	1/4	2	170-104	**25.50**	170-103	**24.30**
SF-1	1/4	5/8	1/4	2	170-108	**22.60**	170-107	**21.60**
SF-51	1/4	1/2	1/8	2	170-110	**16.80**	170-109	**16.10**
SF-3	3/8	3/4	1/4	2-1/2	170-112	**28.40**	170-111	**27.00**
SF-4	7/16	1	1/4	2-3/4	170-114	**41.70**	170-113	**39.70**
SF-5	1/2	1	1/4	2-3/4	170-116	**40.10**	170-115	**38.20**
SF-6	5/8	1	1/4	2-3/4	170-118	**57.60**	170-117	**61.70**
SF-7	3/4	1	1/4	2-3/4	170-120	**75.90**	170-119	**81.50**
SF-14	3/4	1-1/4	1/4	3	170-122	**79.00**	170-121	**75.30**
SF-15	3/4	1-1/2	1/4	3-1/4	170-124	**124.00**	170-123	**118.10**

Tree - Pointed End

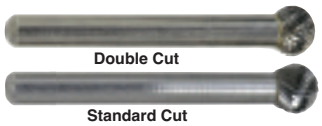


E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SG-41	1/8	1/4	1/8	1-1/2	170-130	**11.30**	170-129	**10.50**
SG-53	3/16	1/2	1/8	1-1/2	170-132	**15.30**	170-131	**18.10**
SG-44	1/8	1/2	1/8	1-1/2	170-134	**11.40**	170-133	**9.30**
SG-1	1/4	5/8	1/4	2	170-138	**22.60**	170-137	**24.30**
SG-51	1/4	1/2	1/8	2	170-140	**16.80**	170-139	**16.10**
SG-2	5/16	3/4	1/4	2-1/2	170-142	**16.30**	170-141	**32.70**
SG-3	3/8	3/4	1/4	2-1/2	170-144	**28.40**	170-143	**27.00**
SG-13	1/2	3/4	1/4	2-1/2	170-146	**39.70**	170-145	**42.90**
SG-5	1/2	1	1/4	2-3/4	170-148	**40.10**	170-147	**38.20**
SG-6	5/8	1	1/4	2-3/4	170-150	**57.60**	170-149	**61.70**
SG-7	3/4	1	1/4	2-3/4	170-152	**85.50**	170-151	**81.50**
SG-15DC	3/4	1-1/2	1/4	3-1/4	170-154	**33.70**	170-153	**118.10**

Oval Shape

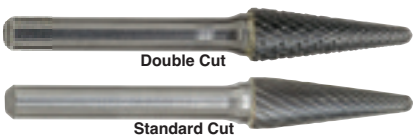


E.D.P.	Cutter Dia. (in.)	Length of Cut (in.)	Shank Dia. (in.)	Overall Length (in.)	Double Cut Code No.	Price $	Standard Cut Code No.	Price $
SE-41	1/8	7/32	1/8	1-1/2	170-160	**10.00**	170-159	**9.30**
SE-1	1/4	3/8	1/4	2	170-164	**24.90**	170-163	**26.80**
SE-51	1/4	3/8	1/8	1-3/4	170-166	**16.80**	170-165	**16.10**
SE-3	3/8	5/8	1/4	2-3/8	170-168	**30.70**	170-167	**29.30**
SE-5	1/2	7/8	1/4	2-5/8	170-170	**43.30**	170-169	**41.40**
SE-6	5/8	1	1/4	2-3/4	170-172	**61.00**	170-171	**66.00**
SE-7	3/4	1	1/4	2-3/4	170-174	**88.50**	170-173	**74.90**



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	170-200	**10.00**	170-199	**10.50**
SD-42	1/8	–	1/8	1-1/2	170-202	**10.00**	170-201	**9.30**
SD-12	1/8	–	1/4	2	170-204	**23.70**	170-203	**22.60**
SD-14	3/16	–	1/4	2	170-206	**23.70**	170-205	**20.10**
SD-53	3/16	–	1/8	2	170-208	**18.90**	170-207	**18.10**
SD-1	1/4	–	1/4	2	170-210	**20.10**	170-209	**19.10**
SD-51	1/4	–	1/8	2	170-212	**16.80**	170-211	**16.10**
SD-2	5/16	–	1/4	2-1/16	170-214	**22.10**	170-213	**20.90**
SD-3	3/8	–	1/4	2-1/8	170-216	**24.80**	170-215	**22.90**
SD-5	1/2	–	1/4	2-1/4	170-218	**31.70**	170-217	**30.00**
SD-6	5/8	–	1/4	2-3/8	170-220	**39.40**	170-219	**37.60**
SD-7	3/4	–	1/4	2-1/2	170-222	**53.80**	170-221	**57.30**
SD-9	1	–	1/4	2-3/4	170-224	**88.00**	170-223	**83.90**



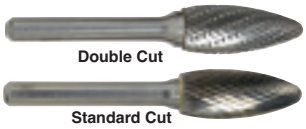
Taper 14º Included Taper with Radius End

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	170-230	**11.40**	170-229	**10.60**
SL-42	1/8	1/2	1/8	1-1/2	170-232	**10.00**	170-231	**9.30**
SL-1	1/4	5/8	1/4	2	170-236	**22.90**	170-235	**21.70**
SL-2	5/16	7/8	1/4	2-5/8	170-238	**28.80**	170-237	**27.50**
SL-3	3/8	1-1/16	1/4	2-13/16	170-240	**34.50**	170-239	**32.80**
SL-4	1/2	1-1/8	1/4	2-7/8	170-242	**43.70**	170-241	**41.70**
SL-6	5/8	1-5/16	1/4	3-1/16	170-244	**74.90**	170-243	**82.40**
SL-7	3/4	1-1/2	1/4	3-1/4	170-246	**109.90**	170-245	**118.10**

Solid Carbide Burrs

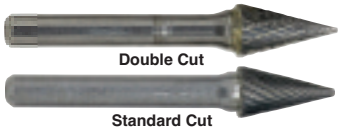
MADE IN USA

MICROGRAIN carbide



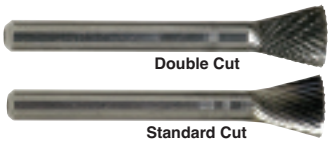
Flame

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	170-250	**10.00**	170-247	**9.30**
SH-1	1/4	5/8	1/4	2	170-251	**28.10**	-	-
SH-2	5/16	3/4	1/4	2-3/4	170-254	**28.00**	170-255	**26.40**
SH-5	1/2	1-1/4	1/4	3-1/4	170-256	**56.70**	170-257	**54.00**
SH-6	5/8	1-7/16	1/4	3-7/16	170-258	**81.50**	170-259	**77.50**
SH-7	3/4	1-5/8	1/4	3-5/8	170-260	**118.00**	170-261	**126.50**



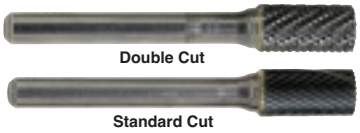
Cone

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°	170-270	**10.00**	170-269	**9.30**
SM-42	1/8	7/16	1/8	1-1/2	14°	170-272	**10.00**	170-271	**9.30**
SM-43	1/8	5/8	1/8	1-1/2	7°	170-274	**10.00**	170-273	**9.30**
SM-1	1/4	1/2	1/4	2	22°	170-278	**22.10**	170-277	**21.20**
SM-2	1/4	3/4	1/4	2	14°	170-280	**23.80**	170-279	**22.60**
SM-3	1/4	1	1/4	2	10°	170-282	**25.20**	170-281	**24.10**
SM-51	1/4	1/2	1/8	2-1/8	22°	170-284	**16.80**	170-283	**16.10**
SM-4	3/8	5/8	1/4	2-3/8	28°	170-286	**33.90**	170-285	**14.30**
SM-5	1/2	7/8	1/4	2-5/8	28°	170-288	**43.30**	170-287	**41.40**
SM-6	5/8	1	1/4	2-3/4	31°	170-290	**75.70**	170-289	**64.30**



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°	170-300	**11.30**	170-299	**10.50**
SN-42	1/8	3/16	1/8	1-1/2	10°	170-302	**10.00**	170-301	**9.30**
SN-1	1/4	5/16	1/4	2	10°	170-306	**20.40**	170-305	**22.10**
SN-51	1/4	1/4	1/8	1-3/4	10°	170-308	**16.80**	170-307	**18.10**
SN-4	1/2	1/2	1/4	2-1/4	16°	170-310	**40.10**	170-309	**38.20**
SN-6	5/8	3/4	1/4	2-1/2	18°	170-312	**57.60**	170-311	**61.70**
SN-7	3/4	5/8	1/4	2-3/4	30°	170-314	**67.60**	170-313	**64.30**



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	170-038	**10.00**	170-078	**10.50**
SB-42	3/32	7/16	1/8	1-1/2	170-040	**11.40**	170-080	**10.60**
SB-43	1/8	9/16	1/8	1-1/2	170-042	**10.00**	170-082	**10.50**
SB-12	1/8	5/8	1/4	2	170-035	**21.60**	170-075	**20.40**
SB-14	3/16	5/8	1/4	2	170-036	**21.50**	170-076	**22.90**
SB-1	1/4	5/8	1/4	2	170-037	**19.80**	170-077	**18.90**
SB-2	5/16	3/4	1/4	2-1/2	170-043	**25.20**	170-083	**24.10**
SB-3	3/8	3/4	1/4	2-1/2	170-039	**27.20**	170-079	**25.80**
SB-4	7/16	1	1/4	2-3/4	170-044	**40.10**	170-084	**43.20**
SB-5	1/2	1	1/4	2-3/4	170-041	**48.80**	170-081	**41.40**
SB-6	5/8	1	1/4	2-3/4	170-045	**54.00**	170-085	**52.40**
SB-16	3/4	3/4	1/4	2-1/2	170-047	**72.90**	170-087	**61.60**
SB-7	3/4	1	1/4	2-3/4	170-046	**80.10**	170-086	**76.20**
SB-9	1	1	1/4	2-3/4	170-048	**132.90**	170-088	**112.30**

60º 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	170-176	**10.00**
SJ-1	1/4	3/16	1/4	2	170-177	**20.90**
SJ-2	5/16	5/16	1/4	2-1/16	170-178	**25.50**
SJ-3	3/8	5/16	1/4	2-1/16	170-179	**25.20**
SJ-5	1/2	7/16	1/4	2-3/16	170-180	**35.20**
SJ-6	5/8	9/16	1/4	2-5/16	170-181	**46.10**
SJ-7	3/4	11/16	1/4	2-7/16	170-182	**62.00**
SJ-9	1	15/16	1/4	2-9/16	170-184	**86.50**

90º 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	170-185	**10.00**
SK-1	1/4	1/8	1/4	2	170-186	**20.90**
SK-2	5/16	3/16	1/4	1-15/16	170-187	**25.50**
SK-3	3/8	3/16	1/4	1-15/16	170-188	**25.20**
SK-5	1/2	1/4	1/4	2	170-189	**31.20**
SK-6	5/8	5/16	1/4	2-1/16	170-190	**41.20**
SK-7	3/4	3/8	1/4	2-1/8	170-191	**62.00**
SK-9	1	1/2	1/4	2-1/4	170-193	**97.50**

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	170-320	**23.70**
SA-3FM	3/8	3/4	1/4	2-1/2	170-321	**32.00**
SA-5FM	1/2	1	1/4	2-3/4	170-322	**56.40**
SA-6FM	5/8	1	1/4	2-3/4	170-323	**70.70**
SA-7FM	3/4	1	1/4	2-3/4	170-324	**106.60**

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	170-325	**30.90**
SC-3FM	3/8	3/4	1/4	2-1/2	170-326	**35.50**
SC-5FM	1/2	1	1/4	2-3/4	170-327	**55.70**
SC-6FM	5/8	1	1/4	2-3/4	170-328	**70.70**
SC-7FM	3/4	1	1/4	2-3/4	170-329	**113.90**

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	170-330	**26.80**
SD-3FM	3/8	5/16	1/4	2-1/8	170-331	**35.10**
SD-5FM	1/2	7/16	1/4	2-1/4	170-332	**40.60**
SD-6FM	5/8	9/16	1/4	2-3/8	170-333	**50.80**
SD-7FM	3/4	11/16	1/4	2-1/2	170-334	**77.40**

Solid Carbide Burrs

MADE IN USA

MICROGRAIN carbide



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	170-335	**36.00**
SE-3FM	3/8	5/8	1/4	2-3/8	170-336	**39.20**
SE-5FM	1/2	7/8	1/4	2-5/8	170-337	**62.80**
SE-6FM	5/8	1	1/4	2-3/4	170-338	**88.80**
SE-7FM	3/4	1	1/4	2-3/4	170-339	**113.90**



Alumacut Burrs - 14º 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	170-345	**49.70**
SL-4FM	1/2	1-1/8	1/4	2-7/8	170-346	**63.40**
SL-6FM	5/8	1-5/16	1/4	3-1/16	170-347	**111.10**
SL-7FM	3/4	1-1/2	1/4	3-1/4	170-348	**159.30**



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	170-340	**28.60**
SF-3FM	3/8	3/4	1/4	2-1/2	170-341	**36.60**
SF-5FM	1/2	1	1/4	2-3/4	170-342	**58.30**
SF-6FM	5/8	1	1/4	2-3/4	170-343	**83.20**
SF-7FM	3/4	1-1/4	1/4	3	170-344	**114.40**





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"	170-370	**42.90**	170-372	**43.60**
SA-5L6	1/2	1	1/4	6"	170-371	**70.00**	170-373	**58.60**
SC-3L6	3/8	3/4	1/4	6"	170-374	**50.00**	170-376	**46.40**
SC-5L6	1/2	1	1/4	6"	170-375	**74.80**	170-377	**63.40**
SF-3L6	3/8	3/4	1/4	6"	170-378	**46.60**	170-380	**47.40**
SF-5L6	1/2	1	1/4	6"	170-379	**72.50**	170-381	**59.90**
SL-3L6	3/8	1-1/16	1/4	6"	170-382	**62.50**	170-384	**53.70**
SL-5L6	1/2	1-1/8	1/4	6"	170-383	**66.10**	-	-
SD-3L6	3/8	-	1/4	6"	170-386	**39.10**	170-388	**42.90**
SD-5L6	1/2	-	1/4	6"	170-387	**52.70**	170-389	**50.80**

Solid Carbide Burr Sets

MADE IN USA

MICROGRAIN carbide







Burrs Included	Single Cut Code No.	Price $	Double Cut Code No.	Price $	Alumacut Code No.	Price $
SA-43, SA-42, SC-42, SC-41 SD-42, SE-41, SF-41, SG-41 SH-41, SJ-41, SL-42, SN-42	172-950	**203.20**	172-951	**211.70**		
SA-41, SC-42, SF-42, SG-44 SE-41, SD-42, SL-42, SH-41 SM-42, SN-42 (Plastic case)			172-980*	**95.20**		
SA-51, SB-51, SC-51, SD-51 SE-51, SF-51, SG-51, SM-51 SN-51	172-952	**244.40**	172-953	**252.70**		
SA-1, SC-1, SF-1, SG-3, SE-3 SD-1, SL-1, SH-1, SM-1, SN-1 (Plastic case)			172-982*	**223.50**		
SA-1, SA-3, SC-1, SC-3, SD-1 SD-3, SF-1, SF-3	172-956	**273.20**	172-957	**284.20**	172-958	**348.10**
SB-1, SB-3, SC-1, SC-3, SD-1 SD-3, SF-1, SF-3	172-959	**277.50**	172-960	**298.60**	172-961	**353.90**
SA-3, SA-5, SC-3, SC-5, SD-3 SD-5, SF-3, SF-5	172-962	**354.50**	172-963	**369.50**	172-964	**456.40**
SB-3, SB-5, SC-3, SC-5, SD-3 SD-5, SF-3, SF-5	172-965	**361.90**	172-966	**377.40**	172-967	**466.70**
SA-5, SC-3, SC-5, SD-5, SF-3 SF-5, SG-3, SL-4	172-968	**380.40**	172-969	**396.30**	172-970	**491.60**
SB-5, SC-3, SC-5, SD-5, SF-3 SF-5, SG-3, SL-4	172-971	**385.30**	172-972	**401.40**	172-973	**498.30**
SC-3L6, SD-3L6, SF-3L6 SF-5L6	172-974	**217.00**	172-975	**224.00**	172-976	**262.20**

* Quality Import

STM

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"	172-984	**133.50**
SA-3, SA-5, SC-1, SC-3, SD-3, SD-5 SF-3, SF-5	1/4"	172-986	**245.50**

Turning Style "A" Brazed Tools

Grade C2 – Cast Iron
Grade C5 – Steel

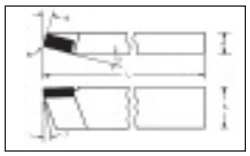




Tool Right Hand	Tool Left Hand	Shank (d)	Shank (h)	Shank (L)	Nose Radius	R.H. C2 Code No.	Price $	L.H. C2 Code No.	Price $	R.H. C5 Code No.	Price $	L.H. C5 Code No.	Price $
AR4	AL4	1/4	1/4	2	1/64	141-500	**7.10**	141-600	**3.90**	141-700	**3.90**	141-800	**3.90**
AR5	AL5	5/16	5/16	2-1/4	1/64	141-502	**7.60**	141-602	**7.60**	141-702	**4.00**	141-802	**4.00**
AR6	AL6	3/8	3/8	2-1/2	1/64	141-504	**4.10**	141-604	**4.10**	141-704	**4.10**	141-804	**4.10**
AR7	AL7	7/16	7/16	3	1/32	141-506	**8.20**	141-606	**8.00**	141-706	**8.80**	141-806	**8.80**
AR8	AL8	1/2	1/2	3-1/2	1/32	141-508	**5.90**	141-608	**5.90**	141-708	**5.90**	141-808	**5.90**
AR10	AL10	5/8	5/8	4	1/32	141-510	**9.40**	141-610	**9.40**	141-710	**9.40**	141-810	**9.40**
AR12	AL12	3/4	3/4	4-1/2	1/32	141-512	**38.00**	141-612	**38.00**	141-712	**47.90**	141-812	**47.90**

Turning Style "B" Brazed Tools

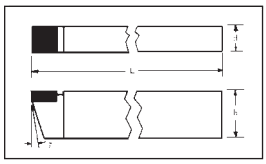
Grade C2 – Cast Iron
Grade C5 – Steel





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	141-528	**7.10**	141-628	**7.10**	141-728	**7.10**	141-828	**7.10**
BR5	BL5	5/16	5/16	2-1/4	1/64	141-530	**7.60**	141-630	**7.60**	141-730	**7.60**	141-830	**7.60**
BR6	BL6	3/8	3/8	2-1/2	1/64	141-532	**7.90**	141-632	**7.90**	141-732	**7.90**	141-832	**7.90**
BR7	BL7	7/16	7/16	3	1/32	141-534	**8.20**	141-634	**8.20**	141-734	**8.80**	-	-
BR8	BL8	1/2	1/2	3-1/2	1/32	141-536	**11.70**	141-636	**11.70**	141-736	**11.70**	141-836	**11.70**
BR10	BL10	5/8	5/8	4	1/32	141-538	**18.00**	141-638	**18.00**	141-738	**18.00**	141-838	**18.00**
BR12	BL12	3/4	3/4	4-1/2	1/32	141-540	**39.10**	141-640	**47.90**	141-740	**47.90**	141-840	**47.90**

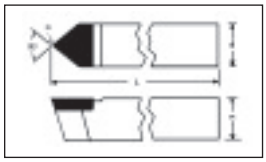
Turning/Facing Style "C" Brazed Tools





Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
C4	1/4	1/4	2	141-542	**7.10**	141-642	**3.90**
C5	5/16	5/16	2-1/4	141-544	**7.60**	141-644	**7.60**
C6	3/8	3/8	2-1/2	141-546	**7.90**	141-646	**4.30**
C7	7/16	7/16	3	141-548	**8.20**	141-648	**8.80**
C8	1/2	1/2	3-1/2	141-550	**11.70**	141-650	**6.50**
C10	5/8	5/8	4	141-552	**18.00**	141-652	**18.00**
C12	3/4	3/4	4-1/2	141-554	**39.10**	141-654	**47.90**
C16	1	1	6	141-556	**48.80**	141-656	**51.40**

Chamfering Style "D" Brazed Tools

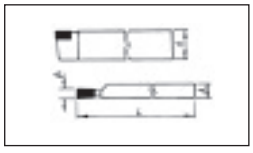




Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
D4	1/4	1/4	2	141-558	**7.10**	141-658	**7.10**
D5	5/16	5/16	2-1/4	141-560	**7.60**	141-660	**7.60**
D6	3/8	3/8	2-1/2	141-562	**7.90**	141-662	**4.30**
D7	7/16	7/16	3	141-564	**8.20**	141-664	**8.80**
D8	1/2	1/2	3-1/2	141-566	**11.70**	141-666	**5.50**
D10	5/8	5/8	4	141-568	**18.00**	141-668	**18.00**
D12	3/4	3/4	4-1/2	141-570	**39.10**	141-670	**47.90**

Carbide Tipped Brazed Cut-Off Tools

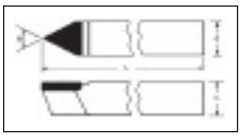
Grade C2 – Cast Iron
Grade C5 – Steel





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"	141-585	**31.20**	141-685	**31.20**	141-785	**31.20**	141-885	**31.20**
CTR-22	CTL-22	3/16"	1/2"	1"	5"	141-586	**31.80**	141-686	**31.80**	141-786	**31.80**	141-886	**31.80**
CTR-33	CTL-33	1/4"	1/2"	1"	5"	141-587	**32.70**	141-687	**32.70**	141-787	**32.70**	141-887	**32.70**
CTR-44	CTL-44	5/16"	1/2"	1"	5"	141-588	**34.70**	141-688	**34.70**	141-788	**34.70**	141-888	**34.70**
CTR-55	CTL-55	3/8"	5/8"	11/4"	5"	141-589	**43.50**	141-689	**43.50**	141-789	**43.50**	141-889	**43.50**

Threading Style "E" Brazed Tools



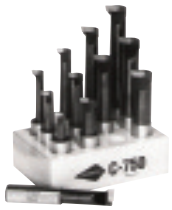


Tool Style	Shank (d)	Shank (h)	Shank (L)	Grade C2 Code No.	Price $	Grade C5 Code No.	Price $
E4	1/4	1/4	2	141-572	**7.10**	141-672	**3.90**
E5	5/16	5/16	2-1/4	141-574	**7.60**	141-674	**7.60**
E6	3/8	3/8	2-1/2	141-576	**7.90**	141-676	**4.30**
E8	1/2	1/2	3-1/2	141-578	**11.70**	141-678	**6.30**
E10	5/8	5/8	4	141-580	**18.00**	141-680	**18.00**
E12	3/4	3/4	4-1/2	141-582	**39.10**	141-682	**47.90**

Carbide Tipped Boring Bars

BORITE

MADE IN USA



Shank Dia.	Length	Bore Depth	Min. Bore	Tool No.	C2 Cast Iron Code No.	Price $	C6 Steel Code No.	Price $	Set Code No.	Price $
3/8	2	3/4	5/16	A5S	145-200	**14.50**	145-308	**14.50**	145-218	**147.70**
3/8	2-3/8	1-1/8	5/16	A5M	145-202	**14.60**	145-310	**14.60**	(A-375-C2)	
3/8	2-3/4	1-1/2	5/16	A5L	145-204	**15.20**	145-312	**15.20**		
3/8	2-3/16	15/16	3/8	A3S	145-206	**16.00**	145-314	**16.00**		
3/8	2-21/32	1-13/32	3/8	A3M	145-208	**21.30**	145-316	**16.60**	145-326	**147.70**
3/8	3-1/8	1-7/8	3/8	A3L	145-210	**17.20**	145-318	**17.20**	(A375-C6)	
3/8	2-3/8	1-1/8	7/16	A7S	145-212	**17.60**	145-320	**17.60**		
3/8	2-15/16	1-11/16	7/16	A7M	145-214	**18.00**	145-322	**18.00**		
3/8	3-1/2	2-1/4	7/16	A7L	145-216	**18.70**	145-324	**18.70**		
1/2	2-1/4	3/4	5/16	B5S	145-220	**19.30**	145-328	**19.30**		
1/2	2-5/8	1-1/8	5/16	B5M	145-222	**19.80**	145-330	**19.80**	145-238	**193.60**
1/2	3	1-1/2	5/16	B5L	145-224	**20.30**	145-332	**20.30**	(B-500-C2)	
1/2	2-5/8	1-1/8	7/16	B7S	145-226	**21.30**	145-334	**21.30**		
1/2	3-3/16	1-11/16	7/16	B7M	145-228	**21.60**	145-336	**21.60**		
1/2	3-3/4	2-1/4	7/16	B7L	145-230	**22.00**	145-338	**22.00**	145-346	**193.60**
1/2	3	1-1/2	9/16	B9S	145-232	**22.90**	145-340	**22.90**	(B-500-C6)	
1/2	3-3/4	2-1/4	9/16	B9M	145-234	**23.20**	145-342	**23.20**		
1/2	4-1/2	3	9/16	B9L	145-236	**23.60**	145-344	**23.60**		
5/8	2-1/4	3/4	5/16	D5S	145-240	**23.20**	145-348	**23.20**		
5/8	2-5/8	1-1/8	5/16	D5M	145-242	**24.10**	145-350	**24.10**		
5/8	3	1-1/2	5/16	D5L	145-244	**24.90**	145-352	**24.90**	145-264	**347.30**
5/8	2-5/8	1-1/8	7/16	D7S	145-246	**26.40**	145-354	**26.40**	(D625-C2)	
5/8	3-3/16	1-11/16	7/16	D7M	145-248	**35.30**	145-356	**27.50**		
5/8	3-3/4	2-1/4	7/16	D7L	145-250	**28.30**	145-358	**28.30**		
5/8	3	1-1/2	9/16	D9S	145-252	**29.60**	145-360	**29.60**		
5/8	3-3/4	2-1/4	9/16	D9M	145-254	**30.60**	145-362	**30.60**	145-372	**347.30**
5/8	4-1/2	3	9/16	D9L	145-256	**31.40**	145-364	**31.40**	(D625-C6)	
5/8	3-3/8	1-7/8	11/16	D11S	145-258	**33.00**	145-366	**33.00**		
5/8	4-5/16	2-13/16	11/16	D11M	145-260	**34.10**	145-368	**34.10**		
5/8	5-1/4	3-3/4	11/16	D11L	145-262	**35.00**	145-370	**35.00**		
3/4	3-1/8	1-1/8	7/16	C7S	145-266	**27.00**	145-374	**27.00**		
3/4	3-11/16	1-11/16	7/16	C7M	145-268	**27.80**	145-376	**27.80**		
3/4	4-1/4	2-1/4	7/16	C7L	145-270	**28.80**	145-378	**28.80**	145-290	**398.60**
3/4	3-1/2	1-1/2	9/16	C9S	145-272	**30.10**	145-380	**30.10**	(C-750-C2)	
3/4	4-1/4	2-1/4	9/16	C9M	145-274	**31.20**	145-382	**31.20**		
3/4	5	3	9/16	C9L	145-276	**32.10**	145-384	**32.10**		
3/4	3-7/8	1-7/8	11/16	C11S	145-278	**33.50**	145-386	**33.50**		
3/4	4-13/16	2-13/16	11/16	C11M	145-280	**34.80**	145-388	**34.80**		
3/4	5-3/4	3-3/4	11/16	C11L	145-282	**35.60**	145-390	**35.60**	145-398	**398.60**
3/4	4-1/4	2-1/4	13/16	C13S	145-284	**38.20**	145-392	**38.20**	(C-750-C6)	
3/4	5-3/8	3-3/8	13/16	C13M	145-286	**39.50**	145-394	**39.50**		
3/4	6-1/2	4-1/2	13/16	C13L	145-288	**40.90**	145-396	**40.90**		
1	5	3	9/16	E9L	145-292	**50.80**	145-400	**50.80**		
1	5-3/4	3-3/4	11/16	E11L	145-294	**53.40**	145-402	**53.40**	145-306	**458.10**
1	6-1/2	4-1/2	7/8	E14L	145-296	**56.80**	145-404	**56.80**	(E100-C2)	
1	6-1/2	4-1/2	1-1/16	E18L	145-298	**60.30**	145-406	**60.30**		
1	7-3/4	5-3/4	1-1/4	E20L	145-300	**64.60**	145-408	**64.60**	145-414	**458.10**
1	8-1/4	6-1/4	1-1/2	E24L	145-302	**68.10**	145-410	**68.10**	(E100-C6)	
1	9-1/2	7-1/2	1-5/8	E26L	145-304	**73.10**	145-412	**73.10**		

Square Ground Tool Bits - 5% Cobalt

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



Square Size	Overall Length (in.)	5% Cobalt Code No.	Price $
1/8	2-1/2	102-000	**5.30**
1/4	2-1/2	102-006	**9.30**
1/4	3	102-008	**8.10**
1/4	6	102-010	**15.90**
5/16	2-1/2	102-012	**9.40**
5/16	3	102-014	**11.40**
5/16	6	102-016	**21.90**
3/8	3	102-018	**15.40**
3/8	4	102-020	**20.10**
3/8	6	102-022	**29.70**
7/16	3-1/2	102-024	**23.20**
1/2	4	102-026	**33.20**
1/2	6	102-028	**49.00**
5/8	4-1/2	102-030	**54.10**
5/8	5	102-032	**61.70**
5/8	6	102-034	**73.90**
3/4	5	102-036	**86.50**
3/4	6	102-038	**103.60**
7/8	6	102-040	**138.70**
1	7	102-044	**205.60**

Rectangular Ground Tool Bits

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



Width (in.)	Height (in.)	Length (in.)	HSS Code No.	HSS Price $	5% Cobalt Code No.	5% Cobalt Price $
1/4	3/8	2-1/2	-	-	102-050	**9.90**
1/4	3/8	3	160-305	**12.30**	102-052	**11.70**
1/4	1/2	4	160-310	**18.30**	102-054	**19.50**
1/4	1/2	6	-	-	102-056	**28.60**
1/4	3/4	5	160-315	**28.00**	102-058	**34.80**
1/4	1	6	160-320	**42.90**	102-060	**54.40**
5/16	1/2	4	-	-	102-062	**22.50**
5/16	3/4	5	-	-	102-064	**40.20**
5/16	1	6	-	-	102-066	**63.10**
3/8	1/2	4	160-325	**23.10**	102-068	**26.30**
3/8	1/2	6	-	-	102-070	**38.90**
3/8	5/8	4	160-330	**31.30**	102-072	**32.30**
3/8	5/8	5	-	-	102-074	**39.70**
3/8	3/4	4	-	-	102-076	**38.10**
3/8	3/4	5	160-335	**40.60**	102-078	**47.20**
3/8	3/4	6	-	-	102-080	**56.40**
3/8	1	6	-	-	102-082	**73.90**
1/2	3/4	5	160-340	**49.10**	102-088	**60.50**
1/2	3/4	6	-	-	102-090	**72.60**
1/2	1	7	160-345	**89.50**	102-092	**109.80**
1/2	1-1/4	7	160-350	**110.80**	102-094	**136.10**
1/2	1-1/2	7	-	-	102-096	**161.90**
5/8	3/4	5	-	-	102-098	**74.20**
5/8	7/8	6	160-360	**103.20**	102-100	**102.90**
5/8	1	7	160-365	**99.10**	102-102	**134.80**
5/8	1-1/4	7	160-370	**108.10**	-	-
3/4	1	6	160-375	**115.90**	102-104	**137.90**
3/4	1-1/4	6	160-380	**126.10**	102-106	**170.90**

Cut-Off Blades - 5% Cobalt





Width (in.)	Height (in.)	Length (in.)	5% Cobalt Code No.	Price $
1/8	3/4	5	104-378	**29.20**
1/8	3/4	6	104-380	**34.60**
1/8	7/8	6	104-382	**39.10**
3/16	1	6-1/2	104-384	**64.90**
3/16	1	7	104-386	**69.90**
1/4	1-1/4	6-1/2	104-390	**101.60**
1/4	1-3/8	7	104-394	**119.80**

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





Width (in.)	Height (in.)	Length (in.)	5% Cobalt Code No.	Price $
1/16	1/2	4-1/2	104-890	**26.20**
3/32	1/2	4-1/2	104-892	**26.20**
3/32	11/16	5	104-894	**36.70**
1/8	11/16	5	104-896	**59.20**
1/8	3/4	5	104-898	**41.30**
5/32	11/16	5	104-900	**44.40**
1/8	7/8	6	104-902	**52.30**
5/32	7/8	6	104-904	**60.60**
3/16	7/8	6	104-906	**70.70**
1/4	7/8	6	104-908	**89.40**

HSS Round Tool Bits



Dia.	Length	Code No.	Price $
1/8	2	102-110	**1.10**
3/16	2-1/2	102-112	**1.80**
1/4	3	102-114	**4.10**
5/8	6	102-122	**36.60**
3/4	6	102-124	**50.00**

HSS Round Tool Bits



Dia.	Length	Code No.	Price $
1/8	2-3/4	160-205	**4.10**
3/16	3-1/2	160-210	**5.40**
1/4	4	160-215	**6.50**
1/4	8	160-255	**13.50**
5/16	4-1/2	160-220	**11.80**
5/16	8	160-260	**16.90**
3/8	5	160-225	**17.30**
7/16	5-1/2	160-230	**22.70**
1/2	6	160-235	**28.40**
9/16	6	160-240	**36.50**
5/8	6	160-245	**40.00**
3/4	6	160-250	**54.60**

Square Tool Bits



Square Size	Overall Length (in.)	HSS Code No.	Price $	5% Cobalt Code No.	Price $
1/8	2-1/2	159-002	5.40	160-103	8.50
3/16	2-1/2	159-004	12.90	160-105	11.80
1/4	2-1/2	159-006	13.60	160-110	13.20
5/16	2-1/2	159-008	14.40	160-115	15.40
5/16	3	159-010	16.00	160-117	21.10
3/8	3	159-012	20.50	160-120	18.00
7/16	4	159-014	16.30	160-125	30.80
1/4	4	159-016	18.00	160-127	22.40
1/2	4	159-018	32.40	160-130	31.60
5/8	5	159-020	36.10	160-135	58.40
3/4	5	159-022	69.30	160-140	85.20
1/4	6	159-024	27.00		
5/16	6	159-026	28.10		
3/8	6	159-028	37.50		
1/2	6	159-030	47.70		
7/8	6	159-032	89.10	160-145	96.10
1	7	159-034	134.10	160-155	197.60
1-1/4	7	159-036	207.30	160-160	354.00

ASIMETO®

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.

See Section F

Exactly What You Need





High Speed Steel Boring Bars

BORITE

MADE IN USA



Shank Dia.	Length	Bore Depth	Min. Bore	Tool No.	HSS Code No.	Price $	Set Code No.	Price $
3/8	1-13/16	9/16	3/16	AH3S	145-100	27.40		
3/8	2-3/16	15/16	3/16	AH3L	145-102	28.60		
3/8	2	3/4	1/4	AH4S	145-104	29.00		
3/8	2-1/2	1-1/4	1/4	AH4L	145-106	29.40	145-116	245.90
3/8	2-3/16	1-5/16	5/16	AH5S	145-108	31.40	(AH375)	
3/8	2-13/16	1-9/16	5/16	AH5L	145-110	32.10		
3/8	2-3/8	1-1/8	3/8	AH6S	145-112	33.70		
3/8	3-1/8	1-7/8	3/8	AH6L	145-114	34.80		
1/2	2-1/8	3/4	1/4	BH4S	145-118	34.80		
1/2	2-5/8	1-1/4	1/4	BH4L	145-120	35.40		
1/2	2-5/16	15/16	5/16	BH5S	145-122	36.30		
1/2	2-15/16	1-9/16	5/16	BH5L	145-124	37.50	145-138	390.40
1/2	2-1/2	1-1/8	3/8	BH6S	145-126	38.50	(BH-500)	
1/2	3-1/4	1-7/8	3/8	BH6L	145-128	39.50		
1/2	2-11/16	1-5/16	7/16	BH7S	145-130	40.90		
1/2	3-9/16	2-3/16	7/16	BH7L	145-132	41.30		
1/2	2-7/8	1-1/2	1/2	BH8S	145-134	43.20		
1/2	3-7/8	2-1/2	1/2	BH8L	145-136	43.70		
5/8	2-5/8	1-1/8	3/8	DH6S	145-140	40.90		
5/8	3-3/8	1-7/8	3/8	DH6L	145-142	42.90		
5/8	2-13/16	1-5/16	7/16	DH7S	145-144	45.20		
5/8	3-11/16	2-3/16	7/16	DH7L	145-146	47.90	145-160	525.00
5/8	3	1-1/2	1/2	DH8S	145-148	50.40	(DH-625)	
5/8	4	2-1/2	1/2	DH8L	145-150	54.60		
5/8	3-3/16	1-11/16	9/16	DH9S	145-152	57.40		
5/8	4-5/16	2-13/16	9/16	DH9L	145-154	59.20		
5/8	3-3/8	1-7/8	5/8	DH10S	145-156	62.30		
5/8	4-5/8	3-1/8	5/8	DH10L	145-158	65.00		
3/4	2-7/8	1-1/8	3/8	CH6S	145-162	49.20		
3/4	3-5/8	1-7/8	3/8	CH6L	145-164	50.40		
3/4	3-1/16	1-5/16	7/16	CH7S	145-166	52.20		
3/4	3-15/16	2-3/16	7/16	CH7L	145-168	53.70		
3/4	3-1/4	1-1/2	1/2	CH8S	145-170	55.60		
3/4	4-1/4	2-1/2	1/2	CH8L	145-172	57.10		
3/4	3-7/16	1-11/16	9/16	CH9S	145-174	58.80	145-190	834.70
3/4	4-9/16	2-13/16	9/16	CH9L	145-176	60.10	(CH-750)	
3/4	3-5/8	1-7/8	5/8	CH10S	145-178	62.20		
3/4	4-7/8	3-1/8	5/8	CH10L	145-180	63.70		
3/4	3-13/16	2-1/16	11/16	CH11S	145-182	65.90		
3/4	5-3/16	3-7/16	11/16	CH11L	145-184	67.20		
3/4	4	2-1/4	3/4	CH12S	145-186	69.00		
3/4	5-1/2	3-3/4	3/4	CH12L	145-188	70.70		

Precision Boring Heads

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



Shanks ☞ **p. G102, G113**

Head Dia.	Hole Size	Offset	Code No.	Price $
2	1/2	1/2	356-001	144.50
3	3/4	3/4	356-002	192.50
4	1	1	356-003	288.60

Indexable Boring Bars

BORITE

MADE IN USA



Shank Dia.	Length	Bore Depth	Min. Bore	Tool No.	Code No.	Price $	Set Code No.	Price $
1/2	2-3/4	1-1/4	7/16	7SB	145-500	**39.90**		
1/2	3-5/8	2-1/8	7/16	7LB	145-502	**40.60**	145-550	**162.30**
1/2	3	1-1/2	1/2	8SB	145-504	**40.60**	(IB500)	
1/2	4	2-1/2	1/2	8LB	145-506	**41.40**		
5/8	3	1-1/4	7/16	7SD	145-510	**45.30**		
5/8	3-7/8	2-1/8	7/16	7LD	145-512	**46.10**		
5/8	3-1/4	1-1/2	1/2	8SD	145-514	**46.10**	145-560	**278.60**
5/8	4-1/4	2-1/2	1/2	8LD	145-516	**46.90**	(ID625)	
5/8	3-1/2	1-3/4	9/16	9SD	145-518	**46.90**		
5/8	4-5/8	2-7/8	9/16	9LD	145-520	**47.70**		
3/4	3-3/8	1-3/8	7/16	7SC	145-530	**49.90**		
3/4	4-1/4	2-1/4	7/16	7LC	145-532	**50.80**		
3/4	3-5/8	1-5/8	1/2	8SC	145-534	**51.50**	145-570	**419.70**
3/4	4-5/8	2-5/8	1/2	8LC	145-536	**51.50**	(IC750)	
3/4	3-7/8	1-7/8	9/16	9SC	145-538	**53.10**		
3/4	5	3	9/16	9LC	145-540	**53.90**		
3/4	4-1/4	2-1/4	11/16	11SC	145-542	**53.90**		
3/4	5-1/2	3-1/2	11/16	11LC	145-544	**54.70**		

Indexable Boring Bar Inserts & Screws

Insert No.	Description	Code No.	Price $
TT-221	C2 Insert	145-575	**10.00**
TT-221	C5 Insert	145-580	**10.00**
TT-222	C2 Insert	145-585	**10.00**
TT-222	C5 Insert	145-590	**10.00**
ICS-2	Set Screw	145-595	**2.40**

QUALITY IMPORT

Carbide Tipped Boring Bar Sets - C6

These bars are made of extra heavy construction ensuring that more steel is behind the cutting face for chatter-free and heavier cuts.

- Extra heavy construction - 100% longer tool life
- All shanks ground to +.0" - .0010"
- Designed so that the same bar can bore flat bottomed holes or face



Shank Size	Pieces per Set	Code No.	Price $
3/8	9	140-920	**56.10**
1/2	9	140-930	**63.50**
5/8	12	140-940	**109.70**
3/4	12	140-950	**109.70**
1	6	140-960	**189.20**

C2 Grade Carbide & HSS Mini Bore Tools

BORITE

MADE IN USA



Shank Dia.	Min. Bore Dia.	Max. Bore Dia.	Overall Length	Carbide Code No.	Price $	HSS Code No.	Price $
1/4	1/16	5/16	2	145-022	**48.70**	145-002	**30.10**
1/4	3/32	15/32	2	145-024	**53.60**	145-004	**30.10**
1/4	1/8	5/8	2	145-026	**58.00**	145-006	**30.10**
1/4	5/32	25/32	2	145-028	**64.80**	145-008	**30.10**
1/4	3/16	15/16	2	145-030	**69.90**	145-010	**30.10**
1/4	1/4	1-1/4	2	145-032	**81.60**	145-012	**30.10**

Borite "Mini Tool Holders"

All mini-bore tools fit all holders.

BORITE

MADE IN USA

Model No.	Shank Size	Code No.	Price $
1	3/8	145-042	**35.70**
2	1/2	145-044	**35.70**
3	5/8	145-046	**40.20**
4	3/4	145-048	**40.20**

Carbide & HSS Borite Mini Sets

Set includes one each mini-tool boring bar plus holder.

BORITE

MADE IN USA

Model No.	Shank Size	Carbide Code No.	Price $	HSS Code No.	Price $
1C-135	3/8	145-034	**337.50**	145-014	**215.30**
2C-235	1/2	145-036	**337.50**	145-016	**215.30**
3C-335	5/8	145-038	**416.40**	145-018	**220.00**
4C-435	3/4	145-040	**416.40**	145-020	**220.00**

HSCO Capscrew Counterbores

cobalt



Capscrew Size	Pilot Dia.	Cutter Dia.	Shank Dia.	Capscrew Length	Overall Length	Grade C5 Code No.	Price $
#6	.150	.242	7/32	1-1/16	3	150-302	**32.40**
#8	11/64	19/64	1/4	1-1/16	3	150-304	**32.40**
#10	13/64	21/64	5/16	1-1/16	3-1/2	150-306	**36.10**
1/4	9/32	13/32	3/8	1-3/8	5	150-308	**43.50**
5/16	11/32	1/2	7/16	1-3/8	5	150-310	**51.70**
3/8	13/32	19/32	1/2	1-1/2	6	150-312	**62.50**
7/16	15/32	11/16	1/2	1-3/4	7	150-314	**77.90**
1/2	17/32	25/32	3/4	2	7-1/2	150-316	**93.70**
9/16	9/16	13/16	3/4	2-3/8	7-1/2	150-318	**107.50**
5/8	21/32	31/32	3/4	2-3/8	7-1/2	150-320	**113.10**
3/4	13/16	1-3/16	3/4	2-3/8	7-1/2	150-322	**137.70**
3/4	25/32	1-3/16	1	2-7/8	8	150-324	**198.80**
7/8	15/16	1-3/8	1	2-7/8	8	150-326	**258.50**
1	1-1/16	1-9/16	1	3-1/8	10	150-328	**371.60**

QUALITY IMPORT

HSS Solid Capscrew Counterbores, Straight Shank



Screw Size	Pilot Dia.	Cutter Dia.	Shank Dia.	Overall Length	Grade C5 Code No.	Price $
#5	.141	.221	3/16	3	150-105	**28.90**
#6	.150	.242	7/32	3	150-110	**28.90**
#8	11/64	19/64	1/4	3	150-115	**29.20**
#10	13/64	21/64	5/16	3-1/2	150-120	**30.50**
1/4	9/32	13/32	3/8	5	150-125	**38.00**
5/16	11/32	1/2	7/16	5	150-130	**41.50**
3/8	13/32	19/32	1/2	6	150-135	**63.00**
7/16	15/32	11/16	1/2	7	150-140	**55.10**
1/2	17/32	25/32	3/4	7-1/2	150-145	**67.00**
5/8	21/32	31/32	3/4	7-1/2	150-150	**117.70**
3/4	13/16	1-3/16	1	8	150-155	**188.20**
7/8	15/16	1-3/8	1	8	150-160	**223.70**

HSCO Straight Shank Counterbores - Metric



Screw Size	Pilot Dia.	Cutter Dia.	Cutter Length	Shank Dia.	Code No.	Price $
M3	3.4	6	25.400	7/32	150-400	**35.40**
M4	4.5	8	25.400	5/16	150-405	**32.30**
M5	5.5	10	31.750	3/8	150-410	**42.80**
M6	6.6	11	34.925	7/16	150-415	**51.00**
M8	9	15	38.894	1/2	150-420	**54.60**
M10	11	18	44.450	1/2	150-425	**71.80**
M12	14	20	50.800	1/2	150-430	**67.10**
M14	15	24	60.325	MT2	150-435	**85.10**
M16	17	26	79.375	MT2	150-440	**123.90**
M20	21	33	79.375	MT2	150-445	**164.70**

HSS Straight Shank Counterbores - Metric



Screw Size	Pilot Dia.	Cutter Dia.	Cutter Length	Shank Dia.	Code No.	Price $
M3	3.4	6	25.400	7/32	150-170	**29.40**
M4	4.5	8	25.400	5/16	150-171	**32.40**
M5	5.5	10	31.750	3/8	150-172	**41.30**
M6	6.6	11	34.925	7/16	150-173	**45.60**
M8	9	15	38.894	1/2	150-174	**45.60**
M10	11	18	44.450	1/2	150-175	**49.80**
M12	14	20	50.800	1/2	150-176	**56.80**
M14	15	24	60.325	MT2	150-177	**88.30**
M16	17	26	79.375	MT2	150-178	**121.60**
M20	21	33	79.375	MT2	150-179	**187.30**

Counterbore Sets - Straight Shank



* block not included

Description	Code No.	Price $
Inch HSCO - 7pc set Includes: #6, #8, #10, 1/4", 5/16", 3/8", 1/2"	150-190	**350.90**
Inch HSS - 7pc set Includes: #6, #8, #10, 1/4", 5/16", 3/8", 1/2"	150-200	**220.50**
Metric HSCO - 7pc set Includes: M3, M4, M5, M6, M8, M10, M12	150-192	**353.00**
Metric HSS - 7pc set Includes: M3, M4, M5, M6, M8, M10, M12	150-195	**245.40**

HSS Taper Shank Counterbores - Inch



Screw Size	Pilot Dia.	Cutter Dia.	Taper Shank	Overall Length	Code No.	Price $
5/8	21/32	31/32	MT 2	8-1/4	150-205	**96.10**
3/4	13/16	1-3/16	MT 3	9	150-210	**195.50**
7/8	15/16	1-3/8	MT 3	9	150-220	**222.00**
1	1-1/16	1-9/16	MT 3	10	150-230	**265.70**

HSS Annular Cutters - Inch

- Eliminate multi-step drilling
- Lower cost per hole
- Better finishing
- More accurate, cleaner holes.
- Longer tool life
- 3/4" shank dia. with two flats
- Cutters are interchangeable with other standard hole cutting systems.



Size	1" Depth Code No.	Price $	2" Depth Code No.	Price $	3" Depth Code No.	Price $
7/16	138-000	**68.90**	138-054	**96.00**		
1/2	138-002	**72.80**	138-056	**99.70**		
9/16	138-004	**72.80**	138-058	**99.70**		
5/8	138-006	**72.80**	138-060	**99.70**		
11/16	138-008	**72.80**	138-062	**99.70**		
3/4	138-010	**77.30**	138-064	**107.60**		
13/16	138-012	**85.30**	138-066	**114.60**	138-108	**161.50**
7/8	138-014	**86.70**	138-068	**128.70**	138-110	**177.70**
15/16	138-016	**91.90**	138-070	**136.70**	138-112	**196.30**
1	138-018	**97.30**	138-072	**145.50**	138-114	**196.30**
1-1/16	138-020	**103.00**	138-074	**153.50**	138-116	**208.10**
1-1/8	138-022	**112.40**	138-076	**154.40**	138-118	**233.80**
1-3/16	138-024	**117.00**	138-078	**160.00**	138-120	**240.70**
1-1/4	138-026	**119.40**	138-080	**168.40**	138-122	**252.40**
1-5/16	138-028	**131.10**	138-082	**179.90**	138-124	**261.80**
1-3/8	138-030	**145.10**	138-084	**193.20**	138-126	**285.20**
1-7/16	138-032	**159.00**	138-086	**210.50**	138-128	**313.00**
1-1/2	138-034	**173.10**	138-088	**219.70**	138-130	**336.50**
1-9/16	138-036	**182.30**	138-090	**235.10**	138-132	**369.20**
1-5/8	138-038	**187.10**	138-092	**247.70**	138-134	**383.10**
1-11/16	138-040	**210.50**	138-094	**275.90**	138-136	**397.20**
1-3/4	138-042	**215.10**	138-096	**280.40**	138-138	**434.50**
1-13/16	138-044	**243.20**	138-098	**303.90**		
1-7/8	138-046	**243.20**	138-100	**308.50**	138-142	**504.50**
1-15/16	138-048	**252.40**	138-102	**327.10**	138-144	**523.20**
2	138-050	**271.00**	138-104	**336.50**	138-146	**556.00**
2-1/16	138-052	**315.40**	138-106	**383.10**		

FOR ANNULAR CUTTER HOLDERS SEE PAGE G104

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



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	120-905	**58.00**	122-005	**144.80**		
5/16	21/32	17/64	21/64	1/2	120-910	**134.10**	122-010	**298.30**		
3/8	25/32	21/64	13/32	3/4	120-915	**164.90**	122-015	**223.30**		
1/2	31/32	25/64	17/32	3/4	120-920	**185.80**				
5/8	1-1/4	31/64	21/32	1					122-065	**459.10**
3/4	1-15/32	5/8	25/32	1			122-030	**391.70**	122-070	**606.50**
1	1-27/32	53/64	1-1/32	1-1/4	120-935	**457.70**	122-035	**1,318.20**	122-075	**877.90**
1-1/4	2-7/32	1-3/32	1-9/32	1-1/4	120-940	**692.60**	122-040	**1,636.20**	122-080	**1,322.00**
1-1/2	2-21/32	1-11/32	1-17/32	1-1/4	120-945	**958.80**	122-045	**821.80**	122-085	**1,775.50**

HSS Annular Cutter Sets



5 Pc. Set	1" Depth Code No.	Price $	2" Depth Code No.	Price $
9/16, 11/16, 13/16, 15/16, 1-1/16	138-148	**456.30**	138-150	**691.50**

Ejector Pins For Annular Cutters



Sizes	Code No.	Price $
1/4 x 3" (short)	138-152	**13.30**
.187 X 3" (short) **	138-153	**13.30**
1/4 x 4" (long)	138-154	**14.30**
.187 x 4" (long) **	138-155	**14.30**
5/16 x 5" (x-long)	138-156	**33.10**

** For use with 7/16" cutter

Corner Rounding End Mills



Radius	Shank Dia.	Largest Dia.	HSS Code No.	Price $	Cobalt Code No.	Price $
1/16	3/8	7/16	136-750	**22.20**	122-200	**95.50**
3/32	3/8	1/2	136-751	**22.20**	122-205	**100.70**
1/8	1/2	5/8	136-752	**32.70**	122-210	**126.70**
5/32	1/2	3/4	136-753	**98.80**	122-215	**157.50**
3/16	1/2	7/8	136-754	**51.40**	122-220	**158.00**
3/16	3/4	7/8	136-755	**51.40**	122-225	**187.60**
1/4	1/2	1	136-756	**66.60**	122-230	**179.50**
1/4	3/4	1	136-757	**59.90**	122-235	**206.10**
5/16	1/2	1-1/8	136-758	**154.00**	122-240	**249.40**
5/16	3/4	1-1/8	-	-	122-245	**255.50**
5/16	7/8	1-1/8	-	-	122-250	**337.70**
3/8	1/2	1-1/4	136-760	**102.60**	122-255	**289.50**
3/8	3/4	1-1/4	-	-	122-260	**264.80**
3/8	7/8	1-1/4	136-761	**53.90**	122-265	**327.30**
7/16	3/4	1-3/8	136-762	**67.60**	122-270	**321.50**
7/16	1	1-3/8	136-748	**246.50**	-	-
1/2	3/4	1-3/8	-	-	122-275	**356.30**
1/2	1	1-1/2	136-763	**166.60**	122-280	**385.00**
5/8	3/4	1-15/16	136-765	**244.50**	122-285	**559.50**
3/4	3/4	1-7/8	136-767	**189.20**	122-290	**683.60**

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	125-005	**43.00**	125-007	**61.70**
202-1/2	5/16	1/16	2-1/16	125-010	**43.00**	125-012	**61.70**
203	3/8	1/16	2-1/16	125-020	**43.00**	125-022	**61.70**
204	1/2	1/16	2-1/16	125-105	**61.70**	125-107	**46.70**
302-1/2	5/16	3/32	2-3/32	125-015	**43.00**	125-017	**61.70**
303	3/8	3/32	2-3/32	125-023	**43.00**	125-024	**61.70**
304	1/2	3/32	2-3/32	125-110	**30.00**	125-112	**56.10**
305	5/8	3/32	2-3/32	125-115	**36.10**	125-117	**56.10**
403	3/8	1/8	2-1/8	125-025	**43.00**	125-027	**51.00**
404	1/2	1/8	2-1/8	125-120	**36.10**	125-122	**46.70**
405	5/8	1/8	2-1/8	125-125	**30.00**	125-127	**56.10**
406	3/4	1/8	2-1/8	125-130	**30.00**	125-132	**51.10**
505	5/8	5/32	2-5/32	125-135	**30.00**	125-137	**56.10**
506	3/4	5/32	2-5/32	125-145	**45.30**	125-147	**61.30**
507	7/8	5/32	2-5/32	125-155	**50.40**	125-157	**74.50**
605	5/8	3/16	2-3/16	125-140	**41.50**	125-142	**46.70**
606	3/4	3/16	2-3/16	125-160	**41.90**	125-162	**51.10**
607	7/8	3/16	2-3/16	125-165	**50.40**	125-167	**74.50**
608	1	3/16	2-3/16	125-175	**46.40**	125-177	**69.50**
609	1-1/8	3/16	2-3/16	125-190	**62.00**	125-192	**92.00**
610	1-1/4	3/16	2-3/16	125-215	**57.10**	125-217	**83.60**
707	7/8	7/32	2-7/32	125-170	**60.90**	125-172	**74.50**
708	1	7/32	2-7/32	125-180	**115.60**	125-182	**83.60**
709	1-1/8	7/32	2-7/32	125-205	**61.20**	125-207	**92.00**
710	1-1/4	7/32	2-7/32	125-220	**82.70**	125-222	**100.20**
806	3/4	1/4	2-1/4	125-150	**41.90**	125-152	**51.10**
807	7/8	1/4	2-1/4	125-195	**51.60**	125-197	**74.50**
808	1	1/4	2-1/4	125-200	**46.40**	125-202	**69.50**
809	1-1/8	1/4	2-1/4	125-210	**104.20**	125-212	**92.00**
810	1-1/4	1/4	2-1/4	125-225	**73.50**	125-227	**100.20**
811	1-3/8	1/4	2-1/4	125-230	**89.40**	125-232	**111.50**
812	1-1/2	1/4	2-1/4	125-235	**100.40**	125-237	**108.10**
1008	1	5/16	2-5/16	125-240	**62.00**	125-242	**83.60**
1009	1-1/8	5/16	2-5/16	125-245	**78.30**	125-247	**92.00**
1010	1-1/4	5/16	2-5/16	125-250	**74.80**	125-252	**176.40**
1011	1-3/8	5/16	2-5/16	125-255	**95.90**	125-257	**118.80**
1012	1-1/2	5/16	2-5/16	125-260	**100.40**	125-262	**129.30**
1208	1	3/8	2-3/8	125-185	**103.70**	125-187	**131.80**
1210	1-1/4	3/8	2-3/8	125-265	**79.80**	125-267	**93.00**
1211	1-3/8	3/8	2-3/8	125-270	**148.60**	125-272	**118.80**
1212	1-1/2	3/8	2-3/8	125-275	**159.50**	125-277	**113.40**
8 Piece Set: No. 204, 304, 305, 406, 605, 606, 608, 806				125-276	**395.80**	125-258	**493.40**
9 Piece Set: No. 204, 404, 406, 806, 606, 608, 808, 610, 1210				125-278	**539.60**	125-259	**647.50**
41 Piece Set: includes all sizes				125-279	**2,794.50**	125-261	**3,046.50**

Dovetail Angular Cutters - 45º

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



Dia.	Width	Shank	Length	HSS Code No.	Price $	Cobalt Code No.	Price $
3/8	1/8	3/8	2-1/8	125-303	**134.30**	122-100	**135.40**
1/2	5/32	3/8	2-1/8	125-305	**129.70**	122-105	**132.80**
3/4	1/4	3/8	2-1/8	125-310	**117.50**	122-110	**143.40**
1-3/8	7/16	5/8	2-7/8	125-315	**189.10**	122-115	**244.40**
1-7/8	9/16	7/8	3-1/4	125-320	**323.40**	122-120	**514.20**
2-1/4	5/8	1	3-3/4	125-325	**392.60**	122-125	**655.10**

Dovetail Angular Cutters - 60º

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



Dia.	Width	Shank	Length	HSS Code No.	Price $	Cobalt Code No.	Price $
3/8	3/16	3/8	2-1/8	125-328	**123.10**	122-130	**135.40**
1/2	1/4	3/8	2-1/8	125-330	**131.80**	122-135	**132.80**
3/4	5/16	3/8	2-1/8	125-335	**117.10**	122-140	**143.40**
1-3/8	9/16	5/8	2-7/8	125-340	**182.40**	122-145	**244.40**
1-7/8	13/16	7/8	3-1/4	125-345	**296.30**	122-150	**514.20**
2-1/4	1-1/16	1	3-3/4	125-350	**392.60**	122-155	**655.10**

Concave, Shank Type Cutters, HSS



Radius	Shank Dia.	Overall Length	Cutter Dia.	No. Flutes	Code No.	Price $
1/32	1/2	3	3/4	6	126-070	**162.30**
1/16	1/2	3	3/4	6	126-071	**146.10**
3/32	1/2	3	3/4	6	126-072	**130.30**
1/8	3/4	3-1/2	1	6	126-073	**178.00**
5/32	3/4	3-1/2	1	6	126-074	**198.50**
3/16	3/4	3-1/2	1	6	126-075	**186.80**
1/4	3/4	4	1-1/4	4	126-076	**236.90**
5/16	3/4	4	1-1/4	4	126-077	**295.20**
3/8	3/4	4-3/16	1-1/2	4	126-078	**332.70**

Convex, Shank Type Cutters, HSS



Radius	Shank Dia.	Overall Length	Cutter Dia.	No. Flutes	Code No.	Price $
1/32	1/2	3	3/4	6	126-079	**126.40**
1/16	1/2	3	3/4	6	126-080	**107.50**
3/32	1/2	3	7/8	6	126-081	**114.10**
1/8	3/4	3-1/2	1-1/4	6	126-082	**170.00**
5/32	3/4	3-1/2	1-5/16	6	126-083	**187.50**
3/16	3/4	3-1/2	1-3/8	6	126-084	**196.40**
1/4	3/4	4	1-1/2	6	126-085	**228.50**
5/16	3/4	4	1-5/8	6	126-086	**310.70**
3/8	3/4	4-3/16	1-3/4	6	126-087	**334.80**

Double Angle, Shank Type Cutters

- Right hand cut
- High Speed Steel



Incl. Angle	Cutter Dia.	Shank Dia.	Overall Length	Cutter Thickness	Code No.	Price $
60˚	3/4	3/8	2-3/8	3/16	126-088	**95.80**
60˚	1	1/2	2-27/32	5/16	126-089	**146.70**
60˚	1-3/8	5/8	3-7/32	7/16	126-090	**192.90**
60˚	1-1/2	5/8	3-3/8	1/2	126-091	**237.90**
60˚	1-7/8	3/4	3-25/32	5/8	126-092	**307.70**
60˚	2-1/4	7/8	4-5/32	3/4	126-093	**314.30**
60˚	2-1/4	3/4	3-1/8	1/2	126-094	**235.70**
90˚	3/4	3/8	2-7/16	1/4	126-095	**95.80**
90˚	1	1/2	2-29/32	3/8	126-096	**146.70**
90˚	1-3/8	5/8	3-9/32	1/2	126-097	**192.90**
90˚	1-1/2	5/8	3-7/16	9/16	126-098	**237.90**
90˚	1-7/8	3/4	3-25/32	5/8	126-099	**307.70**
90˚	2-1/4	7/8	4-5/32	3/4	126-100	**330.00**
90˚	2-1/4	3/4	3-1/8	1/2	126-101	**281.30**

Plain & Staggered Tooth Milling Cutters - 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	125-405	**85.30**	-	-	-
2	1/4	1/2	14	125-410	**89.40**	-	-	-
2	3/8	1/2	14	125-415	**96.60**	-	-	-
2	3/16	5/8	14	125-420	**85.10**	-	-	-
2	1/4	5/8	14	125-425	**87.60**	-	-	-
2	3/8	5/8	14	125-430	**97.10**	-	-	-
2	1/4	7/8	14	125-435	**89.80**	-	-	-
2	5/16	7/8	14	125-440	**94.10**	-	-	-
2	3/8	7/8	14	125-445	**98.10**	-	-	-
2	7/16	7/8	14	125-450	**133.70**	-	-	-
2-1/2	3/16	7/8	16	125-455	**130.70**	16	130-605	**97.60**
2-1/2	1/4	7/8	16	125-460	**136.10**	16	130-610	**104.80**
2-1/2	5/16	7/8	16	125-465	**111.70**	16	130-615	**109.90**
2-1/2	3/8	7/8	16	125-470	**116.90**	16	130-620	**113.60**
2-1/2	7/16	7/8	16	125-475	**122.50**	16	130-625	**103.50**
2-1/2	1/2	7/8	16	125-480	**127.70**	16	130-630	**125.70**
2-1/2	3/16	1	16	125-485	**129.90**	-	-	-
2-1/2	1/4	1	16	125-490	**136.90**	16	130-635	**104.00**
2-1/2	5/16	1	16	125-495	**143.90**	-	-	-
2-1/2	3/8	1	16	125-500	**150.80**	-	-	-
2-1/2	7/16	1	16	125-505	**121.20**	16	130-640	**118.50**
2-1/2	1/2	1	16	125-510	**165.00**	16	130-645	**105.00**
2-1/2	5/8	1	16	125-515	**138.30**	-	-	-
3	3/16	1	18	125-520	**135.30**	16	130-650	**143.10**
3	7/32	1	18	125-525	**106.90**	16	130-655	**113.80**
3	1/4	1	18	125-530	**144.80**	16	130-660	**152.20**
3	9/32	1	18	125-535	**111.70**	16	130-665	**120.70**
3	5/16	1	18	125-540	**115.60**	16	130-670	**158.90**
3	11/32	1	18	125-545	**118.50**	-	-	-
3	3/8	1	18	125-550	**160.20**	16	130-675	**167.10**
3	13/32	1	18	125-555	**126.80**	-	-	-
3	7/16	1	18	125-560	**130.00**	16	130-680	**134.70**
3	1/2	1	18	125-565	**173.50**	16	130-685	**182.00**
3	9/16	1	18	125-570	**144.60**	16	130-690	**150.30**
3	5/8	1	18	125-575	**149.70**	16	130-695	**157.70**
3	11/16	1	18	125-580	**156.40**	16	130-700	**166.20**
3	3/4	1	18	125-585	**165.20**	16	130-705	**175.50**
3	13/16	1	18	125-590	**173.10**	16	130-710	**192.50**
3	7/8	1	18	125-595	**180.80**	16	130-715	**192.50**
3	15/16	1	18	-	-	16	130-720	**243.70**

Plain & Staggered Tooth Milling Cutters - HSS, cont'd

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg. Tooth Code No.	Price $
3	1	1	18	125-605	**220.50**	16	130-725	**243.70**
3	3/16	1-1/4	-	-	-	16	130-730	**109.50**
3	1/4	1-1/4	18	125-610	**111.50**	16	130-735	**116.90**
3	5/16	1-1/4	18	125-615	**115.60**	16	130-740	**120.70**
3	3/8	1-1/4	18	125-620	**122.30**	16	130-745	**126.10**
3	7/16	1-1/4	18	125-625	**170.10**	16	130-750	**134.70**
3	1/2	1-1/4	18	125-630	**175.60**	16	130-755	**139.90**
3	9/16	1-1/4	-	-	-	16	130-760	**150.30**
3	5/8	1-1/4	18	125-635	**150.30**	16	130-765	**157.90**
3	11/16	1-1/4	-	-	-	16	130-770	**166.70**
3	3/4	1-1/4	18	125-640	**166.40**	16	130-775	**175.00**
3	13/16	1-1/4	-	-	-	16	130-780	**192.50**
3	7/8	1-1/4	18	-	-	16	130-785	**175.00**
3	15/16	1-1/4	-	-	-	16	130-790	**198.40**
3	1	1-1/4	18	125-650	**220.50**	16	130-795	**250.60**
3-1/2	3/16	1	20	125-655	**132.80**	-	-	-
3-1/2	1/4	1	20	125-660	**136.90**	18	130-800	**197.70**
3-1/2	5/16	1	20	125-665	**147.20**	-	-	-
3-1/2	3/8	1	20	125-670	**152.50**	18	130-805	**215.30**
3-1/2	7/16	1	20	125-675	**174.80**	-	-	-
3-1/2	1/2	1	20	125-680	**174.80**	18	130-810	**213.00**
3-1/2	5/8	1	20	125-685	**202.50**	18	130-815	**231.40**
3-1/2	7/16	1-1/4	20	125-690	**158.70**	-	-	-
3-1/2	1/2	1-1/4	20	125-695	**174.80**	-	-	-
4	3/16	1	-	125-700	**197.20**	18	130-825	**201.80**
4	7/32	1	22	125-705	**154.60**	18	130-830	**164.70**
4	1/4	1	22	125-710	**211.20**	18	130-835	**214.80**
4	9/32	1	22	125-715	**160.70**	18	130-840	**175.20**
4	5/16	1	22	125-720	**219.30**	18	130-845	**221.70**
4	11/32	1	22	125-725	**171.60**	18	130-850	**185.70**
4	3/8	1	22	125-730	**230.90**	18	130-855	**232.90**
4	7/16	1	22	125-735	**194.00**	18	130-860	**196.20**
4	13/32	1	22	125-740	**189.10**		-	-
4	1/2	1	22	125-745	**269.50**	18	130-865	**269.90**
4	9/16	1	22	125-750	**226.40**	18	130-870	**231.10**
4	5/8	1	22	125-755	**307.70**	18	130-875	**316.30**
4	11/16	1	22	125-760	**250.40**	18	130-880	**198.40**
4	3/4	1	22	125-765	**263.60**	18	130-885	**269.90**
4	13/16	1	22	125-770	**277.60**	18	130-890	**282.80**
4	7/8	1	22	125-775	**296.90**	18	130-895	**299.50**
4	15/16	1	22	125-780	**209.50**	18	130-900	**316.20**
4	1	1	22	125-785	**322.60**	18	130-905	**330.30**
4	3/16	1-1/4	-	-	-	18	130-910	**201.80**
4	7/32	1-1/4	22	125-790	**154.40**	18	130-915	**164.70**
4	1/4	1-1/4	22	125-795	**165.20**	18	130-920	**214.90**
4	9/32	1-1/4	22	125-800	**162.10**	18	130-925	**175.20**
4	5/16	1-1/4	22	125-805	**168.30**	18	130-930	**221.40**
4	11/32	1-1/4	22	125-810	**171.40**	18	130-935	**185.70**
4	3/8	1-1/4	22	125-815	**179.90**	18	130-940	**232.90**
4	7/16	1-1/4	22	125-820	**194.00**	18	130-945	**196.20**
4	13/32	1-1/4	22	125-825	**158.70**	-	-	-
4	1/2	1-1/4	22	125-830	**269.90**	18	130-950	**269.80**
4	9/16	1-1/4	22	125-835	**226.40**	18	130-955	**231.10**
4	5/8	1-1/4	22	125-840	**309.20**	18	130-960	**317.20**
4	11/16	1-1/4	22	125-845	**250.60**	18	-	-
4	3/4	1-1/4	22	125-850	**263.60**	18	130-970	**269.90**
4	13/16	1-1/4	22	125-855	**206.70**	18	130-975	**244.90**
4	7/8	1-1/4	22	125-860	**294.40**	18	130-980	**299.50**
4	15/16	1-1/4	22	125-865	**209.50**	18	130-985	**265.80**
4	1	1-1/4	22	125-870	**321.30**	18	130-990	**334.30**
4	1-1/8	1-1/4	22	125-875	**352.20**	18	130-995	**354.80**
4	1-3/16	1-1/4	-	-	-	18	135-105	**372.60**
4	1-1/4	1-1/4	22	125-880	**381.50**	18	135-110	**399.50**
4	1-1/2	1-1/4	22	125-885	**439.50**	18	135-115	**540.90**
4-1/2	1/2	1	-	-	-	20	135-120	**285.40**
4-1/2	3/8	1-1/4	24	125-890	**235.80**	-	-	-
4-1/2	1/2	1-1/4	24	125-895	**235.80**	20	135-125	**285.40**
5	1/4	1	24	125-900	**288.70**	22	135-130	**293.70**
5	9/32	1	24	125-905	**227.40**	-	-	-
5	5/16	1	24	125-910	**227.40**	22	135-135	**269.90**
5	11/32	1	24	125-915	**235.80**	-	-	-
5	3/8	1	24	125-920	**235.80**	22	135-140	**331.10**

Plain & Staggered Tooth Milling Cutters - HSS, cont'd

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg. Tooth Code No.	Price $
5	13/32	1	24	125-925	**266.10**	-	-	-
5	7/16	1	24	125-930	**271.10**	22	135-145	**285.40**
5	1/2	1	24	125-935	**378.70**	22	135-150	**372.00**
5	9/16	1	-	-	-	22	135-155	**331.60**
5	5/8	1	24	125-945	**338.00**	22	135-160	**349.60**
5	11/16	1	24	125-950	**365.10**	22	135-165	**382.80**
5	3/4	1	24	125-955	**381.50**	22	135-170	**399.50**
5	13/16	1	24	125-960	**240.40**	22	135-175	**422.70**
5	7/8	1	24	125-965	**318.90**	22	135-180	**445.90**
5	15/16	1	24	125-970	**318.90**	-	-	-
5	1	1	24	125-975	**470.20**	-	-	-
5	1/4	1-1/4	24	125-980	**227.40**	22	135-185	**256.90**
5	5/16	1-1/4	24	125-985	**227.40**	22	135-190	**312.70**
5	11/32	1-1/4	24	125-990	**227.40**	-	-	-
5	3/8	1-1/4	24	125-995	**235.80**	22	135-195	**285.40**
5	13/32	1-1/4	24	130-105	**263.60**	-	-	-
5	7/16	1-1/4	24	130-110	**262.20**	22	135-200	**285.40**
5	1/2	1-1/4	24	130-115	**377.60**	22	135-205	**385.20**
5	9/16	1-1/4	24	130-120	**320.00**	22	135-210	**330.30**
5	5/8	1-1/4	24	130-125	**338.00**	22	135-215	**350.90**
5	11/16	1-1/4	-	-	-	22	135-220	**377.90**
5	3/4	1-1/4	24	130-135	**384.30**	22	135-225	**391.90**
5	13/16	1-1/4	24	130-140	**276.40**	-	-	-
5	7/8	1-1/4	24	130-145	**422.70**	22	135-235	**434.20**
5	15/16	1-1/4	24	130-150	**277.30**	22	135-240	**470.20**
5	1	1-1/4	24	130-155	**476.70**	22	135-245	**480.60**
5	1-1/4	1-1/4	24	130-160	**569.20**	-	-	-
6	1/4	1	26	130-165	**303.30**	24	135-250	**393.20**
6	5/16	1	26	130-170	**303.30**	24	135-255	**347.10**
6	3/8	1	26	130-175	**335.50**	24	135-260	**453.90**
6	7/16	1	26	130-180	**361.10**	24	135-265	**366.30**
6	1/2	1	26	130-185	**395.80**	24	135-270	**524.30**
6	9/16	1	26	130-190	**430.40**	24	135-275	**445.90**
6	5/8	1	26	130-195	**326.80**	24	135-280	**470.20**
6	11/16	1	26	130-200	**484.40**	24	135-285	**499.80**
6	3/4	1	26	130-205	**515.10**	24	135-290	**528.00**
6	13/16	1	26	130-210	**542.10**	24	135-295	**579.40**
6	7/8	1	26	130-215	**433.80**	24	135-300	**587.20**
6	15/16	1	26	130-220	**609.00**	-	-	-
6	1	1	26	130-225	**642.40**	24	135-305	**666.80**
6	1-1/4	1	26	130-230	**493.00**	-	-	-
6	1/4	1-1/4	26	130-235	**303.30**	24	135-310	**347.10**
6	9/32	1-1/4	26	130-240	**303.30**	24	135-315	**347.10**
6	5/16	1-1/4	26	130-245	**303.30**	24	135-320	**347.10**
6	11/32	1-1/4	26	130-250	**308.50**	-	-	-
6	3/8	1-1/4	26	130-255	**335.50**	24	135-325	**348.40**
6	13/32	1-1/4	26	130-260	**352.20**	-	-	-
6	7/16	1-1/4	26	130-265	**362.30**	24	135-330	**366.30**
6	1/2	1-1/4	26	130-270	**395.80**	24	135-335	**403.50**
6	9/16	1-1/4	26	130-275	**433.00**	24	135-340	**463.80**
6	5/8	1-1/4	26	130-280	**457.50**	24	135-345	**471.50**
6	11/16	1-1/4	-	-	-	24	135-350	**442.00**
6	3/4	1-1/4	26	130-290	**515.10**	24	135-355	**528.00**
6	13/16	1-1/4	26	130-295	**542.10**	24	135-360	**579.40**
6	7/8	1-1/4	26	130-300	**433.80**	24	135-365	**585.80**
6	15/16	1-1/4	26	130-305	**377.20**	24	135-370	**623.00**
6	1	1-1/4	26	130-310	**638.50**	24	135-375	**655.10**
6	1-1/8	1-1/4	26	130-315	**684.70**	24	135-380	**713.00**
6	1-3/16	1-1/4	-	-	-	24	135-385	**745.00**
6	1-1/4	1-1/4	26	130-320	**759.20**	24	135-390	**778.50**
6	1-1/2	1-1/4	-	-	-	24	135-395	**890.10**
6	1	1-1/2	-	-	-	24	135-400	**492.20**
7	1/4	1-1/4	28	130-325	**513.90**	26	135-405	**597.30**
7	5/16	1-1/4	28	130-330	**528.00**	26	135-410	**597.30**
7	3/8	1-1/4	28	130-335	**548.70**	26	135-415	**650.00**
7	7/16	1-1/4	28	130-340	**562.70**	26	135-420	**684.70**
7	1/2	1-1/4	28	130-345	**562.70**	26	135-425	**706.60**
7	9/16	1-1/4	28	130-350	**643.60**	26	135-430	**732.20**
7	5/8	1-1/4	28	130-355	**679.70**	26	135-435	**759.20**
7	11/16	1-1/4	28	130-360	**715.50**	26	135-440	**837.40**
7	3/4	1-1/4	28	130-365	**760.50**	26	135-445	**837.40**
7	13/16	1-1/4	28	130-370	**791.40**	26	135-450	**941.60**
7	7/8	1-1/4	28	130-375	**842.70**	26	135-455	**941.60**

Plain & Staggered Tooth Milling Cutters - HSS, cont'd

Dia.	Width	Bore	No. of Teeth	Plain Tooth Code No.	Price $	No. of Teeth	Stagg. Tooth Code No.	Price $
7	15/16	1-1/4	28	130-380	**887.50**	26	135-460	**1,028.90**
7	1	1-1/4	28	130-385	**940.30**	26	135-465	**1,028.90**
7	3/8	1-1/2	-	-	-	26	135-470	**590.80**
7	7/16	1-1/2	-	-	-	26	135-475	**706.60**
7	1/2	1-1/2	-	-	-	26	135-480	**559.00**
7	5/8	1-1/2	-	-	-	26	135-485	**689.90**
7	3/4	1-1/2	-	-	-	26	135-490	**837.40**
7	7/8	1-1/2	-	-	-	26	135-495	**936.40**
7	1	1-1/2	-	-	-	26	135-500	**920.80**
8	1/4	1	32	130-390	**749.10**	28	135-505	**706.60**
8	5/16	1	32	130-395	**788.80**	-	-	-
8	3/8	1	32	130-400	**823.40**	28	135-510	**788.80**
8	7/16	1	32	130-405	**792.40**	-	-	-
8	1/2	1	32	130-410	**872.20**	28	-	-
8	1/4	1-1/4	32	130-415	**752.90**	28	135-520	**706.60**
8	5/16	1-1/4	32	130-420	**717.60**	28	135-525	**742.50**
8	3/8	1-1/4	32	130-425	**823.40**	28	135-530	**783.50**
8	7/16	1-1/4	32	130-430	**872.20**	28	135-535	**827.30**
8	1/2	1-1/4	32	130-435	**872.20**	28	135-540	**827.30**
8	9/16	1-1/4	32	130-440	**802.70**	28	135-545	**958.10**
8	5/8	1-1/4	32	130-445	**910.70**	28	135-550	**958.10**
8	11/16	1-1/4	32	130-450	**942.80**	28	135-555	**948.00**
8	3/4	1-1/4	32	130-455	**968.40**	28	135-560	**1,043.00**
8	13/16	1-1/4	32	130-460	**796.70**	28	135-565	**914.90**
8	7/8	1-1/4	32	130-465	**929.20**	28	135-570	**1,157.20**
8	15/16	1-1/4	32	130-470	**1,122.70**	28	135-575	**1,241.90**
8	1	1-1/4	32	130-475	**1,165.00**	28	135-580	**1,241.90**
8	1/4	1-1/2	-	-	-	28	135-585	**559.00**
8	5/16	1-1/2	-	-	-	28	135-590	**742.50**
8	3/8	1-1/2	-	-	-	28	135-595	**783.50**
8	7/16	1-1/2	-	-	-	28	135-600	**827.30**
8	1/2	1-1/2	-	-	-	28	135-605	**827.30**
8	5/8	1-1/2	-	-	-	28	135-615	**958.10**
8	11/16	1-1/2	-	-	-	28	135-620	**1,043.00**
8	3/4	1-1/2	-	-	-	28	135-625	**1,043.00**
8	13/16	1-1/2	-	-	-	28	135-630	**1,157.20**
8	7/8	1-1/2	-	-	-	28	135-635	**1,052.20**
8	15/16	1-1/2	-	-	-	28	135-640	**1,241.90**
8	1	1-1/2	-	-	-	28	135-645	**1,129.00**
8	1-1/8	1-1/2	-	-	-	28	135-650	**1,324.30**
8	1-1/4	1-1/2	-	-	-	28	135-655	**1,270.50**
8	1-1/2	1-1/2	-	-	-	28	135-660	**1,591.40**
9	1/4	1-1/4	34	130-485	**982.60**		-	-
9	3/8	1-1/4	34	130-490	**1,121.40**	30	135-665	**1,106.00**
9	1/2	1-1/4	34	130-495	**1,245.90**	30	135-670	**1,241.90**
9	5/8	1-1/4	34	130-500	**1,194.90**	30	135-675	**1,324.30**
9	3/4	1-1/4	34	130-505	**1,393.50**	30	135-680	**1,443.50**
9	1	1-1/4	34	130-510	**1,414.40**	30	135-685	**1,970.10**
9	1/4	1-1/2	-	-	-	30	135-690	**982.60**
9	3/8	1-1/2	-	-	-	30	135-695	**1,005.20**
9	1/2	1-1/2	-	-	-	30	135-700	**1,129.00**
9	5/8	1-1/2	-	-	-	30	135-705	**1,324.30**
9	3/4	1-1/2	-	-	-	30	135-710	**1,443.50**
9	1	1-1/2	-	-	-	30	135-715	**1,411.80**
10	3/8	1-1/4	-	-	-	32	135-720	**1,547.80**
10	5/8	1-1/4	36	130-515	**1,460.90**	-	-	-
10	3/4	1-1/4	36	130-520	**1,955.90**	-	-	-
10	13/16	1-1/4	-	-	-	32	135-725	**2,044.60**
10	1/4	1-1/2	36	130-525	**1,306.30**	32	135-730	**1,337.10**
10	5/16	1-1/2	36	130-530	**1,436.00**	32	135-735	**1,462.70**
10	3/8	1-1/2	36	130-535	**1,522.00**	32	135-740	**1,545.00**
10	7/16	1-1/2	36	130-540	**1,674.70**	32	135-745	**1,340.00**
10	1/2	1-1/2	36	130-545	**1,737.80**	32	135-750	**1,755.70**
10	9/16	1-1/2	36	130-550	**1,618.10**	32	135-755	**1,795.40**
10	5/8	1-1/2	36	130-555	**1,848.10**	32	135-760	**1,687.40**
10	11/16	1-1/2	36	130-560	**1,510.30**	32	135-765	**1,921.50**
10	3/4	1-1/2	-	-	-	32	135-770	**1,960.00**
10	13/16	1-1/2	36	130-570	**2,040.80**	32	135-775	**2,044.60**
10	7/8	1-1/2	36	130-575	**2,125.50**	32	135-780	**2,138.30**
10	15/16	1-1/2	36	130-580	**2,216.70**	32	135-785	**2,027.20**
10	1	1-1/2	36	130-585	**2,072.20**	32	135-790	**2,336.10**
10	1-1/8	1-1/2	-	-	-	32	135-800	**2,238.10**
10	1-1/4	1-1/2	36	130-590	**2,495.50**	32	135-805	**2,766.20**
10	1-1/2	1-1/2	36	130-595	**2,562.40**	32	135-810	**3,149.00**

Plain Tooth Slitting Saws

- Plain tooth with side chip clearance



Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
2	22	1/16	5/8	135-870	**109.70**
2	22	5/64	5/8	135-871	**95.80**
2	22	3/32	5/8	135-872	**95.80**
2	22	1/8	5/8	135-874	**96.80**
2	22	5/32	5/8	135-877	**100.40**
2-1/2	28	1/16	7/8	135-878	**112.10**
2-1/2	28	1/16	1	135-879	**111.10**
2-1/2	28	5/64	7/8	135-880	**100.30**
2-1/2	28	3/32	7/8	135-900	**112.50**
2-1/2	28	3/32	1	135-901	**112.40**
2-1/2	28	7/64	7/8	135-902	**111.30**
2-1/2	28	1/8	7/8	135-905	**114.60**
2-1/2	28	1/8	1	135-903	**114.50**
2-1/2	28	9/64	7/8	135-904	**84.40**
2-1/2	28	11/64	7/8	135-907	**84.40**
3	32	1/16	1	135-911	**127.90**
3	32	5/64	1	135-906	**127.90**
3	32	3/32	1	135-910	**127.20**
3	32	7/64	1	135-912	**129.00**
3	32	7/64	1-1/4	135-914	**90.00**
3	32	1/8	1	135-915	**129.30**
3	32	9/64	1	135-917	**132.90**
3	32	9/64	1-1/4	135-916	**132.30**
3	32	5/32	1	135-920	**135.60**
3	32	11/64	1	135-921	**142.50**
3	32	11/64	1-1/4	135-922	**108.10**
3	32	3/16	1	135-925	**144.80**
3	32	3/16	1-1/4	135-926	**141.30**
3	32	7/32	1	135-927	**148.60**
3	32	7/32	1-1/4	135-928	**90.00**
3	32	1/4	1	135-929	**154.30**
3	32	1/4	1-1/4	135-931	**151.20**
4	36	1/16	1	135-933	**199.00**
4	36	1/16	1-1/4	135-934	**195.70**
4	36	5/64	1	135-936	**177.20**
4	36	5/64	1-1/4	135-924	**153.60**
4	36	3/32	1	135-930	**181.60**
4	36	3/32	1-1/4	135-938	**179.40**
4	36	7/64	1	135-932	**179.80**
4	36	7/64	1-1/4	135-939	**92.20**
4	36	1/8	1	135-935	**179.80**
4	36	1/8	1-1/4	135-941	**179.80**
4	36	9/64	1	135-937	**184.50**
4	36	9/64	1-1/4	135-942	**191.80**
4	36	5/32	1	135-940	**191.80**
4	36	5/32	1-1/4	135-943	**194.30**
4	36	11/64	1	135-944	**198.80**
4	36	11/64	1-1/4	135-946	**155.10**
4	36	3/16	1	135-945	**202.90**
4	36	3/16	1-1/4	135-947	**201.20**
4	36	7/32	1	135-948	**206.50**
4	36	7/32	1-1/4	135-949	**203.10**
4	36	1/4	1	135-951	**217.10**
4	36	1/4	1-1/4	135-953	**218.00**
5	40	1/16	1	135-954	**238.40**
5	40	1/16	1-1/4	135-956	**258.50**
5	40	3/32	1	135-950	**238.40**
5	40	3/32	1-1/4	135-952	**240.00**
5	40	7/64	1	135-957	**244.50**
5	40	7/16	1-1/4	135-958	**125.40**
5	40	1/8	1	135-955	**244.10**
5	40	1/8	1-1/4	135-960	**252.90**
5	40	9/64	1	135-959	**259.50**
5	40	9/64	1-1/4	135-961	**255.40**
5	40	5/32	1	135-970	**267.20**
5	40	5/32	1-1/4	135-965	**270.70**
5	40	11/64	1	135-962	**265.80**

Plain Tooth Slitting Saws, cont'd

Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
5	40	11/64	1-1/4	135-963	**174.60**
5	40	3⁄16	1	135-975	**278.20**
5	40	3⁄16	1-1⁄4	135-977	**278.50**
5	40	7/32	1	135-964	**288.00**
5	40	7/32	1-1/4	135-966	**285.40**
5	40	1/4	1	135-967	**299.30**
5	40	1/4	1-1/4	135-968	**299.80**
6	42	1/16	1	135-969	**334.90**
6	42	1/16	1-1/4	135-971	**334.90**
6	42	3/32	1	135-972	**312.70**
6	42	3/32	1-1/4	135-973	**312.40**
6	42	7/64	1	135-974	**311.60**
6	42	7/64	1-1/4	135-976	**262.20**
6	42	1⁄8	1	135-980	**323.40**
6	42	1⁄8	1-1⁄4	135-985	**323.50**
6	42	9/64	1	135-986	**322.00**
6	42	9/64	1-1/4	135-987	**295.70**
6	42	5/32	1	135-988	**347.70**
6	42	5/32	1-1/4	135-989	**334.90**
6	42	11/64	1	135-991	**295.70**
6	42	11/64	1-1/4	135-992	**295.70**
6	42	3⁄16	1	135-990	**461.70**
6	42	3⁄16	1-1⁄4	135-995	**356.30**
6	42	1/4	1	135-993	**385.90**
6	42	1/4	1-1/4	135-994	**347.10**
8	48	1/8	1	135-857	**447.30**
8	48	1⁄8	1-1⁄4	135-996	**685.10**
8	48	3⁄16	1-1⁄4	135-997	**685.10**
8	48	1⁄4	1-1⁄4	135-998	**685.10**
10	50	3/16	1-1/4	135-863	**1,076.70**
10	50	3/16	1-1/2	135-864	**1,076.70**
10	50	1/4	1-1/4	135-865	**1,093.20**
10	50	1/4	1-1/2	135-866	**753.50**

Staggered Tooth Slitting Saws

- Staggered tooth with side chip clearance



Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
3	32	1/16	1	138-900	**194.40**
3	32	1/16	1-1/4	138-901	**194.50**
3	32	5/64	1	138-902	**178.00**
3	32	5/64	1-1/4	138-903	**177.70**
3	32	3/32	1	138-904	**178.00**
3	32	3/32	1-1/4	138-905	**178.00**
3	32	7/64	1	138-906	**180.90**
3	32	1⁄8	1	140-102	**180.90**
3	32	9/64	1	138-909	**184.00**
3	32	9/64	1-1/4	138-910	**183.70**
3	32	5⁄32	1	140-103	**187.50**
3	32	5/32	1-1/4	138-911	**187.30**
3	32	11/64	1	138-912	**190.40**
3	32	3⁄16	1	140-105	**171.30**
3	32	3/16	1-1/4	138-914	**172.30**
3	32	7/32	1	138-915	**176.40**
3	32	1⁄4	1	140-106	**183.30**
4	34	1/16	1	138-917	**250.50**
4	34	1/16	1-1/4	138-918	**250.80**
4	34	5/64	1	138-919	**230.20**

Staggered Tooth Slitting Saws, cont'd

Dia.	No. of Teeth	Thickness	Hole Size	Code No.	Price $
4	34	5/64	1-1/4	138-920	**230.30**
4	34	3/32	1	138-921	**234.90**
4	34	3/32	1-1/4	139-922	**235.30**
4	34	7/64	1	139-923	**240.70**
4	34	7/64	1-1/4	139-924	**168.00**
4	34	1/8	1	139-925	**238.90**
4	34	1/8	1-1/4	139-926	**237.20**
4	34	9⁄64	1	140-107	**244.80**
4	34	9/64	1-1/4	139-927	**244.90**
4	34	5⁄32	1	140-108	**250.10**
4	34	5/32	1-1/4	139-928	**247.60**
4	34	11/64	1-1/4	139-930	**158.70**
4	34	3⁄16	1	140-110	**254.90**
4	34	3/16	1-1/4	139-931	**258.90**
4	34	7/32	1	139-932	**239.30**
4	34	1⁄4	1	140-111	**249.30**
4	34	1⁄4	1-1⁄4	140-112	**249.50**
5	38	3/32	1	139-934	**307.00**
5	38	1/8	1	139-935	**316.00**
5	38	1⁄8	1-1⁄4	140-113	**315.60**
5	38	9/64	1	139-937	**196.30**
5	38	9/64	1-1/4	139-938	**196.30**
5	38	5/32	1	139-939	**325.50**
5	38	5/32	1-1/4	139-940	**218.00**
5	38	11⁄64	1	140-114	**207.10**
5	38	11/64	1-1/4	139-941	**227.90**
5	38	3⁄16	1	140-115	**337.80**
5	38	3⁄16	1-1⁄4	140-117	**336.80**
5	38	1⁄4	1	140-120	**345.20**
5	38	1/4	1-1/4	139-942	**335.90**
6	42	1/8	1	139-943	**400.10**
6	42	1⁄8	1-1⁄4	140-121	**384.00**
6	42	9/64	1	139-944	**203.50**
6	42	5/32	1	139-946	**409.10**
6	42	5⁄32	1-1⁄4	140-122	**413.30**
6	42	11/64	1	139-947	**422.10**
6	42	3⁄16	1	140-125	**428.00**
6	42	3⁄16	1-1⁄4	140-130	**431.10**
6	42	1⁄4	1	140-135	**443.80**
6	42	1⁄4	1-1⁄4	140-140	**440.10**
7	46	1/8	1	139-949	**580.00**
7	46	3/16	1-1/4	139-952	**623.30**
8	50	3/16	1	139-953	**751.50**
8	50	3⁄16	1-1⁄4	140-145	**748.60**
8	50	1⁄4	1-1⁄4	140-150	**821.10**
10	60	3/16	1-1/4	139-954	**1,289.70**
10	60	1⁄4	1-1⁄4	140-155	**1,273.90**

Plain Metal Slitting Saws



Dia.	No. of Teeth	Face Width	Hole Size	Code No.	Price $
1-3/4	28	1/32	1/2	139-150	**43.30**
2	28	3/32	1/2	139-152	**41.20**
2	28	1/16	1/2	136-001	**38.20**
2	28	1/8	1/2	139-164	**43.30**
2-1/2	28	3/64	3/8	136-003	**43.30**
2-1/2	28	1/32	3/8	139-153	**43.30**
2-1/2	28	1/32	7/8	136-004	**43.30**
2-1/2	28	3/64	7/8	136-005	**43.30**
2-1/2	28	1/16	7/8	136-006	**43.30**
2-1/2	28	3/32	7/8	139-154	**43.30**
2-1/2	28	1/8	7/8	136-007	**43.30**
2-1/2	28	1/16	1	136-008	**43.30**
3	30	1/64	1	136-009	**80.40**
3	30	1/32	1	136-010	**47.40**
3	30	3/64	1	136-011	**47.40**
3	30	1/16	1	136-012	**50.20**
3	30	5/64	1	136-013	**50.20**
3	30	3/32	1	136-014	**50.20**
3	30	7/64	1	136-015	**51.70**
3	30	1/8	1	136-016	**51.70**
3	30	9/64	1	136-017	**53.90**
3	30	5/32	1	136-018	**53.90**
3	30	3/16	1	136-019	**58.20**
3-1/2	30	1/32	1	136-020	**67.20**
3-1/2	30	3/64	1	136-021	**69.40**
3-1/2	30	1/16	1	136-022	**69.40**
3-1/2	30	3/32	1	136-023	**73.30**
3-1/2	30	1/8	1	136-024	**77.40**
3-1/2	36	1/8	1	139-155	**77.40**
3-1/2	30	9/64	1	139-156	**84.60**
3-1/2	30	5/32	1	139-157	**84.60**
3-1/2	30	3/16	1	136-027	**84.60**
4	36	1/64	1	136-028	**109.70**
4	36	1/32	1	136-029	**67.20**
4	36	3/64	1	136-030	**69.40**
4	36	1/16	1	136-031	**69.40**
4	36	5/64	1	136-032	**73.30**
4	36	3/32	1	136-033	**73.30**
4	36	7/64	1	136-034	**77.40**
4	36	1/8	1	136-035	**77.40**
4	36	9/64	1	136-036	**80.20**
4	36	5/32	1	136-037	**80.20**
4	36	3/16	1	136-038	**84.60**
4-1/2	36	1/32	1	136-039	**109.70**
4-1/2	36	3/64	1	136-040	**92.80**
4-1/2	36	1/16	1	136-041	**92.80**
4-1/2	36	3/32	1	136-042	**101.30**
4-1/2	36	1/8	1	136-043	**105.60**
5	40	3/64	1	136-044	**92.80**
5	40	1/16	1	136-045	**92.80**
5	40	5/64	1	136-046	**98.20**
5	40	3/32	1	136-047	**101.30**
5	40	7/64	1	136-048	**105.60**
5	40	1/8	1	136-049	**105.60**
5	40	9/64	1	136-050	**112.10**
5	40	5/32	1	136-051	**112.10**
5	40	3/16	1	136-052	**118.60**
5	40	1/16	1-1/4	136-053	**92.80**
5	40	3/32	1-1/4	136-054	**101.30**
5	40	1/8	1-1/4	136-055	**105.60**
5	40	5/32	1-1/4	136-056	**112.10**
5	42	3/16	1-1/4	136-057	**118.60**
6	42	3/64	1	136-058	**137.90**
6	42	1/16	1	136-059	**121.20**
6	42	5/64	1	136-060	**128.90**
6	42	3/32	1	136-061	**140.20**
6	42	7/64	1	136-062	**148.90**
6	42	1/8	1	136-063	**145.00**
6	42	9/64	1	136-064	**154.50**

Plain Metal Slitting Saws Continued



Dia.	No. of Teeth	Face Width	Hole Size	Code No.	Price $
6	42	5/32	1	136-065	**168.70**
6	42	3/16	1	136-066	**173.10**
6	42	1/16	1-1/4	136-067	**121.20**
6	42	3/32	1-1/4	136-068	**139.90**
6	42	1/8	1-1/4	136-069	**145.00**
6	42	5/32	1-1/4	136-070	**168.30**
6	42	3/16	1-1/4	136-071	**173.10**
8	48	3/32	1	139-159	**272.60**
8	48	1/8	1	136-072	**304.40**
8	48	3/16	1	136-073	**342.20**
8	48	3/32	1-1/4	136-074	**272.60**
8	48	1/8	1-1/4	136-075	**304.40**
8	48	3/16	1-1/4	136-076	**342.20**
8	48	1/4	1-1/4	139-161	**358.20**
10	56	3/32	1-1/4	139-162	**449.80**
10	56	1/8	1-1/4	136-077	**449.80**
10	56	3/16	1-1/4	136-078	**543.00**
10	62	1/4	1-1/4	139-163	**543.00**

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°	136-550	**215.10**	136-583	**305.20**
2-1/2	1/2	18	7/8	60°	136-551	**203.70**	136-584	**305.40**
2-3/4	1/2	18	1	45°	136-552	**201.00**	136-585	**250.20**
2-3/4	1/2	18	1	60°	136-553	**202.40**	136-586	**216.60**
3	1/2	22	1	45°	136-554	**244.70**	136-587	**276.00**
3	1/2	22	1	60°	136-555	**243.40**	136-588	**275.20**
3	1/2	22	1-1/4	45°	136-556	**279.00**	136-589	**274.90**
3	1/2	22	1-1/4	60°	136-557	**254.40**	136-590	**115.20**
3	5/8	22	1	45°	136-558	**349.00**	136-591	**333.10**
3	5/8	22	1	60°	136-559	**348.70**	136-592	**190.40**
3	5/8	22	1-1/4	45°	136-560	**347.60**	136-593	**209.40**
3	5/8	22	1-1/4	60°	136-561	**347.60**	136-594	**209.40**
3	3/4	22	1	45°	136-562	**370.60**	136-595	**383.50**
3	3/4	22	1	60°	136-563	**370.60**	136-596	**386.40**
3	3/4	22	1-1/4	60°	136-564	**391.20**	136-597	**385.90**
4	1/2	26	1	45°	136-565	**476.90**	136-598	**477.50**
4	1/2	26	1	60°	136-566	**476.90**	136-599	**269.90**
4	1/2	26	1-1/4	45°	136-567	**296.90**	136-600	**477.50**
4	1/2	26	1-1/4	60°	136-568	**476.90**	136-601	**296.90**
4	3/4	26	1	45°	136-569	**565.00**	136-602	**556.60**
4	3/4	26	1	60°	136-570	**565.00**	136-603	**556.60**
4	3/4	26	1-1/4	45°	136-571	**565.00**	136-604	**556.60**
4	3/4	26	1-1/4	60°	136-572	**565.00**	136-605	**556.60**
4	1	26	1-1/4	45°	136-573	**622.60**	136-606	**613.40**
4	1	26	1-1/4	60°	136-574	**622.60**	136-607	**613.40**
5	3/4	28	1-1/4	45°	136-575	**427.20**	136-608	**696.20**
5	3/4	28	1-1/4	60°	136-576	**685.10**	136-609	**674.80**
5	1	28	1-1/4	45°	136-577	**819.50**	136-610	**807.20**
5	1	28	1-1/4	60°	136-578	**819.50**	136-611	**807.20**
6	3/4	30	1-1/4	45°	136-579	**921.30**	136-612	**670.60**
6	3/4	30	1-1/4	60°	136-580	**670.60**	136-613	**844.80**
6	1	30	1-1/4	45°	136-581	**1,060.00**	136-614	**1,060.00**
6	1	30	1-1/4	60°	136-582	**1,060.00**	136-615	**841.50**

Concave Cutters



Circle Dia.	Cutter Dia.	Hole Size	No. of Teeth	Code No.	Price $
1/16	2-1/4	1	14	136-655	102.30
3/32	2-1/4	1	14	136-656	102.30
1/8	2-1/4	1	14	136-657	141.30
5/32	2-1/4	1	14	136-658	272.70
3/16	2-1/4	1	14	136-659	215.70
7/32	2-1/4	1	14	136-660	278.20
1/4	2-1/2	1	12	136-661	196.30
9/32	2-1/2	1	12	136-662	305.10
5/16	2-3/4	1	12	136-663	233.20
11/32	2-3/4	1	12	136-664	265.90
3/8	2-3/4	1	12	136-665	229.90
13/32	2-3/4	1	12	136-666	211.20
7/16	3	1	12	136-667	308.50
1/2	2-1/4	7/8	12	136-668	422.40
1/2	3	1	12	136-669	298.60
9/16	3	1	12	136-671	350.10
5/8	2-3/4	1	12	136-672	511.90
5/8	3	1	12	136-673	345.40
5/8	3-1/2	1-1/4	12	136-674	442.50
11/16	3	1	12	136-675	282.50
3/4	3	1	12	136-676	464.00
3/4	3-3/4	1-1/4	12	136-677	521.20
13/16	3-1/4	1-1/4	12	136-679	413.70
7/8	3-1/4	1	12	136-680	692.10
7/8	4	1-1/4	12	136-681	344.80
15/16	3-1/2	1	10	136-682	419.70
1	3-1/4	1	10	136-683	624.30
1	4-1/4	1-1/4	10	136-684	735.30
1-1/16	4	1-1/4	10	136-685	940.30
1-1/8	4	1-1/4	10	136-686	666.40
1-3/16	3-1/4	1	10	136-687	666.40
1-1/4	4	1-1/4	10	136-688	1,193.00
1-3/8	4-1/4	1-1/4	10	136-689	793.60
1-1/2	4-1/4	1-1/4	10	136-690	1,146.70
1-5/8	5-1/2	1-1/4	10	136-691	971.60
1-3/4	5-1/2	1-1/4	10	136-692	2,435.00
1-7/8	6	1-1/2	10	136-693	1,253.80
2	6	1-1/2	10	136-694	2,605.30

Convex Cutters



Circle Dia.	Cutter Dia.	Hole Size	No. of Teeth	Code No.	Price $
1/16	2-1/4	1	14	136-700	186.10
3/32	2-1/4	1	14	136-702	183.10
1/8	2	7/8	14	136-703	199.70
1/8	2-1/4	1	14	136-704	184.60
5/32	2-1/4	1	14	136-705	188.80
3/16	2	7/8	14	136-706	99.30
3/16	2-1/4	1	14	136-707	163.20
7/32	2-1/4	1	14	136-708	166.40
1/4	2	7/8	14	136-709	169.50
1/4	2-1/4	1	14	136-710	191.90
1/4	2-1/2	1	14	136-711	166.10
9/32	2-1/2	1	14	136-712	197.90
11/32	2-3/4	1	12	136-714	228.60
3/8	2-1/4	7/8	12	136-715	430.20
3/8	2-3/4	1	12	136-716	206.50
13/32	2-3/4	1	12	136-717	239.10
7/16	3	1	12	136-718	377.90
1/2	2-1/4	7/8	12	136-719	206.50
1/2	3	1	12	136-720	231.00
9/16	2-3/4	1	12	136-721	401.10
9/16	3	1	12	136-722	344.00
5/8	2-3/4	1	12	136-723	325.50
5/8	3	1	12	136-724	337.80
5/8	3-1/2	1-1/4	12	136-725	394.80
11/16	3	1	12	136-726	362.30
3/4	3	1	12	136-727	313.00
3/4	3-3/4	1-1/4	12	136-728	401.10
7/8	3-1/4	1	12	136-730	441.00
7/8	4	1-1/4	12	136-731	550.40
15/16	3-1/2	1	12	136-732	356.20
1	3-1/4	1	12	136-733	471.80
1	4-1/4	1-1/4	12	136-734	598.20
1-1/8	4	1-1/4	12	136-735	753.80
1-1/4	4	1-1/4	12	136-736	753.80
1-3/8	4-1/4	1-1/4	12	136-737	858.50
1-1/2	4-1/4	1-1/4	12	136-738	948.00
1-5/8	5-1/2	1-1/4	12	136-739	1,364.10
1-3/4	5-1/2	1-1/4	12	136-740	956.30
1-7/8	6	1-1/2	12	136-741	1,042.70
2	6	1-1/2	12	136-742	1,162.30

Double Angle Cutters

- 45°, 60°, and 90° angles



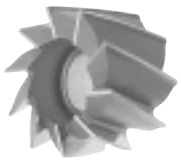
Dia.	Face Width	Hole Size	No. of Teeth	Angle	Code No.	Price $
2-3/4	1/2	1	18	45°	136-620	230.80
2-3/4	1/2	1	18	60°	136-621	227.20
2-3/4	1/2	1	18	90°	136-622	189.50
3	5/8	1	22	45°	136-623	365.20
3	5/8	1	22	60°	136-624	327.30
3	5/8	1	22	90°	136-625	324.00
3	3/4	1	22	60°	136-626	400.30
3	3/4	1	22	90°	136-627	400.30
4	1/2	1-1/4	26	45°	136-628	514.80
4	1/2	1-1/4	26	60°	136-629	449.10
4	1/2	1-1/4	26	90°	136-630	514.80
4	3/4	1	26	45°	136-631	610.20
4	3/4	1	26	60°	136-632	508.40
4	3/4	1	26	90°	136-633	610.20
4	3/4	1-1/4	26	45°	136-634	610.20
4	3/4	1-1/4	26	60°	136-635	610.20
4	3/4	1-1/4	26	90°	136-636	610.20

Double Angle Cutters, cont'd

Dia.	Face Width	Hole Size	No. of Teeth	Angle	Code No.	Price $
4	1	1-1/4	26	60°	136-637	672.50
4	1	1-1/4	26	90°	136-638	672.50
5	3/4	1-1/4	28	45°	136-639	440.70
5	3/4	1-1/4	28	60°	136-640	796.50
5	3/4	1-1/4	28	90°	136-641	739.80
5	1	1-1/4	28	45°	136-642	943.20
5	1	1-1/4	28	60°	136-643	932.90
5	1	1-1/4	28	90°	136-644	885.20
6	3/4	1-1/4	30	45°	136-645	693.80
6	3/4	1-1/4	30	60°	136-646	1,002.50
6	3/4	1-1/4	30	90°	136-647	995.00
6	1	1-1/4	30	45°	136-648	1,205.10
6	1	1-1/4	30	60°	136-649	1,205.10
6	1	1-1/4	30	90°	136-650	1,205.10
6	1-1/2	1-1/4	30	45°	136-651	1,543.90
6	1-1/2	1-1/4	30	60°	136-652	1,489.00
6	1-1/2	1-1/4	30	90°	136-653	1,489.00

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	140-160	**141.20**
1-1/2	1/2	1-1/8	8	140-162	**154.50**
1-3/4	3/4	1-1/4	8	140-164	**174.50**
2	3/4	1-3/8	10	140-166	**222.20**
2-1/4	1	1-1/2	10	140-168	**252.90**
2-1/2	1	1-5/8	10	140-170	**340.40**
2-3/4	1	1-5/8	10	140-172	**168.60**
3	1-1/4	1-3/4	10	140-174	**447.10**
3-1/2	1-1/4	1-7/8	12	140-176	**577.50**
4	1-1/2	2-1/4	14	140-178	**904.70**
4-1/2	1-1/2	2-1/4	14	140-180	**556.30**
5	1-1/2	2-1/4	16	140-182	**1,497.20**
5-1/2	2	2-1/4	16	140-184	**1,673.40**
6	2	2-1/4	16	140-186	**1,862.30**

Heavy Duty Plain Milling Cutters

• Right hand



Mill Dia.	Hole Size	Length of Cut	No. of Teeth	Right Code No.	Price $
2-1/2	1	4	8	140-210	**569.10**
3	1-1/4	1-1/4	8	140-215	**310.80**
3	1-1/4	3	8	140-230	**379.60**
3	1-1/4	4	8	140-235	**482.10**
3	1-1/4	6	8	140-240	**789.70**
4	1-1/2	2	10	140-245	**423.90**
4	1-1/2	3	10	140-250	**625.60**
4	1-1/2	4	10	140-255	**804.90**
4	1-1/2	6	10	140-260	**1,428.60**
4-1/2	2	6	10	140-265	**1,783.50**

Involute Gear Cutters

High Speed Steel. 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.

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

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.



With 90 teeth

Dia.	Face Width	Hole Size	90 Teeth Code No.	Price $
1-3/4	.010	1/2	137-078	**26.80**
1-3/4	.012	1/2	137-079	**24.10**
1-3/4	.020	1/2	137-080	**17.90**
1-3/4	.008	5/8	137-081	**28.40**
1-3/4	.010	5/8	137-082	**26.80**
1-3/4	.012	5/8	137-083	**24.10**
1-3/4	.014	5/8	137-084	**19.70**
1-3/4	.016	5/8	137-085	**19.00**
1-3/4	.018	5/8	137-086	**18.60**
1-3/4	.020	5/8	137-087	**17.90**
1-3/4	.023	5/8	137-088	**17.90**
1-3/4	.025	5/8	137-089	**17.90**
1-3/4	.028	5/8	137-090	**17.90**
1-3/4	.032	5/8	137-091	**17.90**
1-3/4	.036	5/8	137-092	**18.60**
1-3/4	.040	5/8	137-093	**18.60**
1-3/4	.045	5/8	137-094	**18.60**
1-3/4	.051	5/8	137-095	**18.60**
1-3/4	.057	5/8	137-096	**19.70**
1-3/4	.064	5/8	137-097	**21.00**
1-3/4	.072	5/8	137-098	**21.00**

With 60 teeth

Dia.	Face Width	Hole Size	60 Teeth Code No.	Price $
2-1/4	.008	5/8	137-099	**29.60**
2-1/4	.010	5/8	137-100	**39.20**
2-1/4	.012	5/8	137-101	**33.40**
2-1/4	.014	5/8	137-102	**28.30**
2-1/4	.016	5/8	137-103	**28.30**
2-1/4	.018	5/8	137-104	**23.50**
2-1/4	.020	5/8	137-105	**23.50**
2-1/4	.023	5/8	137-106	**23.50**
2-1/4	.025	5/8	137-107	**23.50**
2-1/4	.028	5/8	137-108	**22.30**
2-1/4	.032	5/8	137-109	**22.30**
2-1/4	.035	5/8	137-110	**22.30**
2-1/4	.036	5/8	137-111	**22.30**
2-1/4	.040	5/8	137-112	**23.50**
2-1/4	.045	5/8	137-113	**24.80**
2-1/4	.051	5/8	137-114	**24.80**
2-1/4	.057	5/8	137-115	**24.80**
2-1/4	.064	5/8	137-116	**24.80**
2-1/4	.072	5/8	137-117	**24.80**
2-1/4	.081	5/8	137-118	**26.40**
2-1/4	.091	5/8	137-119	**28.40**
2-1/4	.102	5/8	137-120	**30.90**

Screw Slotting Saws, cont'd

With 72 teeth

Dia.	Face Width	Hole Size	72 Teeth Code No.	Price $
2-3/4	.010	3/4	137-001	**47.40**
2-3/4	.012	3/4	137-002	**31.90**
2-3/4	.016	3/4	137-004	**37.80**
2-3/4	.020	3/4	137-006	**24.80**
2-3/4	.023	3/4	137-007	**18.30**
2-3/4	.025	3/4	137-008	**24.80**
2-3/4	.028	3/4	137-009	**24.80**
2-3/4	.032	3/4	137-010	**24.80**
2-3/4	.036	3/4	137-011	**24.80**
2-3/4	.040	3/4	137-012	**24.80**
2-3/4	.045	3/4	137-013	**29.60**
2-3/4	.051	3/4	137-014	**29.60**
2-3/4	.057	3/4	137-015	**29.60**
2-3/4	.064	3/4	137-016	**29.60**
2-3/4	.072	3/4	137-017	**29.60**
2-3/4	.081	3/4	137-018	**34.40**
2-3/4	.091	3/4	137-019	**37.20**
2-3/4	.102	3/4	137-020	**39.00**
2-3/4	.114	3/4	137-021	**40.10**
2-3/4	.128	3/4	137-022	**41.40**
2-3/4	.162	3/4	137-023	**51.70**
2-3/4	.182	3/4	137-024	**60.80**

With 72 Teeth and 56 Teeth

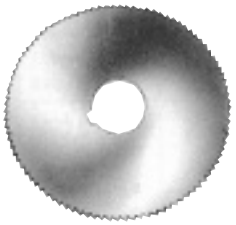
Dia.	Face Width	Hole Size	72 Teeth Code No.	Price $	56 Teeth Code No.	Price $
2-3/4	.010	1	137-025	**47.40**	-	-
2-3/4	.012	1	137-026	**43.30**	137-052	**43.30**
2-3/4	.013	1	137-027	**43.30**	-	-
2-3/4	.014	1	137-028	**40.80**	137-055	**40.80**
2-3/4	.016	1	137-029	**37.80**	137-056	**37.80**
2-3/4	.018	1	137-030	**35.80**	137-057	**35.80**
2-3/4	.020	1	137-031	**24.80**	137-058	**24.80**
2-3/4	.023	1	137-032	**24.80**	137-059	**24.80**
2-3/4	.025	1	137-033	**24.80**	137-060	**24.80**
2-3/4	.028	1	137-034	**24.80**	137-061	**24.80**
2-3/4	.032	1	137-035	**24.80**	137-062	**24.80**
2-3/4	.036	1	137-036	**24.80**	137-063	**24.80**
2-3/4	.040	1	137-037	**24.80**	137-064	**24.80**
2-3/4	.045	1	137-038	**29.60**	137-065	**29.60**
2-3/4	.051	1	137-039	**29.60**	137-066	**29.60**
2-3/4	.057	1	137-040	**29.60**	137-067	**29.60**
2-3/4	.064	1	137-041	**29.60**	137-068	**29.60**
2-3/4	.072	1	137-042	**29.60**	137-069	**29.60**
2-3/4	.081	1	137-043	**34.40**	137-070	**34.40**
2-3/4	.091	1	137-044	**37.20**	137-071	**37.20**
2-3/4	.102	1	137-045	**39.00**	137-072	**39.00**
2-3/4	.114	1	137-046	**40.10**	137-073	**40.10**
2-3/4	.128	1	137-047	**41.40**	137-074	**41.40**
2-3/4	.144	1	137-048	**47.40**	137-075	**47.40**
2-3/4	.162	1	137-049	**51.70**	137-076	**51.70**
2-3/4	.182	1	137-050	**60.80**	-	-

Solid Tungsten Carbide Saw Blades

Slotting, Slitting, Mica Undercutting

- Standards
- Metrics
- Radius Saws
- Circular Slitting Knives
- Specials
- "V" Cutters
- Re-Sharpening

MICROGRAIN carbide



- 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

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O.D.	I.D. +.001-.000			No. of Teeth	Thickness Range (dec.)	Thickness Range (in.)
5/16		1/8		12	.011 - .045	1/32 - 3/64
3/8	1/8		3/16	14	.011 - .045	1/32 - 3/64
1/2	1/8		3/16	14	.011 - .045	1/32 - 3/64
9/16	3/16		1/4	16	.011 - .045	1/32 - 3/64
5/8	3/16		1/4	16	.011 - .0625	1/32 - 1/16
11/16	3/16		1/4	16	.011 - .0625	1/32 - 1/16
3/4	1/4		5/16	18	.011 - .0625	1/32 - 1/16
7/8	5/16		3/8	18	.011 - .0625	1/32 - 1/16
1	1/4		9/32			
	5/16	3/8	1/2	20	.011-.0625	1/32 - 1/16
1-1/8	3/8		1/2	22	.011-.0625	1/32 - 1/16
1-1/4	5/16	3/8	1/2	24	.011-.0625	1/32 - 1/16
1-3/8		1/2		24	.015 - .080	1/32 - 3/32
1-1/2	5/16		1/2	32	.015 - .080	1/32 - 3/32
1-3/4	1/2		5/8	32	.015 - .080	1/32 - 3/32
2	1/2		1	40	.015 - .125	1/32 - 1/8
2-1/4	5/8		1	44	.015 - .125	1/32 - 1/8
2-3/8	5/8		1	48	.015 - .125	1/32 - 1/8
2-1/2	1/2		1	48	.015 - .125	1/32 - 1/8
2-3/4		1		56	.015 - .125	1/32 - 1/8
3		1		60	.020 - .150	1/32 - 3/16
4		1		72	.020 - .150	1/32 - 1/4
5		1		90	.030 - .150	1/16 - 1/4
6		1		120	.020 - .150	1/32 - 1/4

Revolving Knurling Tool Holder

narex

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 standard face diamond pattern knurls in fine and coarse pitch.



Holder

Holder Size	Dia.	Knurl Face Size	Hole	Code No.	Price $
20 x 32 x 200mm	20mm	10mm	6mm	474-200	**396.40**

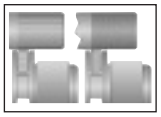
Replacement Knurls

Size	Replacement Knurls	Pitch	Code No.	Price $
20 x 10 x 6mm	Straight coarse	20 x 1	474-230	**8.90**
20 x 10 x 6mm	Straight fine	20 x .6	474-235	**11.30**
20 x 10 x 6mm	Diagonal coarse right hand	20 x 1	474-240	**11.30**
20 x 10 x 6mm	Diagonal fine right hand	20 x .6	474-245	**8.90**
20 x 10 x 6mm	Diagonal left hand coarse	20 x 1	474-250	**11.30**
20 x 10 x 6mm	Diagonal left hand fine	20 x .6	474-255	**8.90**

Three Swivel Head Knurling Tool - 3SHKT

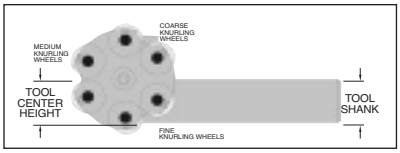
Specifically designed to quickly knurl multiple applications with one tool. Precision square shank with preset centre height. Twin knurl wheels for straight and diamond pattern. Knurl wheels are mounted between the thrust washers to ensure a smooth and even rotation of the knurls while knurling is performed. Self-centering knurling head for a precise alignment to the working part.

MADE IN USA



Patterns





* Available only while quantities last.

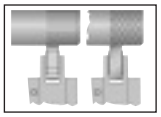
Tool Centre Height	Tool Shank Size	Three Swivel Head Tool Model No.	Code No.	Price $	Knurl Wheel Model No.	Knurl Pin Set Code No.	Price $
1	1 x 1	3SHKT-100-M	151-138	**872.70**	MDR/L-25-C	KPS-31-100	
						151-144	**28.90**

Self-Centering Knurling Tool For CNC Lathe - SCK

Specifically designed for CNC lathe. Precision square shank with preset centre height. Twin knurl wheels for straight and diamond pattern.

- Knurl wheels are mounted between the thrust washers to ensure a smooth and even rotation of the knurls while knurling is performed
- Self-centering knurling head for a precise alignment to the working part
- 1/2" tools supplied with one 30 TPI knurling wheel for a diamond pattern, larger tools supplied with one 25 TPI knurling wheel
- A complete selection of knurl wheel pitch available

MADE IN USA



Patterns





* Available only while quantities last.

Tool Centre Height	Tool Shank Size	Self-Centering Tool Model No.	Code No.	Price $	Knurl Wheel Model No.	Knurl Pin Set Code No.	Price $
1	1 x 1	SCK-100-M	151-150	**700.80**	MDR/L-25-C	KPS-31-100	
						151-144	**28.90**

Knurling Wheels ☞ **P. D22-D24**

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Modular Knurling Tools



Modular Versatility

The CNC Modular Knurling Tool is a tooling system which combines exceptional versatility, rigidity, ease of handling, and simplicity. Knurl wheels, heads, and shanks can be combined to build your own knurling tool to fit any work application and machine.

Precise Adjustable Centre Height

The dovetail mounting of the shank and head insures that the tool will be rigid and adjustable yet easy to use. By turning the adjustment screw clockwise or counterclockwise the centre height of the head can be adjusted. Each eighth turn of the screw, which is marked on the screw, moves the head .004". After the desired centre height has been reached, tightening the lock screw ensures that the head will remain in position while knurling a part.

Method of Knurling

Knurl forming action displaces the material creating a perfect knurl pattern while sacrificing speeds and feeds. The force applied through forming is increased in larger diameters making knurling difficult and slow.
Knurling cutting action cuts a perfect knurl pattern 10 to 20 times faster than a forming knurl tool becoming applicable for CNC use. It is engineered to knurl any material, including thin wall tubing, with minimum stress to the spindle and compound lathe.

Features

- Precision square shank with preset centre height
- Right or Left hand applications
- One shank fits all heads
- Best knurl quality
- One head fits all shanks
- Easy set-up
- Centre height adjustment
- Interchangeable knurl heads
- High productivity
- Low production cost
- Cutting – 10 to 20 times faster

CNC-000-2-R Cutting Tool

Heavy Duty Cutting Range: 3/4" to 5"
- Supplied with RS-25-C cobalt knurl wheels – Tin-c coated; adds longer life and better performance to the knurl wheels
- Minimum stress on the machine, and faster than knurl forming action
- Twin straight R series knurl wheels for diamond pattern; supplies more rigidity for larger diameters
- Knurl wheels are mounted between thrust washers; ensures smooth and even rotation of the knurls



* Available only while quantities last.

Model No.	Code No.	Price $	Shank Size	Tool Length	Head Only Model No.	Knurl Wheel Model No.	Code No.	Price $	Knurl Pin Model No.	Code No.	Price $
CNC-75-2-R	151-022	**1,845.80**	3/4	5-1/2	CNCKH-2-R	RS-25-C	151-030	**70.10**	KPS-25-87-C	151-032	**72.30**
CNC-100-2-R	151-024	**1,956.90**	1	6-3/4							

CNC-000-3-M Cutting Tool

Extra Heavy Duty Cutting Range 1-1/2" and up
- Supplied with MS-25-C cobalt knurl wheels – Tin-c coated; adds longer life and better performance to the knurl wheels
- Minimum stress on the machine, and faster than knurl forming action
- Twin straight M series knurl wheels for diamond pattern; supplies more rigidity for larger diameters
- Knurl wheels are mounted between thrust washers; ensures smooth and even rotation of the knurls



* Available only while quantities last.

Model No.	Code No.	Price $	Shank Size	Tool Length	Head Only Model No.	Code No.	Price $	Knurl Wheel Model No.	Code No.	Price $
CNC-125-3-M	151-038	**1,930.40**	1-1/4	7-3/8	CNCKH-3-M	151-040	**1,216.50**	MS-25-C	151-642	**99.00**

CNC-000-5-0 Forming Tool

Straight Bump
- Great quality of knurl pattern
- Narrow knurl applications, up to 3/8" wide
- Single O series knurl wheel for straight or diamond pattern
- Knurl wheel is mounted between thrust washers; ensures smooth and even rotation of the knurl
- Supplied with ODF-25-C cobalt knurl wheel – TiN-C coated; adds longer life and better performance to the knurl wheel



* Available only while quantities last.

Model No.	Code No.	Price $	Shank Size	Tool Length	Head Only Model No.	Knurl Wheel Model No.	Knurl Pin Model No.
CNC-75-5-O	151-046	**1,461.90**	3/4	5-1/2	CNCKH-5-O	OS-25-C	KPS-31-125-C
CNC-100-5-O	151-048	**1,521.80**	1	6-3/4			

Knurling Wheels ☞ **P. D22-D24**

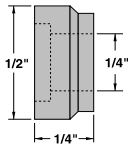
MADE IN USA

SW Knurling Wheels



- "SW" knurling wheels are technically designed to knurl against a square shoulder
- Knurl wheels are Titanium Nitride coated to reduce the co-efficient of friction when knurling, increasing the quality and the force of knurling as well as the life of the knurl wheels
- All SW Series knurl wheels are available only in cobalt and tin coated
- With super precise workmanship, the wheels are made of heat treated High Cobalt Steel to withstand severe knurling operation

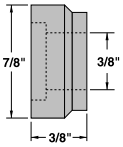
SW2 Knurling Wheels



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Diagonal Left Model No.	Code No.	Price	Tools Used On
20	90°	SW2S-20C	151-202	**99.80**	-	-	-	
25	90°	SW2S-25C	151-204	**99.80**	SW2L-25C	151-232	**99.80**	
30	90°	-	-	-	SW2L-30C	151-234	**99.80**	

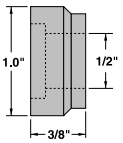
SW3.5 Knurling Wheels



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Cobalt Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
16	90°	-	-	-	-	-	-	SW3.5L-16C	151-276	**106.80**	
25	90°	SW3.5S-25C	151-248	**106.80**	SW3.5R-25C	151-264	**106.80**	SW3.5L-25C	151-280	**106.80**	

SW4 Knurling Wheels



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Cobalt Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
14	90°	-	-	-	SW4R-14C	151-306	**127.00**	SW4L-14C	151-322	**127.00**	
16	90°	SW4S-16C	151-292	**127.00**	SW4R-16C	151-308	**127.00**	-	-	-	
20	90°	SW4S-20C	151-294	**127.00**	-	-	-	-	-	-	
25	90°	SW4S-25C	151-296	**127.00**	SW4R-25C	151-312	**127.00**	SW4L-25C	151-328	**127.00**	
30	90°	SW4S-30C	151-298	**127.00**	-	-	-	SW4L-30C	151-330	**127.00**	
35	90°	-	-	-	SW4R-35C	151-316	**127.00**	-	-	-	
40	90°	SW4S-40C	151-302	**127.00**	-	-	-	-	-	-	
50	70°	-	-	-	SW4R-50C	151-320	**127.00**	SW4L-50C	151-336	**127.00**	

MADE IN USA

Circular Pitch Wheels

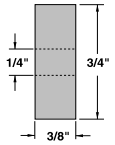
Circular Pitch Knurls are made to extremely high standards from the finest materials available. Knurls are individually hob cut and lapped to a smooth hard finish to give longer life and impart a smooth clean surface to the knurled part.

- Knurls available in High Speed, Cobalt, TiCN - Coated, beveled, and diametral pitch



Straight | Diagonal Left | Diagonal Right

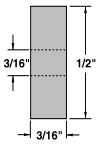
Circular Pitch Knurling Wheels - "A" Series



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	High Speed Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
10	90°	AS-10-HS	151-340	**48.40**	ADR-10-HS	151-362	**48.40**	ADL-10-HS	151-384	**48.40**	
12	90°	AS-12-HS	151-342	**48.40**	ADR-12-HS	151-364	**48.40**	ADL-12-HS	151-386	**48.40**	
14	90°	AS-14-HS	151-344	**48.40**	ADR-14-HS	151-366	**48.40**	ADL-14-HS	151-388	**48.40**	
16	90°	-	-	-	ADR-16-HS	151-368	**48.40**	ADL-16-HS	151-390	**48.40**	
20	90°	AS-20-HS	151-348	**48.40**	-	-	-	-	-	-	
25	90°	AS-25-HS	151-350	**48.40**	-	-	-	ADL-25-HS	151-394	**48.40**	
30	90°	AS-30-HS	151-352	**48.40**	-	-	-	-	-	-	
35	90°	AS-35-HS	151-354	**48.40**	ADR-35-HS	151-376	**48.40**	-	-	-	
40	90°	AS-40-HS	151-356	**48.40**	-	-	-	ADL-40-HS	151-400	**48.40**	
50	70°	-	-	-	ADR-50-HS	151-380	**48.40**	ADL-50-HS	151-402	**48.40**	
80	70°	-	-	-	ADR-80-HS	151-382	**48.40**	ADL-80-HS	151-404	**48.40**	

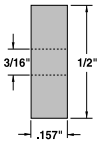
Circular Pitch Knurling Wheels - "C" Series



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	High Speed Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
25	90°	CS-25-HS	151-542	**37.20**	-	-	-	-	-	-	
30	90°	CS-30-HS	151-544	**37.20**	CDR-30-HS	151-560	**37.20**	CDL-30-HS	151-576	**37.20**	
40	90°	CS-40-HS	151-548	**37.20**	-	-	-	-	-	-	
80	70°	CS-80-HS	151-552	**37.20**	-	-	-	-	-	-	

Circular Pitch Knurling Wheels - "D" Series

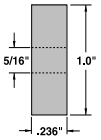


* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Cobalt Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
20	90°	DS-20-C	151-588	**59.70**	DDR-20-C	151-604	**59.70**	DDL-20-C	151-620	**59.70**	
30	90°	-	-	-	DDR-30-C	151-608	**59.70**	DDL-30-C	151-624	**59.70**	
35	90°	-	-	-	DDR-35-C	151-610	**59.70**	DDL-35-C	151-626	**59.70**	
50	70°	-	-	-	DDR-50-C	151-614	**59.70**	DDL-50-C	151-630	**59.70**	

MADE IN USA

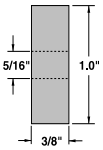
Circular Pitch Knurling Wheels - "M" Series



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Cobalt Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
12	90°	MS-12-HS	151-634	**75.20**	MDR-12-C	151-646	**99.00**	MDL-12-C	151-658	**99.00**	CNC125-3-M
16	90°	MS-16-C	151-638	**98.90**	-	-	-	-	-	-	CNCKH-3-M
20	90°	MS-20-C	151-640	**99.00**	-	-	-	-	-	-	SCK-100-M
25	90°	MS-25-C	151-642	**99.00**	MDR-25-C	151-654	**99.00**	MDL-25-C	151-666	**98.90**	3SHKT-100-M

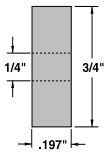
Circular Pitch Knurling Wheels - "O" Series



* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	Tools Used On
12	90°	OS-12-HS	151-670	**71.20**	CNC-75-5-0
					CNC-100-5-0

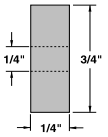
Circular Pitch Knurling Wheels - "R" Series



* Available only while quantities last.

T.P.I.	Included Tooth Angle	High Speed Straight Model No.	Code No.	Price	Cobalt Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
12	90°	RS-12-HS	151-408	**53.60**	RDR-12-C	151-430	**70.10**	RDL-12-C	151-452	**70.10**	CNC-75-2-R
16	90°	RS-16-HS	151-412	**53.60**	-	-	-	-	-	-	CNC-100-2-R
20	90°	RS-20-HS	151-414	**53.60**	RDR-20-C	151-436	**70.10**	RDL-20-C	151-458	**70.10**	
25	90°	RS-25-HS	151-416	**53.60**	RDR-25-C	151-438	**70.10**	RDL-25-C	151-460	**70.10**	
35	90°	RS-35-HS	151-420	**53.60**	-	-	-	-	-	-	
40	90°	RS-40-HS	151-422	**53.60**	-	-	-	-	-	-	
50	70°	-	-	-	RDR-50-C	151-446	**70.10**	RDL-50-C	151-468	**70.10**	

Circular Pitch Knurling Wheels - "S" Series



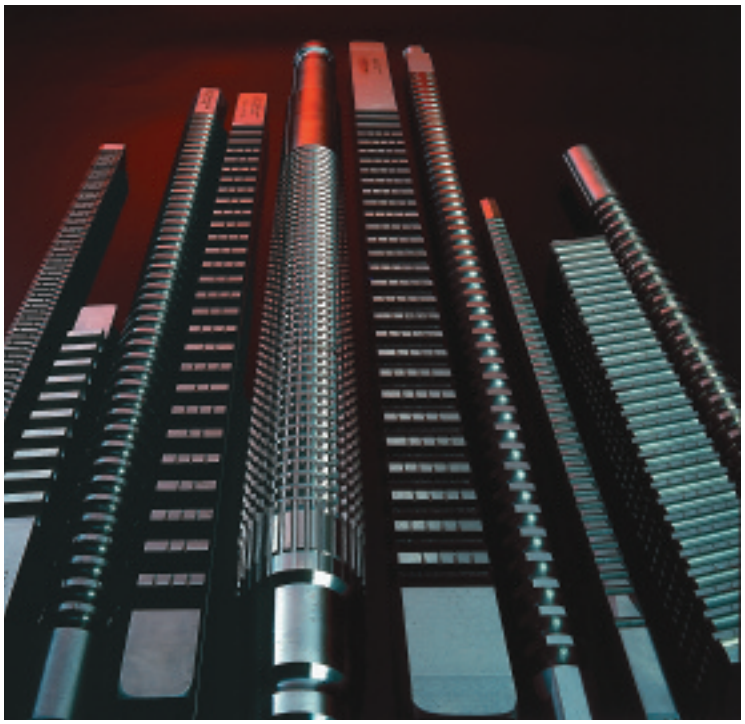
* Available only while quantities last.

T.P.I.	Included Tooth Angle	Straight Model No.	Code No.	Price	High Speed Diagonal Right Model No.	Code No.	Price $	Diagonal Left Model No.	Code No.	Price	Tools Used On
14	90°	-	-	-	-	-	-	SDL-14-HS	151-520	**46.00**	
16	90°	-	-	-	SDR-16-HS	151-500	**46.00**	-	-	-	
25	90°	-	-	-	SDR-25-HS	151-504	**46.00**	SDL-25-HS	151-526	**46.00**	

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Keyway Broach Sets With Collared Bushings

Model No.	Description	Dura Case EDP No.	Code No.	Price $
#1	3 Broaches: 1/16-I, 3/32-I, 1/8-I 5 Bushings: 1/4-I, 5/16-I, 3/8-I,7/16-I, 1/2-I 15 Keyway Combinations	15315	182-050	**336.50**
C-1	4 Broaches: 1/8-II, 3/16-II, 1/4-III, 3/8-III 9 Bushings: 1/2-II, 5/8-II, 3/4-II, 7/8-II, 1-III, 1-1/8-III, 1-1/4-III, 1-3/8-III, 1-1/2-III 18 Keyway Combinations	15318	182-052	**588.30**
C-1A	4 Broaches: 1/8-II, 3/16-II, 1/4-III, 3/8-III, 9 Bushings: 9/16-II, 11/16-II, 13/16-II, 15/16-III, 1-1/16-III, 1-3/16-III, 1-5/16-III, 1-7/16-III, 1-9/16-III 18 Keyway Combinations	15319	182-054	**588.30**
C-2	3 Broaches: 1/8-II, 3/16-III, 1/4-III 9 Bushings: 9/16-II, 11/16-II, 13/16-II, 15/16-III, 1-1/16-III, 1-3/16-III, 1-5/16-III, 1-7/16-III, 1-9/16-III 15 Keyway Combinations	15320	182-056	**498.70**
C-2A	3 Broaches: 1/8-II, 3/16-III, 1/4-III 9 Bushings: 1/2-II, 5/8-II, 3/4-II, 7/8-II, 1-III, 1-1/8-III, 1-1/4-III, 1-3/8-III, 1-1/2-III 15 Keyway Combinations	15321	182-058	**498.70**
C-10A	3 Broaches: 1/8-II, 3/16-III, 1/4-III 18 Bushings: 1/2-II, 9/16-II, 5/8-II, 11/16-II, 3/4-II, 13/16-II, 7/8-II, 15/16-III, 1-III, 1-1/16-III, 1-1/8-III, 1-3/16-III, 1-1/4-III, 1-5/16-III, 1-3/8-III, 1-7/16-III, 1-1/2-III, 1-9/16-III 30 Keyway Combinations	15330	182-060	**711.90**
C-10	4 Broaches: 1/8-II, 3/16-II, 1/4-III, 3/8-III 18 Bushings: 1/2-II, 9/16-II, 5/8-II, 11/16-II, 3/4-II, 13/16-II, 7/8-II, 15/16-III, 1-III, 1-1/16-III, 1-1/8-III, 1-3/16-III, 1-1/4-III, 1-5/16-III, 1-3/8-III, 1-7/16-III, 1-1/2-III, 1-9/16-III 36 Keyway Combinations	15336	182-062	**753.00**
#10 Metric	2 Broaches: 2mm-I, 3mm-I 5 Bushings: 6mm-I, 7mm-I, 8mm-I, 9mm-I, 10mm-I 10 Keyway Combinations	15410	182-064	**301.50**
#18 Metric	4 Broaches: 4mm-II, 5mm-II, 6mm-III, 8mm-III 9 Bushings: 12mm-II, 14mm-II, 16mm-II, 18mm-II, 20mm-III, 22mm-III, 24mm-III, 26mm-III, 28mm-III 18 Keyway Combinations	15418	182-066	**687.70**
#40 Metric	6 Broaches: 2mm-I, 3mm-I, 4mm-II, 5mm-II, 6mm-III, 8mm-III 18 Bushings: 8mm-I, 10mm-I, 12mm-II, 14mm-II, 16mm-II, 18mm-II, 18mm-III, 19mm-III, 20mm-III, 22mm-III, 24mm-III, 25mm-III, 26mm-III, 28mm-III, 30mm-III, 32mm-III, 34mm-III, 36mm-III 36 Keyway Combinations	15440	182-068	**1,119.80**

HASSAY SAVAGE

Keyway Broach Sets With Plain Bushings



Model No.	Description		Wooden Case EDP No.	Code No.	Price $
3-D	4 Broaches: 8 Bushings:	5/16-IV, 3/8-IV, 7/16-IV, 1/2-IV 1-1/2-IV, 1-5/8-IV, 1-3/4-IV, 1-7/8-IV, 2-IV, 2-1/8-IV, 2-1/4-IV, 2-1/2-IV 32 Keyway Combinations	15024	182-014	**1,222.50**
3-DA	4 Broaches: 8 Bushings:	5/16-IV, 3/8-IV, 7/16-IV, 1/2-IV 1-7/16-IV, 1-9/16-IV, 1-11/16-IV, 1-13/16-IV, 1-15/16-IV, 2-3/16-IV, 2-7/16-IV, 2-15/16-IV 32 Keyway Combinations	15124	182-016	**1,222.50**
4E	2 Broaches: 6 Bushings:	5/8-V, 3/4-V 2-3/8-V, 2-1/2-V, 2-5/8-V, 2-3/4-V, 2-7/8-V, 3-V 12 Keyway Combinations	15012	182-018	**1,248.80**
4F	2 Broaches: 6 Bushings:	5/8-V, 3/4-V 2-5/16-V, 2-7/16-V, 2-9/16-V, 2-11/16-V, 2-13/16-V, 2-15/16-V 12 Keyway Combinations	15014	182-020	**1,248.80**
#5	3 Broaches: 17 Bushings:	1/2-IV, 5/8-V, 3/4-V 2-IV, 2-1/16-IV, 2-1/8-IV, 2-3/16-IV, 2-1/4-IV, 2-5/16-IV, 2-3/8-IV, 2-7/16-IV 2-1/2-V, 2-9/16-V, 2-5/8-V, 2-11/16-V, 2-3/4-V, 2-13/16-V, 2-7/8-V, 2-15/16-V, 3-V 26 Keyway Combinations	15026	182-022	**2,257.30**
#100	9 Broaches: 43 Bushings:	1/8-II, 3/16-II, 1/4-III, 5/16-III, 3/8-IV, 7/16-IV, 1/2-IV, 5/8-V, 3/4-V 1/2-II, 9/16-II, 5/8-II, 11/16-II, 3/4-II, 13/16-II, 7/8-II, 15/16-III, 1-III, 1-1/16-III 1-1/8-III, 1-3/16-III, 1-1/4-III, 1-5/16-III, 1-3/8-III, 1-1/2-III, 1-9/16-III, 1-7/16-IV 1-1/2-IV, 1-9/16-IV, 1-5/8-IV, 1-11/16-IV, 1-3/4-IV, 1-13/16-IV, 1-7/8-IV, 1-15/16-IV, 2-IV, 2-1/16-IV, 2-1/8-IV, 2-3/16-IV, 2-1/4-IV, 2-5/16-V, 2-3/8-V, 2-7/16-V, 2-1/2-V 2-9/16-V, 2-5/8-V, 2-11/16-V, 2-3/4-V, 2-13/16-V, 2-7/8-V, 2-15/16-V, 3-V 102 Keyway Combinations	15100	182-024	**4,071.10**
#24 Metric	3 Broaches: 8 Bushings:	10mm-IV, 12mm-IV, 14mm-IV 34mm-IV, 36mm-IV, 38mm-IV, 40mm-IV, 42mm-IV, 44mm-IV, 46mm-IV, 48mm-IV 24 Keyway Combinations	15224	182-036	**1,129.50**
#12 Metric	2 Broaches: 6 Bushings:	16mm-V, 18mm-V 54mm-V, 56mm-V, 58mm-V, 60mm-V, 62mm-V, 64mm-V 12 Keyway Combinations	15212	182-038	**1,481.00**
#30 Metric	3 Broaches: 17 Bushings:	14mm-IV, 16mm-V, 18mm-V 44mm-IV, 45mm-IV, 46mm-IV, 48mm-IV, 50mm-IV, 52mm-V, 54mm-V, 55mm-V, 56mm-V, 58mm-V, 60mm-V, 62mm-V, 64mm-V, 65mm-V, 66mm-V, 68mm-V, 70mm-V 29 Keyway Combinations	15230	182-040	**2,501.50**

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HASSAY SAVAGE

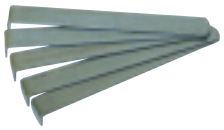
Keyway Broaches - Inch



Broach	Keyway Width Tol.	Dim.	No. Shims	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
1/16-I (A)	0.0625-.0635	1/8 x5-1/4	0	13/64–1-1/8	10104	182-070	**88.60**
3/32-I (A)	.0937-.0947	1/8 x 5-1/4	0	13/64–1-1/8	10106	182-072	**88.60**
1/8-I (A)	.1252-.1262	1/8 x 5-1/4	1	13/64–1-1/8	10108	182-074	**88.60**
3/32-II (B)	.0937-.0947	3/16 x 7	0	19/64–1-11/16	10206	182-076	**104.90**
1/8-II (B)	.1252-.1262	3/16 x 7	1	19/64–1-11/16	10208	182-078	**104.90**
5/32-II (B)	.1564-.1574	3/16 x 7	1	19/64–1-11/16	10210	182-080	**104.90**
3/16-II (B)	.1877-.1887	3/16 x 7	1	19/64–1-11/16	10212	182-082	**104.90**
3/16-III (C)	.1877-.1887	3/8 x 11-7/8	1	13/32–2-1/2	10312	182-084	**129.00**
1/4-III (C)	.2502-.2512	3/8 x 11-7/8	1	13/32–2-1/2	10316	182-086	**129.00**
5/16-III (C)	.3127-.3137	3/8 x 11-7/8	1	13/32–2-1/2	10320	182-088	**129.00**
3/8-III (C)	.3755-.3765	3/8 x 11-7/8	2	13/32–2-1/2	10324	182-090	**129.00**
5/16-IV (D)	.3127-.3137	9/16 x 13-7/8	1	3/4–6	10420	182-092	**197.00**
3/8-IV (D)	.3755-.3765	9/15 x 13-7/8	2	3/4–6	10424	182-094	**197.00**
7/16-IV (D)	.4380-.4390	9/16 x 13-7/8	2	3/4–6	10428	182-096	**197.00**
1/2-IV (D)	.5006-.5016	9/16 x 13-7/8	3	3/4–6	10432	182-098	**197.00**
9/16-IV (D)	.5630-.5640	9/16 x 13-7/8	3	3/4–6	10436	182-100	**470.80**
5/8-V (E)	.6260-.6270	3/4 x 15-1/4	4	3/4–6	10540	182-102	**321.40**
3/4-V (E)	.7515-.7525	3/4 x 15-1/4	5	3/4–6	10548	182-104	**321.40**
7/8-VI (F)	.8765-.8775	1 x 19-1/4	6	3/4–6	10656	182-106	**595.70**
1-VI (F)	1.0015-1.0025	1 x 19-1/4	7	3/4–6	10664	182-108	**595.70**
1-1/8	1.1260-1.1270	1-1/8 x 23	8	3/4–6	10666	182-110	**1,982.30**
1-1/4	1.2510-1.2520	1-1/4 x 23	9	3/4–6	10668	182-112	**2,236.10**
1-3/8	1.3760-1.3770	1-3/8 x 23	10	3/4–6	10670	182-114	**2,508.60**
1-1/2	1.5020-1.5030	1-1/2 x 23	11	3/4–6	10672	182-116	**2,885.50**

Shims For Keyway Broaches - Inch

NOTE:
Extra shims are available individually. Please refer to the column Shims Required in the broach chart. Note that shims correspond to broach size, not the bushing type.



Size	Thickness	Length x Width	Hassay EDP No.	Code No.	Price $
1/8-I (A)	.031	1-3/8 x 1/8	30108	182-140	**5.60**
1/8-II (B)	.031	1-7/8 x 3/16	30208	182-142	**5.60**
5/32-II (B)	.042	1-7/8 x 3/16	30210	182-144	**5.60**
3/16-II (B)	.050	1-7/8 x 3/16	30212	182-146	**5.60**
3/16-III (C)	.050	2-7/8 x 3/8	30312	182-148	**5.60**
1/4-III (C)	.062	2-7/8 x 3/8	30316	182-150	**5.60**
5/16-III (C)	.078	2-7/8 x 3/8	30320	182-152	**5.60**
3/8-III (C)	.062	2-7/8 x 3/8	30324	182-154	**5.60**
5/16-IV (D)	.078	6-1/4 x 9/16	30420	182-156	**7.70**
3/8-IV (D)	.062	6-1/4 x 9/16	30424	182-158	**7.70**
7/16-IV (D)	.075	6-1/4 x 9/16	30428	182-160	**7.70**
1/2-IV (D)	.062	6-1/4 x 9/16	30432	182-162	**7.70**
5/8-V (E)	.062	6-3/4 x 3/4	30540	182-164	**7.70**
3/4-V (E)	.062	6-3/4 x 3/4	30548	182-166	**7.70**
7/8-VI (F)	.062	6-3/4 x 3/4	30656	182-168	**7.70**
1-VI (F)	.062	6-3/4 x 3/4	30664	182-170	**7.70**
1-1/8	.062	7 x 1-1/8	30740	182-172	**12.90**
1-1/4	.062	7 x 1-1/8	30750	182-174	**12.90**
1-3/8	.062	7 x 1-1/8	30760	182-176	**12.90**
1-1/2	.062	7 x 1-1/8	30770	182-178	**12.90**

Collared & Plain Bushings - Inch



Diameter	Length	Hassay EDP No.	Code No.	Price $
I (A) Collared Bushings				
1/4	1-1/8	20116	182-180	**21.40**
5/16	1-1/8	20120	182-182	**21.40**
3/8	1-1/8	20124	182-184	**21.40**
7/16	1-1/8	20128	182-186	**21.40**
1/2	1-1/8	20132	182-188	**21.40**
II (B) Collared Bushings				
1/2	1-11/16	20232	182-190	**18.80**
9/16	1-11/16	20236	182-192	**18.80**
5/8	1-11/16	20240	182-194	**18.80**
11/16	1-11/16	20244	182-196	**18.80**
3/4	1-11/16	20248	182-198	**18.00**
13/16	1-11/16	20252	182-200	**18.80**
7/8	1-11/16	20256	182-202	**18.80**
III (C) Collared Bushings				
3/4	2-1/2	20348	182-204	**25.10**
13/16	2-1/2	20352	182-206	**25.10**
7/8	2-1/2	20356	182-208	**25.10**
15/16	2-1/2	20360	182-210	**25.10**
1	2-1/2	20364	182-212	**25.10**
1-1/16	2-1/2	20368	182-214	**25.10**
1-1/8	2-1/2	20372	182-216	**25.10**
1-3/16	2-1/2	20376	182-218	**30.30**
1-1/4	2-1/2	20380	182-220	**30.30**
1-5/16	2-1/2	20384	182-224	**30.30**
1-3/8	2-1/2	20388	182-226	**30.30**
1-7/16	2-1/2	20392	182-228	**30.30**
1-1/2	2-1/2	20396	182-230	**30.30**
1-9/16	2-1/2	20400	182-232	**30.30**
IV (D) Plain Bushings				
1-7/16	4	21492	182-238	**30.30**
1-1/2	4	21496	182-240	**30.30**
1-9/16	4	21500	182-242	**30.30**
1-5/8	4	21504	182-246	**30.30**
1-11/16	4	21508	182-248	**42.40**
1-3/4	4	21512	182-250	**42.40**
1-13/16	5	21516	182-252	**42.40**
1-7/8	5	21520	182-254	**42.40**
1-15/16	5	21524	182-256	**46.30**
2	5	21528	182-258	**46.30**
2-1/16	5	21532	182-260	**46.30**
2-1/8	5	21536	182-262	**46.30**
2-3/16	5	21540	182-264	**46.30**
2-1/4	5	21544	182-266	**61.80**
2-5/16	5	21548	182-268	**61.80**
2-3/8	6	21552	182-270	**61.80**
2-7/16	6	21556	182-272	**61.80**
2-1/2	6	21560	182-274	**78.60**
2-9/16	6	21564	182-276	**78.60**
2-5/8	6	21568	182-278	**78.60**
2-11/16	6	21572	182-280	**78.60**
2-3/4	6	21576	182-282	**78.60**
2-13/16	6	21580	182-284	**78.60**
2-7/8	6	21584	182-286	**78.60**
2-15/16	6	21588	182-288	**78.60**
3	6	21592	182-290	**78.60**
V (E) Plain Bushings				
2-5/16	6	21688	182-292	**68.40**
2-3/8	6	21692	182-294	**68.40**
2-7/16	6	21696	182-296	**68.40**
2-1/2	6	21700	182-298	**68.40**
2-9/16	6	21704	182-300	**84.50**
2-5/8	6	21708	182-302	**84.50**
2-11/16	6	21712	182-306	**84.50**
2-3/4	6	21716	182-308	**84.50**
2-13/16	6	21720	182-310	**84.50**
2-7/8	6	21724	182-312	**84.50**
2-15/16	6	21728	182-314	**84.50**
3	6	21732	182-316	**84.50**

HASSAY SAVAGE

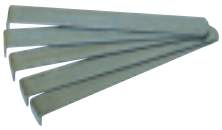
Keyway Broaches - Metric



Broach	Keyway Width Tol.	Dim.	No. Shims	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
2mm-I (A)	.0787-.0792	1/8 x 5-1/4	0	13/64-1-1/8	11102	182-318	**90.00**
3mm-I (A)	.1181-.1186	1/8 x 5-1/4	1	13/64-1-1/8	11103	182-320	**90.00**
4mm-II (B)	.1575-.1580	1/4 x 7	1	19/64-1-11/16	11204	182-322	**116.00**
5mm-II (B)	.1968-.1973	1/4 x 7	1	19/64-1-11/16	11205	182-324	**116.00**
5mm-III (C)	.1968-.1973	3/8 x 11-7/8	1	13/32-2-1/2	11305	182-326	**129.80**
6mm-III (C)	.2362-.2367	3/8 x 11-7/8	1	13/32-2-1/2	11306	182-328	**129.80**
7mm-III (C)	.2756-.2761	3/8 x 11-7/8	1	13/32-2-1/2	11307	182-330	**282.40**
8mm-III (C)	.3150-.3155	3/8 x 11-7/8	1	13/32-2-1/2	11308	182-332	**129.80**
10mm-IV (D)	.3937-.3942	9/16 x 13-7/8	2	3/4-6	11410	182-334	**197.00**
12mm-IV (D)	.4724-.4730	9/16 x 13-7/8	2	3/4-6	11412	182-336	**197.00**
14mm-IV (D)	.5512-.5519	9/16 x 13-7/8	2	3/4-6	11414	182-338	**197.00**
16mm-V (E)	.6299-.6306	3/4 x 15-1/4	3	3/4-6	11516	182-340	**321.80**
18mm-V (E)	.7087-.7093	3/4 x 15-1/4	3	3/4-6	11518	182-342	**321.80**
20mm-VI (F)	.7874-.7883	1 x 19-1/4	3	3/4-6	11620	182-344	**594.80**
22mm-VI (F)	.8661-.8669	1 x 19-1/4	4	3/4-6	11622	182-346	**594.80**
24mm-VI	.9449-.9458	1 x 19-1/4	4	3/4-6	11624	182-348	**594.80**
25mm-VI	.9842-.9851	1 x 19-1/4	4	3/4-6	11625	182-350	**594.80**
28mm	1.1030-1.1040	1-1/8 x 23	5	3/4-6	11628	182-352	**2,438.00**
30mm	1.1817-1.1827	1-1/4 x 23	5	3/4-6	11630	182-354	**2,522.50**
32mm	1.2605-1.2615	1-1/4 x 23	5	3/4-6	11632	182-356	**2,581.40**
36mm	1.4180-1.4190	1-7/16 x 23	5	3/4-6	11636	182-358	**2,931.80**

Shims For Keyway Broaches - Metric

NOTE:
Extra shims are available individually. Please refer to the column Shims Required in the broach chart. Note that shims correspond to broach size, not the bushing type.



Size	Thickness	Length x Width	Hassay EDP No.	Code No.	Price $
3mm-I	.031	1-3/8 x 1/8	31103	182-370	**5.60**
4mm-II	.038	1-7/8 x 1/4	31204	182-372	**5.60**
5mm-II	.050	1-7/8 x 1/4	31205	182-374	**5.60**
5mm-III	.047	2-7/8 x 3/8	31305	182-376	**5.60**
6mm-III	.062	2-7/8 x 3/8	31306	182-378	**5.60**
7mm-III	.062	2-7/8 x 3/8	31307	182-380	**5.60**
8mm-III	.078	2-7/8 x 3/8	31308	182-382	**5.60**
10mm-IV	.056	6-1/4 x 9/16	31410	182-384	**7.70**
12mm-IV	.056	6-1/4 x 9/16	31412	182-386	**7.70**
14mm-IV	.062	6-1/4 x 9/16	31414	182-388	**7.70**
16mm-V	.062	6-3/4 x 3/4	31516	182-390	**7.70**
18mm-V	.062	6-3/4 x 3/4	31518	182-392	**7.70**
20mm-VI	.062	6-3/4 x 1	31620	182-394	**7.70**
22mm-VI	.062	6-3/4 x 1	31622	182-396	**7.70**
24mm-VI	.062	6-3/4 x 1	31624	182-398	**7.70**
25mm-VI	.062	6-3/4 x 1	31625	182-400	**7.70**
28mm	.062	7 x 1	31628	182-402	**12.90**
30mm	.062	7 x 1	31630	182-404	**12.90**
32mm	.062	7 x 1-1/4	31632	182-406	**12.90**
36mm	.062	7 x 1-1/4	31636	182-408	**12.90**

Collared & Plain Bushings - Metric



Diameter (mm)	Diameter (in.)	Hassay EDP No.	Code No.	Price $
I (A) Collared Bushings				
6mm	.2362	22106	182-410	**21.90**
7mm	.2756	22107	182-412	**23.00**
8mm	.3150	22108	182-414	**23.00**
9mm	.3543	22109	182-416	**23.00**
10mm	.3937	22110	182-418	**23.00**
II (B) Collared Bushings				
11mm	.4331	22211	182-420	**22.80**
12mm	.4724	22212	182-422	**22.80**
13mm	.5118	22213	182-424	**22.80**
14mm	.5512	22214	182-426	**22.80**
15mm	.5905	22215	182-428	**22.80**
16mm	.6299	22216	182-430	**22.80**
17mm	.6693	22217	182-432	**22.80**
18mm	.7087	22218	182-434	**22.80**
19mm	.7480	22219	182-436	**22.80**
III (C) Collared Bushings				
17mm	.6693	22317	182-440	**26.10**
18mm	.7087	22318	182-442	**26.10**
19mm	.7480	22319	182-444	**26.10**
20mm	.7874	22320	182-446	**26.10**
22mm	.8661	22322	182-448	**26.10**
24mm	.9449	22324	182-450	**26.10**
25mm	.9842	22325	182-452	**26.10**
26mm	1.0236	22326	182-454	**26.10**
27mm	1.0630	22327	182-456	**30.20**
28mm	1.1024	22328	182-458	**30.20**
30mm	1.1811	22330	182-460	**30.20**
32mm	1.2598	22332	182-462	**30.20**
34mm	1.3386	22334	182-464	**30.20**
35mm	1.3779	22335	182-466	**30.20**
36mm	1.4173	22336	182-468	**30.20**
IV (D) Plain Bushings				
32mm	1.2598	22432	182-451	**40.30**
34mm	1.3386	22434	182-453	**40.30**
35mm	1.3779	22435	182-455	**40.30**
36mm	1.4173	22436	182-457	**40.30**
38mm	1.4961	22438	182-459	**40.30**
40mm	1.5748	22440	182-461	**43.70**
42mm	1.6535	22442	182-463	**43.70**
44mm	1.7323	22444	182-465	**43.70**
45mm	1.7716	22445	182-467	**43.70**
46mm	1.8110	22446	182-469	**51.10**
48mm	1.8898	22448	182-470	**51.10**
50mm	1.9685	22450	182-472	**51.10**
52mm	2.0472	22452	182-474	**67.80**
54mm	2.1260	22454	182-476	**67.80**
55mm	2.1653	22455	182-478	**67.80**
56mm	2.2047	22456	182-480	**67.80**
V (E) Plain Bushings				
52mm	2.0472	22552	182-482	**88.80**
54mm	2.1260	22554	182-484	**88.80**
55mm	2.1653	22555	182-486	**88.80**
56mm	2.2047	22556	182-488	**88.80**
58mm	2.2835	22558	182-490	**88.80**
60mm	2.3622	22560	182-492	**88.80**
62mm	2.4409	22562	182-494	**88.80**
64mm	2.5197	22564	182-496	**96.50**
65mm	2.5590	22565	182-498	**96.50**
66mm	2.5984	22566	182-500	**96.50**
68mm	2.6772	22568	182-502	**96.50**
70mm	2.7559	22570	182-504	**96.50**
72mm	2.8346	22572	182-506	**96.50**

HASSAY SAVAGE

One Pass Keyway Broaches - Inch

* OP designates one-pass, no chamfer
** COP designates chamfer, one-pass



Broach	Keyway Width Tol.	Dim. (in.)	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
1/8-II	.1252-.1262	3/16 x 10-3/4	1/4-1-1/2	10208-OP	182-120	**425.60**
5/32-II	.1564-.1574	3/16 x 10-3/4	1/4-1-1/2	10210-COP	182-122	**425.60**
3/16-II	.1877-.1887	3/16 x 10-3/4	1/4-1-1/2	10212-OP	182-124	**431.90**
3/16-III	.1877-.1887	3/8 x 18-1/2	5/16-1-11/16	10312-COP	182-126	**514.20**
1/4-III	.2502-.2512	3/8 x 18-1/2	5/16-1-11/16	10316-COP	182-128	**514.20**
5/16-III	.3127-.3137	3/8 x 18-1/2	5/16-1-11/16	10320-COP	182-130	**514.20**
3/8-III	.3755-.3765	3/8 x 18-1/2	5/16-1-11/16	10324-OP	182-132	**514.20**

One Pass Keyway Broaches - Metric

* OP designates one-pass, no chamfer
** COP designates chamfer, one-pass



Broach	Keyway Width Tol.	Dim. (in.)	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
3mm-I	.1185-.1190	1/8 x 8-1/2	13/64-1-1/8	11103-OP	182-360	**369.30**
4mm-II	.1581-.1585	1/4 x 10-3/4	1/4-1-1/2	11204-COP	182-362	**426.40**
5mm-II	.1975-.1979	1/4 x 10-3/4	1/4-1-1/2	11205-COP	182-364	**426.40**
6mm-III	.2372-.2376	3/8 x 18-1/2	5/16-1-11/16	11306-COP	182-366	**514.20**
8mm-III	.3159-.3163	3/8 x 18-1/2	5/16-1-11/16	11308-COP	182-368	**514.20**

Square Broaches





Inch

Square Size	Keyway Width Tol.	Broach Length	Pilot Diameter	Drill Size	Min/Max	Hassay EDP No.	Code No.	Price $
1/8	.1250-.1260	4-5/8	.1280	No. 30	3/16–1/2	13008	182-510	**230.90**
5/32	.1565-.1575	5-5/8	.1585	No. 21	1/4–1/2	13010	182-512	**260.90**
3/16	.1880-.1890	5-11/16	.1930	No. 10	1/4–5/8	13012	182-514	**237.60**
7/32	.2190-.2200	6-7/8	.2275	No. 1	1/4–3/4	13014	182-516	**260.90**
1/4	.2505-.2515	7	.2651	17/64	1/4–3/4	13016	182-518	**230.90**
9/32	.2815-.2825	7-1/4	19/64	19/64	3/8–1	13018	182-520	**289.00**
5/16	.3130-.3140	8-1/8	21/64	21/64	3/8–1	13020	182-522	**236.40**
11/32	.3440-.3450	9-5/8	23/64	23/64	3/8–1-1/4	13022	182-524	**374.90**
3/8	.3755-.3765	9-7/8	25/64	25/64	3/8–1-1/4	13024	182-526	**300.90**
13/32	.4065-.4075	10-7/8	27/64	27/64	1/2–1-3/8	13026	182-528	**446.50**
7/16	.4385-.4395	11-3/8	29/64	29/64	1/2–1-3/8	13028	182-530	**382.60**
15/32	.4690-.4700	12-1/2	1/2	1/2	1/2–1-3/8	13030	182-532	**584.10**
1/2	.5005-.5015	12-5/8	17/32	17/32	1/2–1-3/8	13032	182-534	**442.30**
9/16	.5630-.5640	14-7/8	19/32	19/32	1/2–1-1/2	13036	182-536	**560.30**
5/8	.6260-.6270	16-13/16	21/32	21/32	5/8–1-5/8	13040	182-538	**657.50**
11/16	.6885-.6895	18-1/2	3/4	3/4	5/8–1-5/8	13044	182-540	**765.30**
3/4	.7510-.7520	18-7/8	13/16	13/16	5/8–1-5/8	13048	182-544	**888.20**
7/8	.8765-.8775	22-3/4	15/16	15/16	5/8–2	13056	182-546	**1,278.40**
1	1.0020-1.0030	24-1/2	1-3/32	1-3/32	5/8–2	13064	182-548	**1,329.50**

Metric

Square Size	Keyway Width Tol.	Broach Length	Pilot Diameter	Drill Size	Min/Max	Hassay EDP No.	Code No.	Price $
4mm	.1580-.1585	5-9/16	.1655	4.2	5/16-5/8	17001	182-560	**274.90**
5mm	.1973-.1983	6-7/8	.2047	5.2	3/8-3/4	17002	182-562	**342.70**
6mm	.2367-.2377	7	.2500	6.35	3/8-3/4	17003	182-564	**342.70**
8mm	.3155-.3165	8-3/16	.3267	8.3	7/16-7/8	17004	182-566	**345.60**
10mm	.3942-.3952	10-7/8	.4057	10.3	1/2-1	17005	182-568	**395.80**
12mm	.4729-.4739	12-1/2	.4921	12.5	5/8-1-1/4	17006	182-570	**584.70**
14mm	.5517-.5527	14-7/8	.5905	15.0	3/4-1-1/2	17007	182-572	**693.10**
16mm	.6310-.6320	16-13/16	.6693	17.0	7/8-1-3/4	17008	182-574	**802.20**
18mm	.7092-.7102	18-1/2	.7874	20.0	7/8-1-3/4	17009	182-576	**996.60**
20mm	.7879-.7889	18-7/8	.8661	22.0	7/8-1-3/4	17010	182-578	**1,256.00**
22mm	.8666-.8676	23-1/4	.9448	24.0	7/8-1-3/4	17011	182-580	**1,312.20**
24mm	.9454-.9464	24-9/16	1.0236	26.0	7/8-1-3/4	17012	182-582	**1,491.40**
25mm	.9848-.9858	24-9/16	1.0630	27.0	7/8-1-3/4	17013	182-584	**1,497.50**

CALL TODAY FOR YOUR COMPLETE HASSAY SAVAGE CATALOGUE

HASSAY SAVAGE

Full Square Broaches - Inch





Square Size	Tol.	Broach Length	Pilot Dia.	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
3/16	.1880 - .1890	6-1/4	.1870	3/16-1/2	14012	182-550	**254.90**
1/4	.2505 - .2515	8-5/8	.2495	1/4-5/8	14016	182-552	**254.90**
5/16	.3130 - .3140	10-1/4	.3120	1/4-3/4	14020	182-554	**261.00**
3/8	.3755 - .3765	12-1/4	.3745	3/8-1	14024	182-556	**325.00**
1/2	.5005 - .5015	14-7/16	.4995	3/8-1	14032	182-558	**471.70**

Hexagon Broaches





Inch

Hex Broach	Tol.	Broach Length	Pilot Dia.	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
1/8	.1255 - .1260	4-5/8	.1245	3/16-3/8	12008	182-590	**263.20**
5/32	.1565 - .1570	5-1/2	.1557	1/4-1/2	12010	182-594	**298.40**
3/16	.1880 - .1890	5-9/16	.1870	1/4-5/8	12012	182-596	**277.00**
7/32	.2190 - .2200	6	.2182	1/4-3/4	12014	182-598	**328.90**
1/4	.2505 - .2515	6-1/2	.2495	1/4-3/4	12016	182-600	**277.00**
9/32	.2815 - .2825	7-3/4	.2807	3/8-1	12018	182-602	**342.70**
5/16	.3130 - .3140	8-1/4	.3120	3/8-1	12020	182-604	**289.70**
11/32	.3440 - .3450	8-1/4	.3432	3/8-1-1/4	12022	182-606	**421.70**
3/8	.3755 - .3765	9	.3745	3/8-1-1/4	12024	182-608	**338.80**
13/32	.4065 - .4075	10	.4057	1/2-1-3/8	12026	182-610	**504.50**
7/16	.4385 - .4395	10-3/4	.4370	1/2-1-3/8	12028	182-612	**428.40**
15/32	.4690 - .4700	12-3/8	.4682	1/2-1-3/8	12030	182-614	**604.70**
1/2	.5005 - .5015	12-1/2	.4995	1/2-1-3/8	12032	182-616	**501.20**
9/16	.5630 - .5640	14-1/4	.5620	1/2-1-1/2	12036	182-618	**601.40**
5/8	.6260 - .6270	16-7/8	.6245	5/8-1-5/8	12040	182-620	**692.50**
11/16	.6880 - .6890	17	.6870	5/8-1-5/8	12044	182-622	**763.10**
3/4	.7510 - .7520	17-7/8	.7495	5/8-1-5/8	12048	182-624	**804.30**
7/8	.8755 - .8765	18-7/8	.8745	5/8-1-5/8	12056	182-626	**1,267.70**
1	1.0020 - 1.0030	19-7/8	.9995	5/8-1-5/8	12064	182-628	**1,328.30**

Metric

Hex Broach	Tol.	Broach Length	Pilot Dia.	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
4mm	.1580-.1585	5-1/2	.1575	1/4-1/2	12104	182-640	**619.70**
5mm	.1973-.1983	6	.1968	1/4-3/4	12105	182-642	**648.60**
6mm	.2367-.2377	6-1/2	.2362	1/4-3/4	12106	182-644	**678.70**
7mm	.2760-.2770	7-3/4	.2756	3/8-1	12107	182-646	**766.60**
8mm	.3155-.3165	8-1/4	.3150	3/8-1	12108	182-648	**766.60**
10mm	.3942-.3952	10	.3937	1/2-1-3/8	12110	182-650	**943.10**
12mm	.4729-.4739	12-3/8	.4724	1/2-1-3/8	12112	182-652	**1,002.40**
14mm	.5517-.5527	14-1/4	.5512	1/2-1-1/2	12114	182-654	**1,178.70**
16mm	.6310-.6320	16-7/8	.6290	5/8-1-5/8	12116	182-656	**1,296.60**
18mm	.7092-.7102	17	.7087	5/8-1-5/8	12118	182-658	**1,473.50**
20mm	.7879-.7889	17-7/8	.7874	5/8-1-5/8	12120	182-660	**1,641.40**
22mm	.8666-.8676	18-7/8	.8661	5/8-1-5/8	12122	182-662	**1,694.90**
24mm	.9454-.9464	19-7/8	.9449	5/8-1-5/8	12124	182-664	**1,797.70**
25mm	.9848-9858	19-7/8	.9842	5/8-1-5/8	12125	182-666	**1,827.70**

Keyseating Broaches



Inch

Broach Size	Keyway Width Tol.	Dim. WxHxL	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
1/16	.0625-.0635	3/16 x 3/8 x 16	5/8-1-7/8	10701	182-670	**368.90**
3/32	.0937-.0947	3/16 x 3/8 x 16	5/8-1-7/8	10702	182-672	**368.90**
1/8	.1252-.1262	3/16 x 7/16 x 16	5/8-1-7/8	10703	182-674	**368.90**
5/32	.1564-.1574	3/16 x 1/2 x 16	5/8-1-7/8	10704	182-676	**368.90**
3/16	.1877-.1887	3/16 x 9/16 x 16	5/8-1-7/8	10705	182-678	**391.10**
3/16	.1877-.1887	3/16 x 3/4 x 20	5/8-3-1/8	10706	182-680	**398.70**
1/4	.2502-.2512	1/4 x 3/4 x 16	5/8-1-5/8	10707	182-682	**417.20**
1/4	.2502-.2512	1/4 x 3/4 x 20	5/8-3-1/8	10708	182-684	**486.80**
5/16	.3127-.3137	5/16 x 7/8 x 16	1-1/16-3-3/16	10709	182-686	**446.10**
5/16	.3127-.3137	5/16 x 7/8 x 20	1-1/16-5-3/16	10710	182-688	**490.10**
3/8	.3755-.3765	3/8 x 7/8 x 16	1-1/16-3-3/16	10711	182-690	**457.30**
3/8	.3755-.3765	3/8 x 7/8 x 20	1-1/16-5-5/16	10712	182-692	**542.40**
7/16	.4380-.4390	7/16 x 1 x 16	1-1/16-3-3/16	10713	182-694	**504.50**
7/16	.4380-.4390	7/16 x 1 x 20	1-1/16-5-3/16	10714	182-696	**638.60**
1/2	.5006-.5016	1/2 x 1 x 20	1-1/16-5-3/16	10715	182-698	**578.50**
9/16	.5630-.5640	9/16 x 1 x 20	1-1/16-5-3/16	10716	182-700	**619.70**
5/8	.6260-.6270	5/8 x 1 x 20	1-1/16-5-3/16	10717	182-702	**633.90**
3/4	.7515-.7525	3/4 x 1 x 20	1-1/16-5-3/16	10718	182-704	**690.00**
7/8	.8765-.8775	7/8 x 1 x 20	1-1/16-5-3/16	10719	182-706	**825.10**
1	1.0015-1.0025	1 x 1 x 20	1-1/16-5-3/16	10720	182-708	**858.70**

Metric

Broach Size	Keyway Width Tol.	Dim. WxHxL	Cut Length Min/Max	Hassay EDP No.	Code No.	Price $
2mm	.0787-.0792	3/16 x 3/8 x 16	5/8-1-7/8	11701	182-710	**405.80**
3mm	.1181-.1186	3/16 x 7/16 x 16	5/8-1-7/8	11702	182-712	**405.80**
4mm	.1575-.1580	3/16 x 1/2 x 16	5/8-1-7/8	11703	182-714	**405.80**
5mm	.1968-.1973	5mm x 9/16 x 16	5/8-1-7/8	11704	182-716	**405.80**
5mm	.1968-.1973	5mm x 3/4 x 20	5/8-3-1/8	11705	182-718	**451.40**
6mm	.2362-.2367	6mm x 3/16 x 16	5/8-1-7/8	11706	182-720	**431.40**
6mm	.2362-.2367	6mm x 3/4 x 20	5/8-3-1/8	11707	182-722	**481.30**
8mm	.3150-.3155	8mm x 7/8 x 20	1-1/16-3-3/16	11708	182-724	**449.00**
8mm	.3150-.3155	8mm x 7/8 x 20	1-1/16-5-5/16	11709	182-726	**519.60**
10mm	.3937-.3942	10mm x 7/8 x 16	1-1/16-5-5/16	11710	182-728	**490.10**
10mm	.3937-.3942	10mm x 7/8 x 20	1-1/16-5-5/16	11711	182-730	**572.20**
12mm	.4724-.4730	12mm x 1 x 20	1-1/16-5-5/16	11712	182-732	**640.60**
14mm	.5512-.5519	14mm x 1 x 20	1-1/16-5-5/16	11713	182-734	**684.70**
16mm	.6299-.6306	16mm x 1 x 20	1-1/16-5-5/16	11714	182-736	**737.10**
18mm	.7087-.7093	18mm x 1 x 20	1-1/16-5-5/16	11715	182-738	**802.70**
20mm	.7874-.7883	20mm x 1 x 20	1-1/16-5-5/16	11716	182-740	**860.90**
22mm	.8661-.8669	22mm x 1 x 20	1-1/16-5-5/16	11717	182-742	**914.00**
24mm	.9449-.9458	24mm x 1 x 20	1-1/16-5-5/16	11718	182-744	**982.30**
25mm	.9843-.9853	25mm x 1 x 20	1-1/16-5-5/16	11719	182-746	**1,009.20**

HASSAY SAVAGE

Hex Rotary/Punch Broaches

- M2 HSS
- For cutting mild steel applications



With .315" Shank - Inch

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
.051"	5/64"	1-1/4"	66002	182-750	**117.90**
1/16"	3/32"	1-1/4"	66004	182-752	**117.90**
5/64"	7/64"	1-1/4"	66005	182-754	**117.90**
3/32"	9/64"	1-1/4"	66006	182-756	**117.90**
7/64"	5/32"	1-1/4"	66007	182-758	**117.90**
1/8"	3/16"	1-1/4"	66008	182-760	**117.90**
9/64"	7/32"	1-1/4"	66009	182-762	**117.90**
5/32"	1/4"	1-1/4"	66010	182-764	**117.90**
3/16"	9/32"	1-1/4"	66012	182-766	**117.90**
7/32"	11/32"	1-1/4"	66014	182-768	**117.90**
1/4"	3/8"	1-1/4"	66016	182-770	**117.90**
9/32"	3/8"	1-1/4"	66018	182-772	**155.60**
5/16"	3/8"	1-1/4"	66020	182-774	**155.60**
11/32"	7/16"	1-1/4"	66022	182-776	**155.60**
3/8"	1/2"	1-1/4"	66024	182-778	**162.10**
13/32"	1/2"	1-1/4"	66026	182-780	**162.10**
7/16"	1/2"	1-1/4"	66028	182-782	**162.10**
15/32"	1/2"	1-1/4"	66030	182-784	**162.10**
1/2"	1/2"	1-1/4"	66032	182-786	**162.10**

With .315" Shank - Metric

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
1.3mm	3/32"	1-1/4"	662013	182-790	**117.90**
1.5mm	3/32"	1-1/4"	662015	182-791	**117.90**
2mm	7/64"	1-1/4"	66202	182-792	**117.90**
2.5mm	5/32"	1-1/4"	662025	182-794	**117.90**
3mm	3/16"	1-1/4"	66203	182-796	**117.90**
3.5mm	3/16"	1-1/4"	662035		
4mm	1/4"	1-1/4"	66204	182-798	**117.90**
4.5mm	1/4"	1-1/4"	662045		
5mm	5/16"	1-1/4"	66205	182-800	**117.90**
6mm	3/8"	1-1/4"	66206	182-802	**117.90**
7mm	3/8"	1-1/2"	66207	182-804	**160.30**
8mm	3/8"	1-1/2"	66208	182-806	**160.30**
9mm	3/8"	1-1/2"	66209	182-808	**160.30**
10mm	1/2"	1-1/2"	66210	182-810	**160.30**
11mm	1/2"	1-1/2"	66211	182-812	**160.30**
12mm	1/2"	1-1/2"	66212	182-814	**160.30**

Hex Rotary/Punch Broaches, cont'd

- M2 HSS
- For cutting mild steel applications



With .500" Shank - Inch

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
3/32"	9/64"	1-3/4"	66106	182-820	**138.70**
7/64"	5/32"	1-3/4"	66107	182-824	**138.70**
1/8"	3/16"	1-3/4"	66108	182-826	**138.70**
9/64"	7/32"	1-3/4"	66109	182-828	**138.70**
5/32"	1/4"	1-3/4"	66110	182-830	**138.70**
3/16"	9/32"	1-3/4"	66112	182-832	**138.70**
7/32"	9/32"	1-3/4"	66114	182-834	**138.70**
1/4"	3/8"	1-3/4"	66116	182-836	**138.70**
9/32"	7/16"	1-3/4"	66118	182-838	**138.70**
5/16"	1/2"	1-3/4"	66120	182-840	**138.70**
11/32"	9/16"	1-3/4"	66122	182-842	**231.10**
3/8"	9/16"	1-3/4"	66124	182-844	**138.70**
7/16"	5/8"	1-3/4"	66128	182-848	**184.60**
15/32"	5/8"	1-3/4"	66130	182-850	**231.10**
1/2"	5/8"	1-3/4"	66132	182-852	**184.60**
17/32"	5/8"	1-3/4"	66134		
9/16"	5/8"	1-3/4"	66136	182-856	**189.80**
19/32"	5/8"	1-3/4"	66138		
5/8"	3/4"	1-3/4"	66140	182-860	**194.20**
21/32"	3/4"	1-3/4"	66142		
11/16"	7/8"	1-3/4"	66144	182-864	**200.40**
23/32"	7/8"	1-3/4"	66146		
3/4"	7/8"	1-3/4"	66148	182-868	**204.20**

With .500" Shank - Metric

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
2mm	5/32"	1-1/2"	66302	182-870	**138.70**
2.5mm	5/32"	1-1/2"	663025	182-872	**138.70**
3mm	3/16"	1-1/2"	66303	182-874	**138.70**
4mm	1/4"	1-1/2"	66304	182-876	**138.70**
5mm	5/16"	1-1/2"	66305	182-878	**138.70**
6mm	3/8"	1-1/2"	66306	182-880	**138.70**
7mm	1/2"	1-1/2"	66307	182-882	**138.70**
8mm	1/2"	1-1/2"	66308	182-884	**138.70**
9mm	1/2"	1-1/2"	66309	182-886	**138.70**
10mm	9/16"	1-1/2"	66310	182-888	**138.70**
11mm	9/16"	2"	66311	182-890	**176.60**
12mm	5/8"	2"	66312	182-892	**184.60**
13mm	5/8"	2"	66313	182-894	**184.60**
14mm	5/8"	2"	66314	182-896	**189.80**
15mm	5/8"	2"	66315	182-898	**189.80**
16mm	5/8"	2"	66316	182-900	**194.20**
17mm	7/8"	2"	66317	182-902	**194.20**
18mm	7/8"	2"	66318	182-904	**204.20**
19mm	7/8"	2"	66319	182-906	**204.20**

With .750" Shank - Inch

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
3/8"	1/2"	2-1/2"	66524	182-908	**184.60**
7/16"	1/2"	2-1/2"	66528	182-910	**184.60**
1/2"	1/2"	2-1/2"	66532	182-912	**184.60**
9/16"	3/4"	2-1/2"	66536	182-914	**255.90**
5/8"	3/4"	2-1/2"	66540	182-916	**255.90**
3/4"	7/8"	2-3/4"	66548	182-918	**269.80**
7/8"	7/8"	2-3/4"	66556	182-920	**269.80**
1"	7/8"	2-3/4"	66564	182-922	**289.50**

CALL TODAY FOR YOUR COMPLETE HASSAY SAVAGE CATALOGUE

HASSAY SAVAGE

Hex Rotary/Punch Broaches - M42 Cobalt



- M42 HSS with Cobalt
- Provides edge toughness for standard operations, and resists heat to better effect tool life in machining most metals
- For broaching materials such as ductile iron, tool steel, stainless steels, titanium alloys. This superior grade of HSS provides significantly longer tool life with these more difficult to machine alloys.

With .315" Shank - Inch

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
1/16	3/32	1-1/4	66004-M42	182-213	**145.50**
5/64	7/64	1-1/4	66005-M42	182-215	**145.50**
3/32	9/64	1-1/4	66006-M42	182-217	**145.50**
7/64	5/32	1-1/4	66007-M42	182-219	**145.50**
1/8	3/16	1-1/4	66008-M42	182-221	**145.50**
9/64	7/32	1-1/4	66009-M42	182-223	**145.50**
5/32	1/4	1-1/4	66010-M42	182-225	**145.50**
3/16	9/32	1-1/4	66012-M42	182-227	**145.50**
7/32	11/32	1-1/4	66014-M42	182-229	**145.50**
1/4	3/8	1-1/4	66016-M42	182-231	**145.50**
9/32	3/8	1-1/4	66018-M42	182-233	**158.40**
5/16	3/8	1-1/4	66020-M42	182-235	**158.40**
11/32	7/16	1-1/4	66022-M42	182-237	**158.40**
3/8	1/2	1-1/4	66024-M42	182-239	**158.40**

With .315" Shank - Metric

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
2mm	7/64"	1-1/4"	66202-M42	182-241	**145.50**
2.5mm	5/32"	1-1/4"	662025-M42	182-243	**145.50**
3mm	3/16"	1-1/4"	66203-M42	182-245	**145.50**
3.5mm	3/16"	1-1/4"	662035-M42	182-247	**145.50**
4mm	1/4"	1-1/4"	66204-M42	182-249	**145.50**
4.5mm	1/4"	1-1/4"	662045-M42	182-251	**145.50**

With .500" Shank - Inch

Hex Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
3/32	9/64	1-3/4	66106-M42	182-253	**181.10**
7/64	5/32	1-3/4	66107-M42	182-255	**181.10**
1/8	3/16	1-3/4	66108-M42	182-257	**181.10**
9/64	7/32	1-3/4	66109-M42	182-259	**181.10**
5/32	1/4	1-3/4	66110-M42	182-261	**181.10**
3/16	9/32	1-3/4	66112-M42	182-263	**181.10**
7/32	9/32	1-3/4	66114-M42	182-265	**181.10**
1/4	3/8	1-3/4	66116-M42	182-267	**181.10**
9/32	7/16	1-3/4	66118-M42	182-269	**181.10**
5/16	1/2	1-3/4	66120-M42	182-271	**181.10**
11/32	9/16	1-3/4	66122-M42	182-273	**181.10**
3/8	9/16	1-3/4	66124-M42	182-275	**181.10**

Square Rotary/Punch Broaches



- M2 HSS
- For cutting mild steel applications

With .315" Shank - Inch

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
1/16"	1/8"	1-1/4"	68004	182-930	**117.90**
3/32"	9/64"	1-1/4"	68006	182-932	**117.90**
1/8"	3/16"	1-1/4"	68008	182-934	**117.90**
5/32"	1/4"	1-1/4"	68010	182-936	**117.90**
3/16"	9/32"	1-1/4"	68012	182-938	**117.90**
7/32"	11/32"	1-1/4"	68014	182-940	**117.90**
1/4"	3/8"	1-1/2"	68016	182-942	**160.20**
9/32"	3/8"	1-1/2"	68018	182-944	**160.20**
5/16"	3/8"	1-1/2"	68020	182-946	**160.20**
11/32"	3/8"	1-1/2"	68022	182-948	**162.60**
3/8"	3/8"	1-1/2"	68024	182-950	**162.60**

With .315" Shank - Metric

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
1.5mm	3/32"	1-1/4"	682015	182-277	**117.90**
2mm	7/64"	1-1/4"	68202	182-279	**117.90**
2.5mm	5/32"	1-1/4"	682025	182-281	**117.90**
3mm	3/16"	1-1/4"	68203	182-283	**117.90**
3.5mm	3/16"	1-1/4"	682035	182-285	**117.90**
4mm	1/4"	1-1/4"	68204	182-287	**117.90**
4.5mm	1/4"	1-1/4"	662045	182-289	**117.90**
5mm	5/16"	1-1/4"	68205	182-291	**117.90**
6mm	3/8"	1-1/4"	68206	182-293	**117.90**
7mm	3/8"	1-1/4"	68207	182-295	**160.30**
8mm	3/8"	1-1/4"	68208	182-297	**160.30**
9mm	3/8"	1-1/4"	68209	182-299	**160.30**
10mm	1/2"	1-1/4"	68210	182-301	**160.30**

With .500" Shank - Inch

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
3/32"	9/64"	1-1/2"	68106	182-960	**138.70**
1/8"	3/16"	1-1/2"	68108	182-962	**138.70**
5/32"	1/4"	1-1/2"	68110	182-964	**138.70**
3/16"	9/32"	1-1/2"	68112	182-966	**138.70**
7/32"	11/32"	1-1/2"	68114	182-968	**138.70**
1/4"	3/8"	1-1/2"	68116	182-970	**138.70**
9/32"	7/16"	1-1/2"	68118	182-972	**138.70**
5/16"	1/2"	1-1/2"	68120	182-974	**138.70**
11/32"	9/16"	1-1/2"	68122	182-976	**194.60**
3/8"	5/8"	2"	68124	182-978	**194.60**
7/16"	5/8"	2"	68128	182-980	**194.60**
1/2"	5/8"	2"	68132	182-982	**194.60**
9/16"	3/4"	2"	68136	182-984	**204.20**
5/8"	7/8"	2"	68140	182-986	**204.20**

With .500" Shank - Metric

Square Size	Depth of Cut	Overall Length	Hassay EDP No.	Code No.	Price $
1.5mm	3/32"	1-3/4"	683015	182-303	**138.70**
2mm	7/64"	1-3/4"	68302	182-305	**138.70**
2.5mm	5/32"	1-3/4"	683025	182-307	**138.70**
3mm	3/16"	1-3/4"	68303	182-309	**138.70**
3.5mm	3/16"	1-3/4"	683035	182-311	**138.70**
4mm	1/4"	1-3/4"	68304	182-313	**138.70**
4.5mm	1/4"	1-3/4"	683045	182-315	**138.70**
5mm	5/16"	1-3/4"	68305	182-317	**138.70**
6mm	3/8"	1-3/4"	68306	182-319	**138.70**
7mm	3/8"	1-3/4"	68307	182-321	**138.70**
8mm	3/8"	1-3/4"	68308	182-323	**138.70**
9mm	3/8"	1-3/4"	68309	182-325	**138.70**
10mm	1/2"	1-3/4"	68310	182-327	**138.70**
11mm	9/16"	1-3/4"	68311	182-329	**184.60**
12mm	5/8"	1-3/4"	68312	182-331	**184.60**

HASSAY SAVAGE

CNC - Single Point Keyway Broaches

CNC-Single Point Keyway Broaches

A CNC Broaching Alternative

Broaching keyways on CNC machines today is as common as turning a part. It will eliminate part handling and improve your control when you design your process to incorporate short effective nibbling broaches that take the place of much longer tools and sometimes timely set up on secondary machines.

Blind hole and **through hole** CNC keyway broaching with standard tools that are off the shelf, will give you a profitable alternative and save you time.

Blind hole or through hole CNC keyway broaching is achieved through the use of single point nibbling cutters that are designed with two separate cutting surfaces at 180° apart. The one piece construction is created on a high speed tooling blank that is a common size round shank with ground timing flats to align the keyway for timing to the part it is broaching. These tools will offer long tool life, and can be easily sharpened many times for extended tool life. Ideally designed for either CNC lathe or CNC vertical machining centres, these tools can get the job done quickly and effectively:

- For a CNC lathe, the tool is mounted directly into the turret on centerline while a setscrew-locking holder will lock the tool in place and position
- For a CNC vertical machining center, a collet will hold the tool shank and provide timing orientation. With the spindle locked, the broach can be brought in line with the pre-prepared bore diameter and chamferlead of the part to start broaching

With the spindle locked, the broach can be brought in line with the pre-prepared bore diameter and chamfer lead of the part to start broaching the keyway at a speed of 10 - 30 in/min and an in-feed of .003 -.005 depth per pass, using a flood coolant for lubrication during the cut. The in-feeding cycle is repeated until the desired depth of the keyway is achieved. Chips can be removed from the bottom of the hole in a couple of ways:

- If the hole is a blind hole bore, remove the chips by either prior trepanning the bottom of the keyway area and allow chips to fall away
- Or pre-drill a hole from the outside to the inside of the part at the bottom of the keyway location.
- With a through hole, you can broach right through, but do not disengage with the part, and simply de-burr the keyway upon completion.

The advantages:



- Complete the part on one machine
- Only way to keyway a blind hole
- Cut down on set-up time
- Become more flexible with machining
- Manage small lot production
- Use cost effective standard tooling
- No bushing guide required
- No hydraulic press or pull required
- No additional operator needed

Inch Shank

Size	Tolerance (in.)	Shank Dia. (in.)	Overall Length (in.)	Max L.O.C. (in.)	Hassay EDP No.	Code No.	Price $
1/8	.1265	.625	3.75	1.50	69008	182-627	**520.50**
4mm	.159	.625	3.75	1.50	69004	182-629	**520.50**
3/16	.189	.625	3.75	1.50	69012	182-630	**520.50**
5mm	.198	.625	3.75	1.50	69005	182-631	**520.50**
6mm	.238	.875	4.50	2.00	69106	182-632	**576.00**
1/4	.252	.875	4.50	2.00	69116	182-633	**576.00**
5/16	.314	.875	4.50	2.00	69120	182-634	**617.20**
8mm	.317	.875	4.50	2.00	69108	182-635	**617.20**
3/8	.377	1.00	4.50	2.00	69224	182-636	**691.20**
10mm	.396	1.00	4.50	2.00	69210	182-637	**691.20**
12mm	.4745	1.00	4.50	2.00	69212	182-638	**691.20**
1/2	.502	1.00	4.50	2.00	69232	182-639	**691.20**

Metric Shank

Size	Tolerance (in.)	Shank Dia. (mm)	Overall Length (in.)	Max L.O.C. (in.)	Hassay EDP No.	Code No.	Price $
1/8	0.127	16	3.75	1.5	69308	182-189	**520.50**
4mm	0.159	16	3.75	1.5	69304	182-191	**520.50**
3/16	0.189	16	3.75	1.5	69312	182-193	**520.50**
5mm	0.198	16	3.75	1.5	69305	182-195	**520.50**
6mm	0.238	20	4.50	2	69406	182-197	**576.00**
1/4	0.252	20	4.50	2	69416	182-199	**576.00**
5/16	0.314	20	4.50	2	69420	182-201	**617.20**
8mm	0.317	20	4.50	2	69408	182-203	**617.20**
3/8	0.377	25	4.50	2	69524	182-205	**691.20**
10mm	0.396	25	4.50	2	69510	182-207	**691.20**
12mm	0.474	25	4.50	2	69512	182-209	**691.20**
1/2	0.502	25	4.50	2	69532	182-211	**691.20**

Things That You Should Know:

- Standard tooling will come with common shank diameters.
- The keyway size and length or depth of cut will determine the shank size.
- Strength and rigidity in the set- up will give you longer tool life.
- Consider using the larger shank size to process your jobs.
- Keyway production will achieve excellent finishes and better accuracy.
- You can design and create your own special tool with our help.

Call or see our website chapter on Single Key Broaching.

Use GS CAT 40 ER Collet Chucks & Collets to hold your CNC Single Point Keyway Broaches

See Pages G22 to G34

GS TOOLING





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Manufacturers of Precision Tools

Adjustable Rotary Broach Holders

FOR BROACHES WITH .315 DIAMETER SHANKS

O.A.L.	Shank Dia.	Shank Length	Broach Shank Depth	Hassay EDP No.	Code No.	Price $
3-27/64"	5/8"	1-1/2"	9/16"	P-67040	182-173	**2,921.00**
3-59/64"	3/4"	2"	9/16"	P-67048S	182-175	**3,014.20**

FOR BROACHES WITH .500 DIAMETER SHANKS

O.A.L.	Shank Dia.	Shank Length	Broach Shank Depth	Hassay EDP No.	Code No.	Price $
4-17/32"	3/4"	2"	.742"	P-67048	182-177	**3,278.60**
4-17/32"	1"	2"	.742"	P-67064	182-179	**3,363.90**
5-17/32"	1-1/4"	3"	.742"	P-67068	182-181	**3,466.10**
5-17/32"	1-1/2"	3"	.742"	P-67072	182-183	**3,562.80**



FOR BROACHES WITH .750 DIAMETER SHANKS - HEAVY DUTY

O.A.L.	Shank Dia.	Shank Length	Broach Shank Depth	Hassay EDP No.	Code No.	Price $
7-9/16"	1-1/2"	3"	1.25"	P-67072HDS	182-185	**6,449.40**
7-9/16"	1-3/4"	3"	1.25"	P-67076HD	182-187	**6,449.40**

Applications

ROTARY/PUNCH BROACHES can be used in a variety of machines to cut polygons in blind holes: Any type of CNC or manual turning, milling, drilling or screw machine. The practical forming length of rotary/punch broaching is usually up to 1-1/2 times the size of the broach (measured across flats).

ROTARY BROACH HOLDERS: For optimal tool life in large production settings these broaches are used in Rotary Broach Holders. Holders and broaches are sold separately and available from stock for immediate delivery. These holders are for use on any type CNC or manual turning, milling, drilling or screw machine. The holder has an internal live spindle, which holds the end cutting broach tool. The centerline of the cutting tool is offset at 1° from the centerline of the work piece. This causes the broach to wobble creating a shearing effect as the broach is advanced into the work piece or vise versa as described below:

BROACHING A ROTATING WORK PIECE: In a turning or screw machine, the holder is mounted stationary while its internal live spindle and the broach rotates after contact with the rotating work piece. At the appropriate feed, the work piece is "sheared" by the pressure of the broach through a wobbling type action producing the polygon shape desired.

BROACHING A STATIONARY WORK PIECE: In a milling or drilling machine, the holder is mounted into and rotates with the machine spindle while its internal live spindle along with the broach remains stationary upon contact with the stationary work piece. While the machine spindle is rotating, the broach's pressure shears the polygon shape into the work piece (wobbling type action).

PUNCHING VERSUS ROTARY BROACHING: Many applications can be achieved without the rotary broach holder. For the purpose of merely punching a polygon into an existing pilot hole, these broaches have successfully been used with universal machining methods.

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HASSAY SAVAGE

Rotary Broaching Set-Up Plugs

For Hex Broach Set-Up Only



8mm Shank

Size	Plug Dia. (-.001")	Shank Dia. (-.0050")	Plug Depth	O.A.L.	Hassay EDP No.	Code No.	Price $
1/8"	0.129"	8mm	5/16"	1-1/4"	67008	182-063	**59.10**
3/16"	0.193"	8mm	5/16"	1-1/4"	67012	182-065	**59.10**
1/4"	0.257"	8mm	5/16"	1-1/4"	67016	182-067	**59.10**
5/16"	0.321"	8mm	3/8"	1-1/4"	67020	182-069	**59.10**
3/8"	0.387"	8mm	1/2"	1-1/4"	67024	182-071	**59.10**
1/2"	0.515"	8mm	1/2"	1-1/4"	67032	182-073	**59.10**

Rotary Broaching Set-Up Plugs, cont'd

For Hex Broach Set-Up Only

.500" Shank

Size	Plug Dia. (-.001")	Shank Dia. (-.0050")	Plug Depth	O.A.L.	Hassay EDP No.	Code No.	Price $
3/16"	0.193"	.500"	5/16"	1-3/4"	67112	182-075	**82.60**
1/4"	0.257"	.500"	5/16"	1-3/4"	67116	182-077	**82.60**
3/8"	0.387"	.500"	5/16"	1-3/4"	67124	182-079	**82.60**
1/2"	0.515"	.500"	1/2"	1-3/4"	67132	182-081	**82.60**
5/8"	0.643"	.500"	1/2"	1-3/4"	67140	182-083	**82.60**

.750" Shank

Size	Plug Dia. (-.001")	Shank Dia. (-.0050")	Plug Depth	O.A.L.	Hassay EDP No.	Code No.	Price $
3/8"	0.387"	.750"	1/2"	2-1/2"	67524	182-085	**99.20**
1/2"	0.515"	.750"	1/2"	2-1/2"	67532	182-087	**99.20**
5/8"	0.643"	.750"	3/4"	2-1/2"	67540	182-089	**99.20**
3/4"	0.771"	.750"	3/4"	2-3/4"	67548	182-091	**99.20**

Swiss Style Rotary Hex Punch Broaches

For use with Swiss Style Non-Adjustable Holders

- Consistent high tolerance forms for long production runs
- Superb surface finishes
- Outstanding tool life in Stainless & Titanium

- M2 for use with mild steel (HSS)
- PM-M4 for use with Stainless Steel, Titanium & other high alloy steels



8mm Shank - Inch

Hex Size	Across Flats (±.0002")	Max Depth of Cut	Overall Length	Hassay EDP No.	M2 Code No.	Price $	Hassay EDP No.	PM-M4 Code No.	Price $
0.051"	0.0510	5/64"	28mm	76002	182-093	**119.20**	77002	182-115	**138.10**
1/16"	0.0645	3/32"	28mm	76004	182-095	**119.20**	77004	182-117	**138.10**
5/64"	0.0801	7/64"	28mm	76005	182-097	**119.20**	77005	182-119	**138.10**
3/32"	0.0958	9/64"	28mm	76006	182-099	**119.20**	77006	182-121	**138.10**
7/64"	0.1113	5/32"	28mm	76007	182-101	**119.20**	77007	182-123	**138.10**
1/8"	0.1270	3/16"	28mm	76008	182-103	**119.20**	77008	182-125	**138.10**
9/64"	0.1426	7/32"	28mm	76009	182-105	**119.20**	77009	182-127	**138.10**
5/32"	0.1585	1/4"	28mm	76010	182-107	**119.20**	77010	182-129	**138.10**
3/16"	0.1895	9/32"	28mm	76012	182-109	**119.20**	77012	182-131	**138.10**
7/32"	0.2207	11/32"	28mm	76014	182-111	**119.20**	77014	182-133	**138.10**
1/4"	0.2520	3/8"	28mm	76016	182-113	**119.20**	77016	182-135	**138.10**

8mm Shank - Metric

Hex Size	Across Flats (±.0002")	Max Depth of Cut	Overall Length	Hassay EDP No.	M2 Code No.	Price $	Hassay EDP No.	PM-M4 Code No.	Price $
1.5mm	0.0610	3/32"	28mm	762015	182-137	**119.20**	772015	182-155	**138.10**
2mm	0.0807	5/32"	28mm	76202	182-139	**119.20**	77202	182-157	**138.10**
2.5mm	0.1004	5/32"	28mm	762025	182-141	**119.20**	772025	182-159	**138.10**
3mm	0.1201	3/16"	28mm	76203	182-143	**119.20**	77203	182-161	**138.10**
3.5mm	0.1398	3/16"	28mm	762035	182-145	**119.20**	772035	182-163	**138.10**
4mm	0.1595	1/4"	28mm	76204	182-147	**119.20**	77204	182-165	**138.10**
4.5mm	0.1792	1/4"	28mm	762045	182-149	**119.20**	772045	182-167	**138.10**
5mm	0.1989	5/16"	28mm	76205	182-151	**119.20**	77205	182-169	**138.10**
6mm	0.2382	3/8"	28mm	76206	182-153	**119.20**	77206	182-171	**138.10**

Hassay Savage
Manufacturers of Precision Tools

Swiss Style Non-Adjustable Rotary Broach Holders

Swiss Style Holders

- No Center Indicating Required – Self-Centering
- Smaller Head Diameter Eliminates Interference on Tool Blocks
- Longer Shank Can Be Cut To Proper Length
- Short Head Length For Limited Back Work Space
- Built In Wobble Cutting Feature 1° Angle
- Heavy Duty Bearing Takes 2,250 lbs. Pushing Force
- Swiss Made Quality High-Precision
- Fits Most Swiss Type Tool Blocks & Gang Machines
- Holds 8mm shank Swiss Style Rotary Punch Broaches



Shank Dia.	Shank Length	Hassay EDP No.	Code No.	Price $
5/8"	1-1/2"	HSP-2160-158-038	182-033	3,292.90
3/4"	4"	HSP-2160-190-100	182-035	3,292.90
1"	4-3/4"	HSP-2160-254-120	182-037	3,292.90
12mm	38mm	HSP-2160-120-038	182-039	3,292.90
14mm	38mm	HSP-2160-140-038	182-041	3,292.90
16mm	38mm	HSP-2160-160-038	182-043	3,292.90
20mm	100mm	HSP-2160-200-100	182-045	3,292.90
22mm	100mm	HSP-2160-220-100	182-047	3,292.90
25mm	120mm	HSP-2160-250-120	182-049	3,292.90

Self Centering Holders

Designed for CNC machines, the new 2100 Series Broach Holder meets the challenge. Faster and easier setup.

- Places rotary broach on center, eliminates the need to indicate the holder
- Cylindrical shank design with Weldon Notch perfect for lathe or machining center applications
- Micro-manufacturing includes medical, dental, automotive and aircraft micro components, with micro precision systems that require high precision tolerance and quality
- Holds 8mm shank Swiss Style Rotary Punch Broaches



Shank Dia.	Shank Length	Hassay EDP No.	Code No.	Price $
15.87mm	38mm	HSP-2100-58	182-051	2,696.80
19.05mm	38mm	HSP-2102	182-053	2,696.80
25.4mm	38mm	HSP-2104	182-055	2,696.80
16mm	38mm	HSP-2100-16	182-057	2,696.80
20mm	38mm	HSP-2101	182-059	2,696.80
25mm	50mm	HSP-2103	182-061	2,696.80

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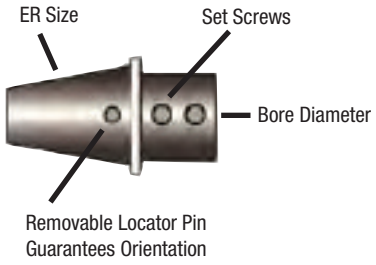
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Manufacturers of Precision Tools

Quick Change ER Collet Punch & Index Broach ER Holder Systems

For Swiss and CNC machining

When orientation and concentricity of an internal polygon profile is crucial, an ER holder can be used to securely hold a punch or index broach tool and accurately align the tool to center, while ensuring perfect alignment of the profile orientation. **These Quick change holders can be preset and reloaded in seconds.**



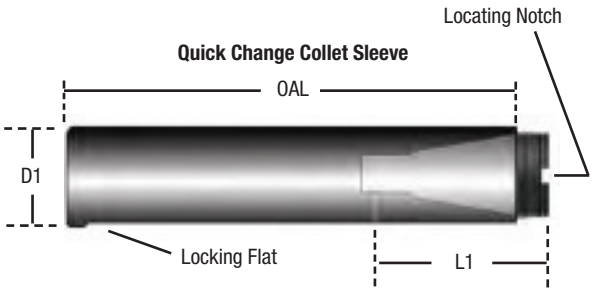
Punch Broach / Boring Adaptors & Nuts

ER Size	Bore Dia.	Nut Thread	Hassay EDP No.	Code No.	Price $
ER16	.250	M19 x 1mm Nut & Locator Pin	HSP-PA16-25001	182-001	**261.20**
ER16	8mm	M19 x 1mm Nut & Locator Pin	HSP-PA16-31501	182-003	**261.20**
ER20	.250	M24 x 1mm Nut & Locator Pin	HSP-PA20-25001	182-005	**261.20**
ER20	8mm	M24 x 1mm Nut & Locator Pin	HSP-PA20-31501	182-007	**261.20**



Quick Change Collet Sleeve | Punch Broach Adapter | Holding Nut | Punch Broach





Quick Change Collet Sleeves

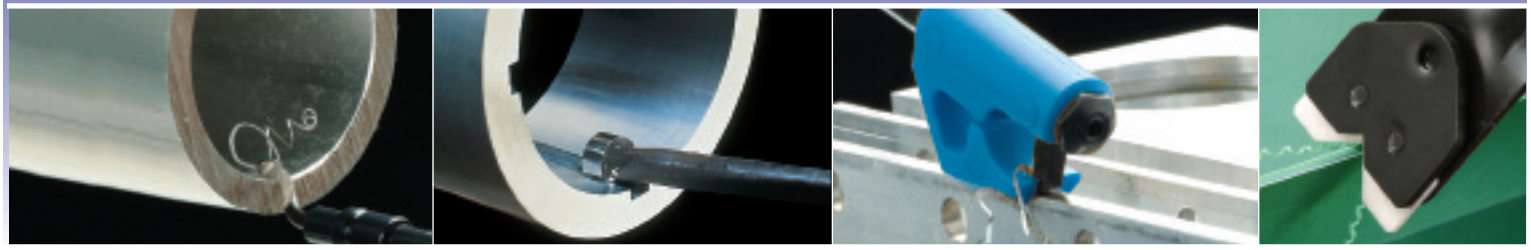
For shank only holders

Collet	D1	L1	Overall Length	Hassay EDP No.	Code No.	Price $
ER16	.500"	1.1"	4.5"	HSP-CS16-160500	182-009	**249.60**
ER16	.625"	1.1"	4.5"	HSP-CS16-160625	182-011	**249.60**
ER16	.750"	1.1"	4.5"	HSP-CS16-160750	182-013	**265.00**
ER16	20mm	28mm	71mm	HSP-CS16-160787	182-015	**226.60**
ER16	22mm	28mm	118mm	HSP-CS16-160866	182-017	**226.60**
ER16	25mm	28mm	95mm	HSP-CS16-160984	182-019	**249.60**
ER16	1"	1.1"	4.5"	HSP-CS16-161000	182-021	**265.00**
ER20	.750"	1.2"	4.5"	HSP-CS20-200750	182-023	**265.00**
ER20	22mm	30mm	114mm	HSP-CS20-200866	182-025	**265.00**
ER20	1.00"	1.2"	4.5"	HSP-CS20-201000	182-027	**265.00**
ER20	1.250"	1.2"	4.5"	HSP-CS20-201250	182-029	**265.00**
ER20	32mm	30mm	118mm	HSP-CS20-201260	182-031	**265.00**

CALL TODAY FOR YOUR COMPLETE HASSAY SAVAGE CATALOGUE

www.hassay-savage.com

NOGA DEBURRING SYSTEMS



Promo N Noga Set - NG8000

For Steel, Aluminum & Plastic
Contains: Noga Grip 2 handle &
10pcs N1 (B10) blades



Model	Code No.	Price $
NG8000	165-474	19.50

N Cobalt Set - NG8100

For Plastic & Hard Materials
Contains: 1 Noga Grip 2 handle &
20 pcs N10 (B10) Cobalt blades



Model	Code No.	Price $
NG8100	165-466	41.70

Promo S Noga Set - NG8150

For Steel, Aluminum & Plastic
Contains: Noga Grip 1handle &
10pcs S10 (E100) blades



Model	Code No.	Price $
NG8150	165-464	21.30

S Golden Noga Set - NG8152 TiN Coated

For Abrasive Materials
Contains: Noga Grip 1handle &
10pcs S10 Tin Coated blades



Model	Code No.	Price $
NG8152	165-460	33.70

N Economy Set - NG8050

For Steel, Aluminum & Plastic
Contains: Noga Grip handle &
20pcs N1 (B10) blades



Model	Code No.	Price $
NG8050	165-478	29.70

N Golden Noga Set - NG8002 TiN Coated

For Steel, Aluminum and Plastic
Contains: Noga Grip Handle
10 N1 TIN Coated blades



Model	Code No.	Price $
NG8002	165-465	27.70

NOGA

Deburring Tool - SG1000

Includes:
- Ergonomic soft grip SG handle
- S100 and N10 blades



Model	Code No.	Price $
SG1000	165-380	18.60

Noga Burr 3 - NB3000

- Multi-functional tool deburrs round parts, small holes and straight edges
- Blades are easily changed and stored in handle
- Contains handle and 3 "S" blades (165-024, 165-026, 165-030)



Model	Code No.	Price $
NB3000	165-370	16.80

Liza Burr - LB1000

- Double sided blade holder
- Accepts all "N" and "S" blades
- Standard tool includes unihandle
- To lock holder in position turn black ring clockwise



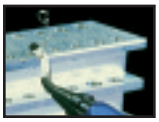


Model	Code No.	Price $
LB1000	165-010	19.00

Rapid Burr - RB1000

- Economical version of the Noga Burr
- Utilizes replaceable blades only without spare blade storage





Model	Code No.	Price $
RB1000	165-006	12.30
RB1005 (RB1000 + S20 Blade)	165-130	14.90

Edge Off - EO2000

- Includes:
  Plastic handle and S10 blade, holds all types of "S" blades. (blades can be replaced)



Model	Code No.	Price $
EO2000	165-375	4.40

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Noga Burr 1 - NB1100

- Blue plastic handle and S10 blade



Model	Code No.	Price $
NB1100	165-390	10.70

Noga Burr 5 - NB5000

- Multi-functional tool deburrs round parts, small holes and straight edges
- Blades are easily changed and stored in handle
- Set includes blades 1pc ea.: 165-024, 165-026, 165-030, 165-032, 165-034





Model	Code No.	Price $
NB5000	165-004	20.10

Super Burr - SB1000

Similar to the Liza-Burr but with heavy duty blades for heavy duty jobs
Contains
- Uni-handle, SN-holder, S100, S20, S30 blades





Model	Code No.	Price $
SB1000	165-001	24.60

Teddy Burr - TB1000

Slim-grip design allows deburring in hard to reach locations.
- Holds all "N" (2.6 mm) blades
- Easy to replace blades with handy pocket clip
- Contains: N1 blade, 8 mm hexagonal painted handle





Model	Code No.	Price $
TB1000	165-031	10.50

Edge-Off Disposable Deburring Tool - EO1000

- Handy tool fits in shirt pocket
- Equipped with a non-removable 165-024 blade
- Pocket clip included





Model	Code No.	Price $
EO1000	165-008	7.10

DOUBLE EDGE CUTTING

H.D. Keyway Burr - KW1300

Most useful for wide, deep or shallow keyways
Range: 3 - 15 mm
Contains:
• Uni-handle, K-holder, N90K blade





Model	Code No.	Price $
KW1300	165-003	21.30

H.D. Keyway Burr - KW1000

• Effectively solves the problem of deburring
• Keyways, internal and external
• Blade can be reversed to extend life





Model	Code No.	Price $
KW1000	165-018	20.40

Double Burr (Sheet Metal) - DB1000

• Dual purpose tool for machinists and sheet metal workers
• Deburr both sides of sheet metal simultaneously
• Blades adjustable up to 3/8" thickness
• Can be used with one blade in centre for deburring edges of blocks
• Blades can be rotated to extend life
• Standard tool includes: handle, two 165-042 blades





Model	Code No.	Price $
DB1000	165-016	30.50

Noga "V" Cut - NC1000

Simple and safe for use with hand guard, which is available on request.
• Most economical tool for sheet metal range 1 - 8 mm
• Contains: Uni-handle, LD-holder, L3 blade





Model	Code No.	Price $
NC1000	165-011	23.60

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COUNTERSINKS & ROTODRIVES

Countersink - CS1000

• 20mm Dia. countersink
• Uses 140mm hex. blade holder which can be locked into any position
• Useful for chamfering deep holes
• Standard tool includes Unihandle, hex. blade holder





Model	Code No.	Price $
CS1000	165-012	42.80

Reversible Countersinks - RC2000 & RC2200

• RC2000 Range: 5 - 9 mm
• RC2200 Range: 10-22 mm
• Contains: Handle and R2 (RC2000) or R3 blade (RC2200)
• Similar to RC1000 only larger
• Patented





Model	Code No.	Price $
RC2000	165-029	38.90
RC2200	165-182	46.30

Reversible Mini Countersink - RC1000

• Unique 2 pair of cutting edges
• For chamfering, hold tool between fingers and thumb and rotate back and forth
• Fine tool for deburring both back side and front side of holes
• Blade has two working positions
• Range: 3 - 3.5 mm
• To insert/withdraw blade into/from hole, push knob and release slowly
• Contains: Handle and small R1 blade





Model	Code No.	Price $
RC1000	165-027	38.90

H.D. Rotodrive - RD7000

• Has cranked blade holder with M7 thread
• Accepts C12, C20 and C30
• 56 mm displacement allows for heavy-duty burrs to be removed
• Contains: Uni-handle, H.D. rotodrive holder, C20 countersink
• Continuous rotation of countersink enables very fast chamfering



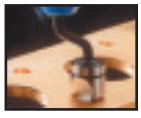


Model	Code No.	Price $
RD7000	165-002	45.80

Fixed Rotodrive - RD1040

• The quickest way to chamfer by hand
• Contains: NB-handle, 10.4 rotodrive countersink
• Single flute countersink provides a smoother cut.
• Patented





Model	Code No.	Price $
RD1040	165-022	36.30

NOGA

SCRAPERS

Scraper - SC1000





- Includes: Unihandle, 3/4" scraper blade
- Heavy duty scraper
- Triangular double ended blade
- Blade can be locked into the handle at desired length

Model	Code No.	Price $
SC1000	165-014	**29.20**

Mini-Scraper - MS1000





- Ideal for tool and die makers
- Hollow ground

Contains:
- Uni-handle, D-holder, triangular mini-scraper D50
- D50 scraper is held in the D-holder by means of wedge action

Model	Code No.	Price $
MS1000	165-005	**25.10**

Internal Scraper - IS1000





- For the deburring of cross-holes
- D66 scraper is held in the D-holder by means of wedge action

Contains:
- Uni-handle, D-holder, internal scraper D66

Model	Code No.	Price $
IS1000	165-007	**23.40**

Adjustable Scraper - SC8000



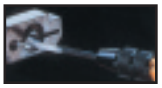


- Protected by plastic cap
- 5 mm medium size scraper
- Contains: 12 mm anodized handle, T80 double ended triangular scraper
- Knurled locking collar to control blade extension

Model	Code No.	Price $
SC8000	165-033	**26.30**

Adjustable Mini Scraper - SC7500





- Protected by plastic cap
- 3.2 x 75 mm triangular scraper
- Contains: 12 mm anodized handle, D75 triangular scraper
- Ideal for tool and mold making

Model	Code No.	Price $
SC7500	165-035	**24.60**

SPECIALTY TOOLS

Noga Mini Cut - NG3220



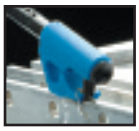


- Used for deburring small ridges in difficult to reach places
- Range of 0 - 2.5 mm makes this tool very unique
- Contains: Uni-handle, LD-holder, L4 blade

Model	Code No.	Price $
NG3220	165-479	**22.70**

Leader - LD1000





- Safe and easy to use
- Ensures 45º chamfers
- Contains: Uni-handle, L-holder, L1 blade
- Chamfers straight or curved edges

Model	Code No.	Price $
LD1000	165-013	**24.10**

Noga "O" Ring Burr - KW2000





- Range: 0 - 3 mm (groove width)
- Contains: NB-handle, OR blade
- Removes burrs from internal "O" ring grooves
- Patented

Model	Code No.	Price $
KW2000	165-019	**22.50**

Thread Cleaner - TC1000





- For repair and cleaning damaged internal threads
- 9 mm minimum dia.
- Contains: NB-handle, TC blade
- Works well on all threads and pitches
- Patented

Model	Code No.	Price $
TC1000	165-017	**18.90**

Deburring Accessories

Item	Description	Range	Code No.	Price $
D50	Mini-scraper; most suitable for miniature components	HSS 3mm	165-100	**10.20**
D66	Internal scraper; most useful on cross holes	HSS 3.2mm	165-105	**8.40**
N70K	Special square blade for small keyways (For shallow Keyways, one corner is truncated)	1.2 - 8mm 3/64" - 5/16"	165-120	**8.80**
N90K	Heavy duty blade for wide Keyways (simular to N70K)	3 - 15mm 3/64" - 5/16"	165-125	**9.30**

NOGA

MultiBurr - RG1000

Four of Noga's most popular multi-purpose blades in one innovative tool set.
- S10 blade (steel, aluminum, plastic)
- D50 scraper (ideal for tool & die makers)
- N2 blade (brass, cast iron)
- Rotodrive 90º countersink (1-10.4mm)



Model	Code No.	Price $
RG1000	165-371	103.80

Universal Handy Chuck Holder - PV1000

A 3 jaw chuck helps with the quick and secure clamping of a wide variety of tools, blades and blade holders such as scrapers, countersinks, files etc.

Hardness 58HRC
Range: 0.5-8.0mm



Model	Code No.	Price $
PV1000	165-484	75.60

YT Handle - YT1000

The perfect grip on Noga Adjustable Scrapers, Needle Files, Pins & Drills

- Quick Change
- Fits every hand
- Flexible collet

Range: 2.2 - 4.5mm

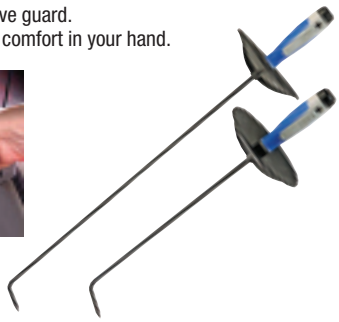


Model	Code No.	Price $
YT1000	165-486	8.60

Chip Hooks - SP2500 & SP2550

For removing chips and clean the chip trays on your machines.
Black finished steel hooks.
The Chip Hooks include a plastic protective guard.
NogaGrip Handle designed for maximum comfort in your hand.





Model	Length	Code No.	Price $
SP2500	400mm	165-488	32.50
SP2550	600mm	165-490	36.80

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CERAMICS

Soft Cut Ceramic Tool - NC5100

Ideal for deburring soft abrasive plastics.
Blade can be replaced

Includes: Noga NC5100 holder & CR6100 blade





Model	Code No.	Price $
NC5100 holder	165-492	39.50
CR6000 65º blade	165-494	21.90
CR6100 75º blade	165-496	21.90

Cera-Cut - CR1100

- Includes: Ceramic blade mounted in a modified Soft Grip handle, (this blade cannot be replaced).
- Ideal for deburring plastics and other soft materials.
- Extremely long life.



Model	Code No.	Price $
CR1100	165-385	46.30

Ceramic Tool - CR2000

- Includes: Cera-Cut handle and straight Cera-Cut blade, (blades can be replaced).
- Ideal for all plastic materials and soft metals.
- Ideal for cleaning surface and parting line flash.



Model	Code No.	Price $
CR2000	165-415	45.40

Ceramic Double Burr - DB5000

- Includes: V-shaped blade mounted in a DB handle, (blades can be replaced).
- Removes burr from both sides of workpiece simultaneously.
- Ergonomically designed handle with guard to protect you while you work.



Model	Code No.	Price $
DB5000	165-410	63.00

NOGA SETS & KITS

The Set - SP7700

The most popular deburring tools you need to carry for any deburring application. Packed in one handy box.
• Contains:
Countersink NG3100, Mini Scraper NG3700, Noga V Cut NG3200, Adjustable Scraper SC8000, Keyway-Burr NG3300, Internal Scraper NG3710, Super Burr NG3003



Model	Code No.	Price $
SP7700	165-482	184.60

Noga Box - NX1000

• Collected to meet the total requirements of the tool and die makers.
• Contains:
Keyway burr; half round riffler file; round riffler file; flat riffler file; double-burr; D-key; uni-handle plus SN holder; C holder plus C20; C12; D holder plus D50; D holder plus D66; T120 scraper; L holder plus L1; N1 blade; S10 blade; S101 B blade; S20 blade



Model	Code No.	Price $
NX1000	165-160	244.90

NB Set - NB1900

For Steel, Aluminum & Plastic
Contains: NB Handle &
10pcs S10 blades



Model	Code No.	Price $
NB1900	165-060	21.30

Deburring Kit - SP1007

• Contains:
RB Handle (12mm Hex. Aluminum Handle).
OR ("O" Ring Grooves Blade).
RD 16.5 (RotoDrive Countersink).
RDE18 (External Rotodrive Countersink).
TC (Thread Cleaner Blade).
S100 Blade (for Steel).
S150 Blade (for Plastic).



Model	Code No.	Price $
SP1007	165-190	78.70

Noga Unikit - UK1000

• Recommended for machinists and tool makers
• Contains:
1 Liza-burr; 1 C20 countersink, 1 countersink holder; 1 scraper blade; 1 S10 blade; 1 S20 blade; 1 S30 blade; 1 S101 blade



Model	Code No.	Price $
UK1000	165-020	98.10

Micro Deburring Set - FT3000

• Ideal for Tool and Die makers
• For extra fine jobs
Contains:
• Micro Deburring Tool (FT1000)
• Micro Scraper (FT1100)
• Micro RotoDrive Countersink (FT1200)



Model	Code No.	Price $
FT3000	165-135	44.00

Magic Set - RB4000

The handle can hold both types of blades (rotating & fixed)
• Contains:
Rapid Burr (RB1000) and modified D50 Mini Scraper Blade.



Model	Code No.	Price $
RB4000	165-480	22.40

Unikit Special - UK2000

• The Standard UNIKIT with the addition of the internal scraper and the 12mm countersink C12
• Contains:
D holder plus D66; T120 scraper; uni-handle; SN holder; C holder plus C20; C12; N2 blade; N1 blade; S101 blade; S30 blade; S20 blade; S10 blade



Model	Code No.	Price $
UK2000	165-150	135.30

Unikit Extra - UK3000

• Contains:
- D holder plus D50,D66; T120 scraper; uni-handle; SN holder;
- C holder plus C20; C12; N1 blade; N2 blade; S101 blade; S30 blade; S20 blade; S10 blade
- L holder; L1;L2



Model	Code No.	Price $
UK3000	165-168	178.10

Rotodrive Combi Set - RD2001

Combination of RotoDrive and Universal deburring set
• Contains: NB handle, 3.2 mm RotoDrive Countersink, 10.4 mm RotoDrive countersink, S10, S20,S30 blade, demo plate



Model	Code No.	Price $
RD2001	165-165	72.50

Plastic Edge-Off Set - EO2100

Includes
EO handle + S10 blade, green sleeve (for aluminum)
EO handle + S20 blade, red sleeve for (brass & cast iron)
EO handle + S100 blade, blue sleeve (for steel)
EO handle + S150 blade, yellow sleeve (for plastic)



Model	Code No.	Price $
EO2100	165-440	18.60

NOGA

hss

Blade Selection - General

- Ready-to-use blades included
- All blades are made of HSS

S10



165-024
For steel and aluminum

S20



165-026
For brass and cast iron; for both right and left hand

S30



165-028
For external and internal burrs simultaneously in sheet metal and tubing

S35



165-030
Works best on straight edges for most materials

S101



165-032
Works best on fine edges for all materials

S202



165-034
For brass and cast iron fine edges

B10



165-320
For steel, plastic and aluminum

N1



165-036
For steel, plastic and aluminum

N2



165-038
For brass and cast iron

N3



165-040
Simultaneously removes external and internal burrs

165-042
For use in double burr.
(M42 available for stainless)

N80



165-044
For use in keyway burr. (M42 available for stainless)

N80K



C12



165-046
12 mm dia., countersink
M7 internal thread

C20



165-048
20mm Dia., countersink
M7 internal thread

C30



165-050
30mm Dia., countersink
M7 internal thread

T120



165-052
Double headed scraper ground on 3 sides from solid

SN



165-054
Double headed blade holder. Accepts all “S” and “N” series blades

C



165-056
Holds C12, C20, C30 countersink blades.

Type	Length (in.)	Fits Tool No.	Standard Pack	Code No.	Per Blade Price $
S10	1-7/8	165-004/165-010	10	165-024	**2.00**
S20	1-7/8	165-004/165-010	10	165-026	**2.20**
S30	1-7/8	165-004/165-010	10	165-028	**2.20**
S35	1-7/8	165-004/165-010	10	165-030	**2.20**
S101	1-5/8	165-004/165-010	10	165-032	**2.30**
S202	1-5/8	165-004/165-010	10	165-034	**2.30**
B10	7/8	165-010/165-310	10	165-320	**1.50**
N1	7/8	165-010	10	165-036	**1.50**
N2	7/8	165-010	10	165-038	**1.50**
N3	7/8	165-010	10	165-040	**3.10**
N80	7/16	165-016	10	165-042	**6.50**
N80K	7/16	165-018	10	165-044	**6.50**
C12	1-1/8	165-012	1	165-046	**23.00**
C20	1-3/16	165-012	1	165-048	**31.00**
C30	1-7/16	165-012	1	165-050	**43.20**
T120	4-3/4	165-014	1	165-052	**19.90**
SN	5-3/4	165-010	1	165-054	**10.00**
C-Holder	5-1/2	165-012	1	165-056	**7.20**

NOGA

Blade Selection - Swivel Blades

- Ready-to-use blades included

N1LH



165-037
For left handed user

N1 TiN



165-039
TiN coated N1 for long life

N1 C



165-041
Solid carbide N1 for hardened steel and special plastics

N2 C



165-043
Solid carbide N2 for ceramic and glass

N6



165-045
For cross holes in difficult to reach places

S10 LH



165-047
For left handed users

S10 TiN



165-049
TiN coated S10 for long life

S10 C



165-051
Solid carbide tipped S10 for hardened steel and special plastics

S100



165-053
Cobalt combination blade best for plastics and hard materials

S101 LH



165-055
S101 for left handed users

S101 TiN



165-057
TiN coated S101 for long life

S150



165-059
Heavy duty shank, for holes as small as 1.5 mm dia.

S20 C



165-061
Solid carbide tipped S20 for hardened materials

S60



165-062
Heavy duty for cross holes in difficult to reach places

TC



165-063
Patented for internal thread cleaning and deburring from 9 mm

Type	Standard Pack	Code No.	Per Blade Price $
N1 Left Hand	10	165-037	**2.10**
N1 TiN	10	165-039	**3.10**
N1 C	1	165-041	**8.40**
N2 C	1	165-043	**9.70**
N6	1	165-045	**4.60**
S10 Left Hand	10	165-047	**2.70**
S10 TiN	10	165-049	**3.20**
S10 C	10	165-051	**9.40**
S100 Cobalt	10	165-053	**2.60**
S101 Left Hand	10	165-055	**2.70**
S101 TiN	10	165-057	**3.20**
S150	10	165-059	**2.30**
S20 C	10	165-061	**9.40**
S60	1	165-062	**4.60**
TC	1	165-063	**8.80**

CALL TODAY FOR YOUR COMPLETE NOGA CATALOGUE

NOGA

Blade Selection - Diamond Coated Blades, Countersinks, And Reversible Blades

- Ready-to-use blades included

N1D



165-074
Diamond coated N1 for ceramic and glass

S10D



165-075
Diamond coated S10 for ceramic and glass

RD 10.4DC



165-077•
Same as RD 10.4D but coated with D252

RD 10.4D



165-076•
Diamond coated RotoDrive countersink (D126) 10.4 mm

RDE 25D



165-080
External diamond coated RotoDrive for reinforced plastic, fiberglass and epoxy

MINI FILE



165-081
Diamond coated file (D126) 3.2 mm, ideal for horizontal filing jobs

D55



165-082
Solid carbide D50, fits adjustable scraper handle

D75

165-083
Similar to D50 but 75 mm long, fits adjustable scraper handle

D77



165-084
Similar to D66 but 75 mm long, fits adjustable scraper handle

T80



165-085
Double medium scraper blade for adjustable scraper

165-086
Same as N80 but heat-treated to 68 Rc., use for stainless steel

N80M42



165-087
Same as N80K but heat-treated to 68 Rc.

N80KM42



REVERSIBLE BLADES

165-088
For cross holes 3 - 5.5 mm

R1



165-089
For cross holes 5 - 9 mm

R2



Type	Standard Pack	Code No.	Per Blade Price $
N1D	1	165-074	**16.20**
S10D	10	165-075	**16.70**
RD 10.4D	1	165-076•	**16.60**
RD 10.4DC	1	165-077•	**19.00**
RDE 25D	1	165-080	**64.60**
MINI FILE	1	165-081	**0**
D55	1	165-082	**22.30**
D75	1	165-083	**11.00**
D77	1	165-084	**10.20**
T80	1	165-085	**11.20**
N80 M42	10	165-086	**8.70**
N80K M42	10	165-087	**8.70**
R1	1	165-088	**17.50**
R2	1	165-089	**18.60**

• Avilable only while quantities last.

NOGA

hss

Blade Selection - Swivel Blades

- Ready-to-use blades included
- All blades are made of HSS

OR



165-064
Patented HSS for
"O" ring grooves up to 3 mm

RD 3.2



165-065
Patented, 3.2mm cranked countersink

RD 6.3



165-066
Patented, 6.3mm cranked countersink

RD 8.3



165-067
Patented, 8.3 mm cranked
countersink

RD 10.4



165-068
Patented, 10.4 mm cranked
countersink

RD 16.5



165-069
Patented, 16.5 mm cranked
countersink

RDE 18



165-073
Patented, 4 - 18 mm
cranked external countersink

Type	Standard Pack	Code No.	Per Blade Price $
OR	1	165-064	11.60
RD 3.2	1	165-065	9.80
RD 6.3	1	165-066	22.30
RD 8.3	1	165-067	22.70
RD 10.4	1	165-068	25.50
RD 16.5	1	165-069	27.80
RDE 18	1	165-073	21.60

Blade Selection - L-Blades And Handles & Holders

L3



165-090
Used with Leader
for steel and aluminum

L4



165-091
Used for sheet metal
1 - 8 mm wide

L5



165-092
Used for ridges
0 - 2.5 mm wide

L6



165-093
Used for cleaning corners

L7



165-094
Double ended slot cleaner

Uni Handle



165-095
Holds round, hexagonal and triangular holders

D Holder



165-096
Holds D50 and D66 blades

K Holder



165-097
Holds N80K and N90 K on one side and
N70K on the other

LD Holder



165-099
Holds L3, L4, L5, L6, L7 blades

H.D. Cranked Holder



165-101
Heavy duty
cranked holder for C12, C20, C30

L Holder



165-098
Holds L1 blade

Type	Code No.	Per Blade Price $
L3	165-090	4.70
L4	165-091	3.50
L5	165-092	5.60
L6	165-093	4.00
L7	165-094	8.40
UNI Handle	165-095	9.70
D Holder	165-096	8.00
K Holder	165-097	7.60
L Holder	165-098	15.80
LD Holder	165-099	9.80
H.D. Cranked Holder	165-101	11.30








INDEXABLE CUTTING TOOLS

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Turning Inserts E6-36
Turning Inserts for Aluminum E37-41
C.B.N. Turning Inserts E42
CERAMIC Inserts E43-45
Turning Toolholder Index E48-50
Turning Toolholders E51-65

BORING
Boring Bar Index E68-70
Boring Bars E70-79

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M.T.G. Grooving & Part Off E80-88
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SOWA
METALWORKING SOLUTIONS

www.sowatool.com

INDEXABLE CUTTING TOOLS

Sowa Indexable Grade Identification

This is your **quick reference colour band guide** that you will see throughout this catalog. It will make your insert choice **quick, easy, and accurate**.

Material Group

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

P T 10 C

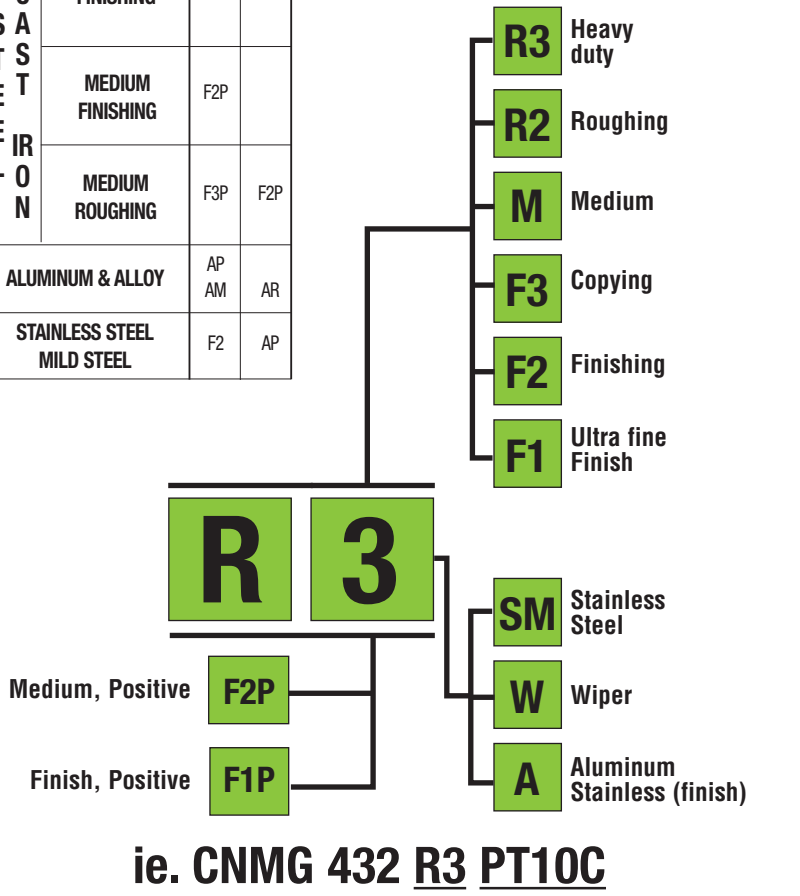
Material		Application	ISO Grade	Coating
P	Steel	T = Turning	10 = ISO 10 Grade	C = C.V.D. Coated
M	Stainless Steel	M = Milling	20 = ISO 20 Grade	U = Uncoated
K	Cast Iron Aluminum		30 = ISO 30 Grade	S = Cermet
S	Heat Resistant Alloy Titanium Alloy		40 = ISO 40 Grade	P = P.V.D. Coated

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		G	R2
	STAINLESS STEEL MILD STEEL		A SM MM MI	F3 M R1 VM
	CAST IRON		R1	G R2
	ALUMINUM		A	

APPLICATION			SOWA Main	SOWA Sub
POSI•TYPE	STEEL CAST IRON	FINISHING	F1P	
		MEDIUM FINISHING	F2P	
		MEDIUM ROUGHING	F3P	F2P
	ALUMINUM & ALLOY		AP AM	AR
	STAINLESS STEEL MILD STEEL		F2	AP

Code Key



ie. CNMG 432 R3 PT10C

Sowa Indexable Grades

Coated Carbide

- Turning
  - P: PT10C | PT22C | 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

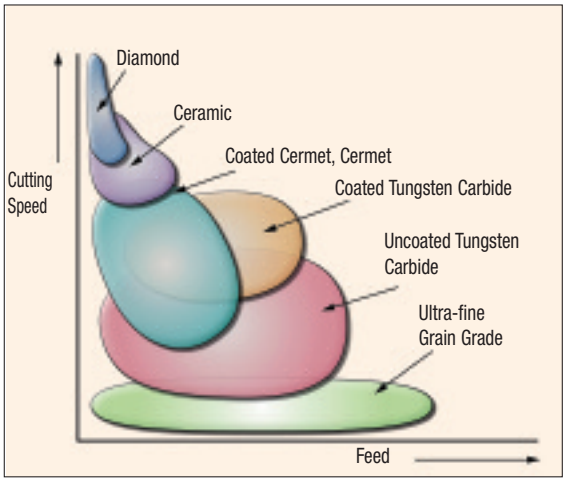
Diamond Coated Carbide

- Turning: ND100
- Milling: ND200
- Drill, Endmill: ND300

Un-Coated Carbide

- Turning
  - P: PT20U
  - M: PTM30U
  - K: KT10U | KTM10U
- Milling
  - P: PTM30U
  - K: KTM10U

Application range

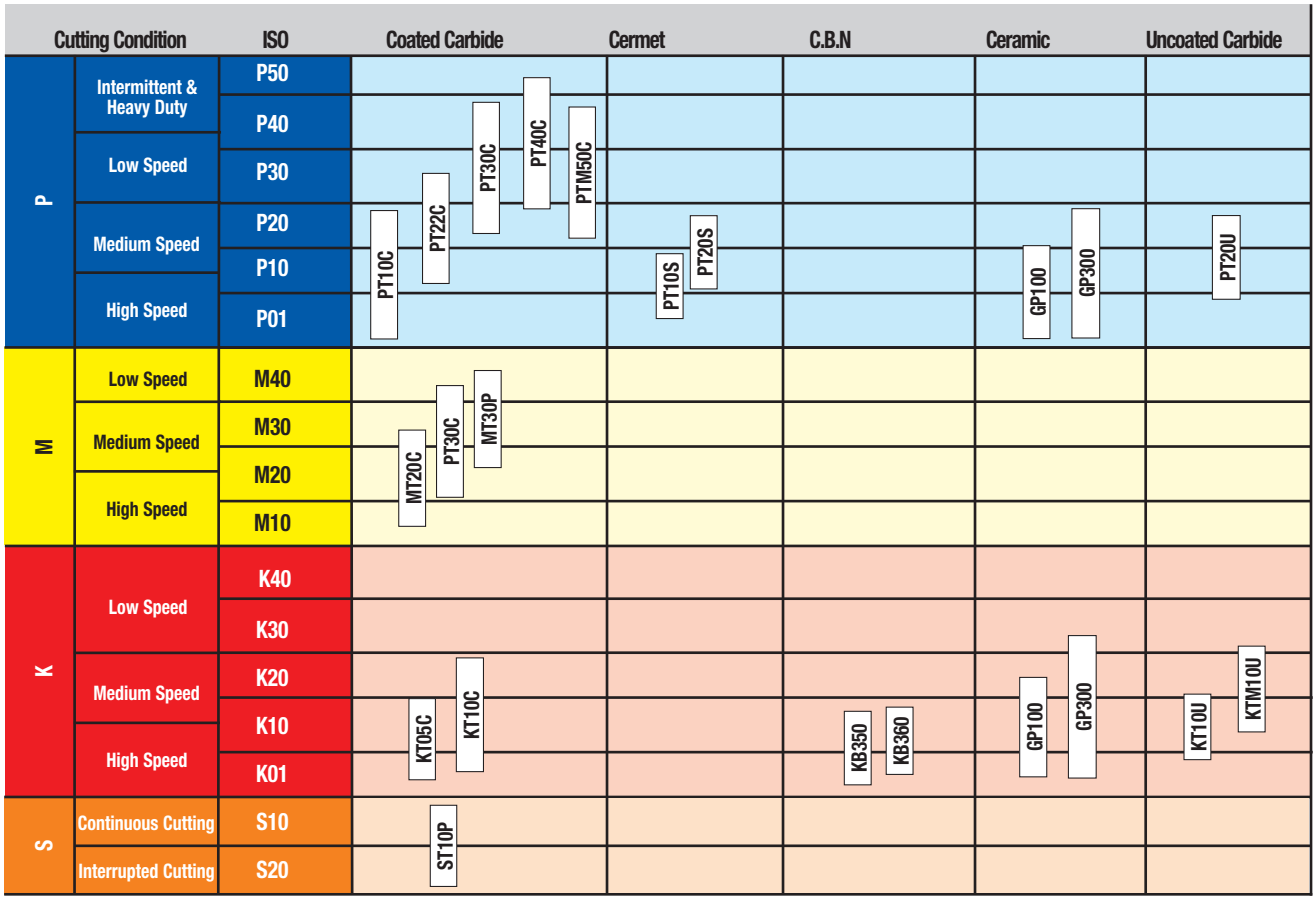


Tungsten Carbide ISO Grade

Class	Class of symbol	Work-piece	Way of cut	Working condition	High performance direction	
					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.		

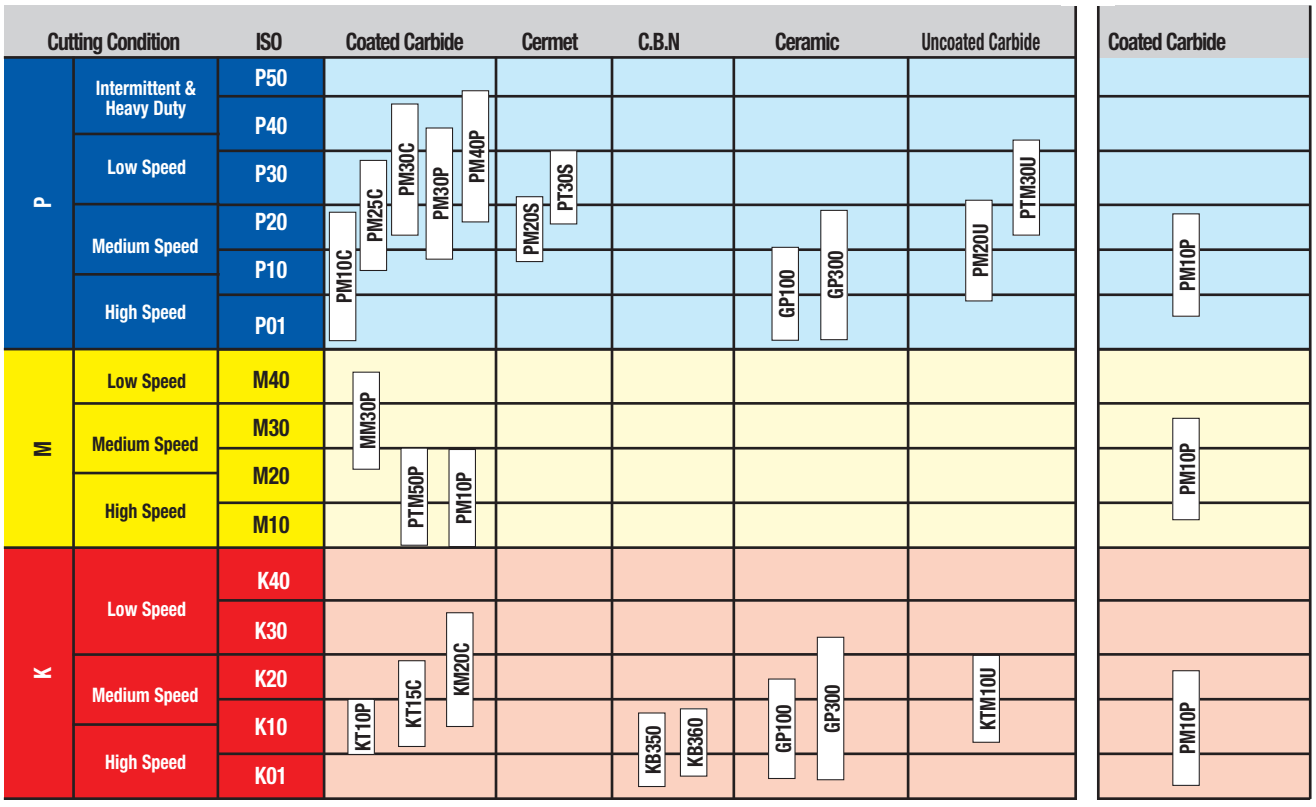
Grade Application

Turning



Milling

Drilling



Turning Insert Code System

1 Insert Shape

			
C	D	E	K
			
L	R	S	T
			
V	W		

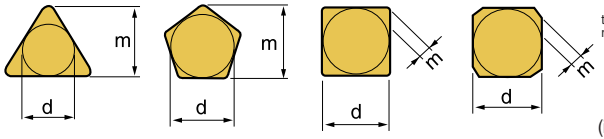
2 Clearance Angle

			
B	C	D	E
			
F	N	P	
Special			
O			

T N M G

1 2 3 4

3 Tolerance



d : theoretical diameter of inscribed circle
t : Thickness
m : see figure

(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

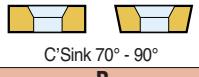
■ Tolerance on C,H,R,T,W class (exceptional)

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	±006	±0.011
1	±0.005	±0.01	±0.07	±0.015

■ Tolerance on D class (exceptional)

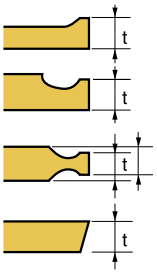
d	Tolerance on d	Tolerance on m
1/4	±0.002	±0.0043
3/8	±0.002	±0.0043
1/2	±0.003	±0.006
5/8	±0.004	±0.007
3/4	±0.004	±0.007

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

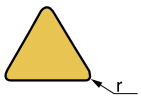
6 Height of Cutting Edge



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)	

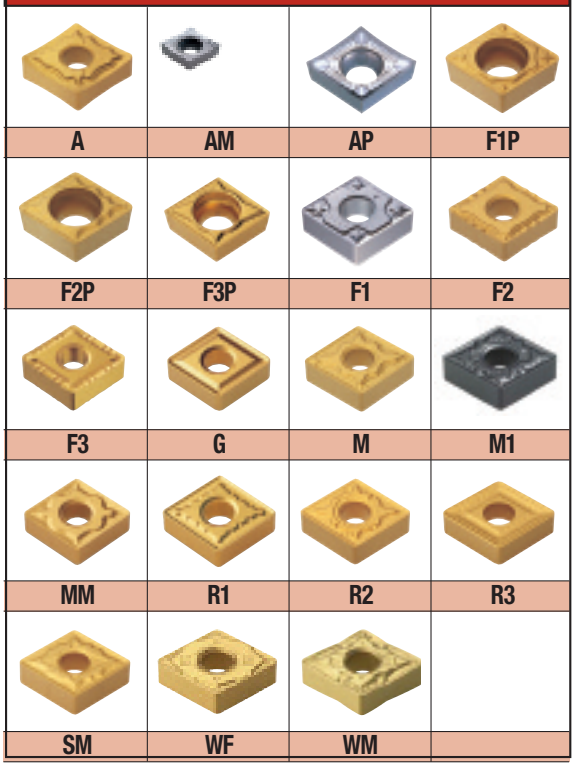
3 **3** **2** **R1**

5 6 7 8

5 Cutting Edge Length, Diameter of Inscribed Circle

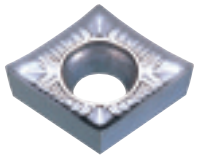
Symbol								
C	D	S	T	R	V	W		IC
Metric							Inch	d(inch)
03	04	03	06	03	-	02	1.2(5)	5/32
04	05	04	08	04	08	S3	1.5(6)	3/16
05	06	05	09	05	09	03	1.8(7)	7/32
-	-	-	-	06	-	-	-	0.236
06	07	06	11	06	11	04	2	1/4
08	09	07	13	07	13	05	2.5	5/16
-	-	-	-	08	-	-	-	0.315
09	11	09	16	09	16	06	3	3/8
-	-	-	-	10	-	-	-	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

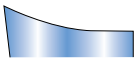
8 Chip Breaker for Turning



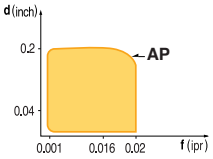
CC_T 80º Positive Turning Inserts

CCGT-AP (AP Chipbreaker is for Aluminum)

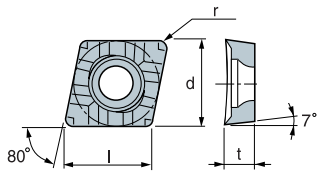




- Exclusive chip breaker for aluminum and aluminum alloy.



- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



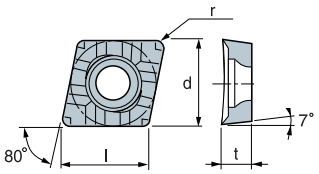
Designation	ISO	Coated Carbide PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	Diamond Coated ND100	Uncoated Carbide KT10U	l (inch)	d	t	r	Applicable Holders Holder	Page No.
CCGT 21.51-AP	060204												146-024 $ 16.10	.256	1/4	3/32	1/64	*Turning*	
CCGT 32.50.5-AP	09T302												146-027 $ 18.80	.382	3/8	5/32	.008	SCACR/L	E62
CCGT 32.51-AP	09T304											146-701 $ 74.80	146-011 $ 18.80	.382	3/8	5/32	1/64	*Boring*	
CCGT 32.52-AP	09T308												146-012 $ 18.80	.382	3/8	5/32	1/32	SCLCR/L	E76
CCGT 431-AP	120404												146-627 $ 21.90	.508	1/2	3/16	1/64		
CCGT 432-AP	120408												146-023 $ 21.90	.508	1/2	3/16	1/32		

CCGT-AM (AM Chipbreaker is for Aluminum)



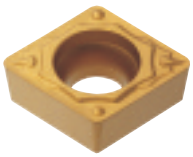
- High stability of cutting edge secures great performance in high speed and interrupted cutting
- High speed of medium and interrupted operation

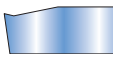
- USE
  Aluminum Cutting
- Recommendation
  d = 0.020~0.157inch
  f = 0.002~0.020ipr



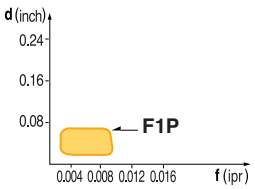
Designation	ISO	Coated Carbide PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	Cermet PT10S	PT20S	Uncoated Carbide KTM10U	l (inch)	d	t	r	Applicable Holders Holder	Page No.
CCGT 21.50.5-AM	060202													145-661 $ 18.50	.256	1/4	3/32	.008	*Turning*	
CCGT 21.51-AM	060204													145-681 $ 16.10	.256	1/4	3/32	1/64	SCACR/L	E62
CCGT 21.52-AM	060208													145-682 $ 16.10	.256	1/4	3/32	1/32	*Boring*	
CCGT 32.50.5-AM	09T302													145-662 $ 18.80	.382	3/8	5/32	.008	SCLCR/L	E76
CCGT 32.51-AM	09T304													145-683 $ 18.80	.382	3/8	5/32	1/64		
CCGT 430.5-AM	120402													145-684 $ 21.90	.508	1/2	3/16	.008		
CCGT 431-AM	120404													145-685 $ 21.90	.508	1/2	3/16	1/64		
CCGT 432-AM	120408													145-686 $ 21.90	.508	1/2	3/16	1/32		

CCGT-F1P

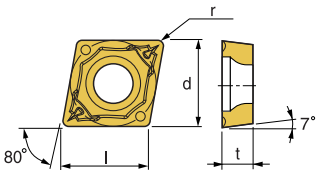




- Excellent chip control at shallow depth of cut and low feed rate.
- Excellent surface finish of work piece due to reduced cutting force.
- Suitable for fine boring.



- USE
  Finishing
- Recommendation
  d = 0.004~0.06inch
  f = 0.002~0.01ipr

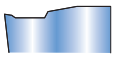


Designation	ISO	Coated Carbide PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	Cermet PT10S	PT20S	Uncoated Carbide KTM10U	l (inch)	d	t	r	Applicable Holders Holder	Page No.
CCGT 21.50.5-F1P	060202		145-687 $ 18.50												.256	1/4	3/32	.008	*Turning*	
CCGT 21.52-F1P	060208		145-688 $ 18.50												.256	1/4	3/32	1/32	SCACR/L	E62
CCGT 32.50.5-F1P	09T302							145-626 $ 18.80			145-627 $ 18.80				.382	3/8	5/32	.008	*Boring*	
CCGT 32.51-F1P	09T304			149-038 $ 21.70	145-691 $ 21.70								146-013 $ 18.80		.382	3/8	5/32	1/64	SCLCR/L	E76
CCGT 32.52-F1P	09T308	145-692 $ 21.70						145-693 $ 21.70							.382	3/8	5/32	1/32		

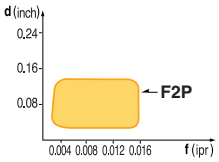
P Steel | M Stainless Steel | K Cast Iron-Alum | S Heat Resistant Alloy

CCMT-F1P/F2P



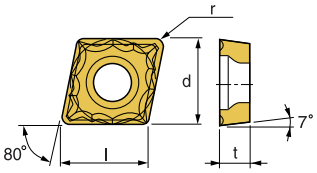


- Excellent chip control at wide range of cutting conditions.
- Suitable for stainless steel cutting.



- USE
  Medium
- Recommendation

F2P d = 0.02~0.14inch
f = 0.002~0.016ipr

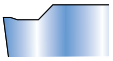


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CCMT 21.50.5-F1P	060202		145-694 $ 12.50												.256	1/4	3/32	.008	*Turning*	
CCMT 32.51-F1P	09T304			148-785 $ 12.80											.382	3/8	5/32	1/64	SCACR/L	E63
CCMT 432-F1P	120408			146-601 $ 16.70											.508	1/2	3/16	1/32	*Boring*	
CCMT 21.50.5-F2P	060202			147-464 $ 12.50											.256	1/4	3/32	.008	SCLCR/L	E71
CCMT 21.51-F2P	060204	145-630 $ 10.00		148-711 $ 12.50			148-426 $ 12.50				148-450 $ 12.50				.256	1/4	3/32	1/64		
CCMT 32.50.5-F2P	09T302										148-452 $ 12.80				.382	3/8	5/32	.008		
CCMT 32.51-F2P	09T304	147-152 $ 12.80	146-470 $ 12.80	146-361 $ 12.10	149-010 $ 10.60		147-545 $ 12.80	145-698 $ 12.80			148-453 $ 12.80		148-683 $ 10.00		.382	3/8	5/32	1/64		
CCMT 32.52-F2P	09T308			148-738 $ 12.80	148-549 $ 12.80		147-547 $ 12.80		146-699 $ 12.80		148-454 $ 12.80		148-408 $ 10.00		.382	3/8	5/32	1/32		
CCMT 431-F2P	120404	145-716 $ 16.70	145-722 $ 16.70		145-718 $ 16.70		145-728 $ 16.70	145-732 $ 16.70		145-727 $ 16.70					.508	1/2	3/16	1/64		
CCMT 432-F2P	120408		148-498 $ 16.70	148-786 $ 16.70			148-499 $ 16.70	145-632 $ 16.70							.508	1/2	3/16	1/32		

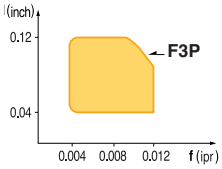
CC_T 80º Positive Turning Inserts

CCMT-F3P



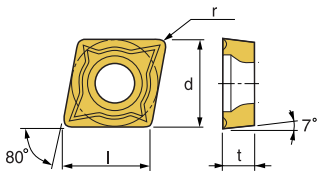


- Suitable for intermittent cutting and cast iron machining.
- Good surface finish due to low cutting force.
- Suitable for both boring and outer diameter turning.



- USE
  Medium
- Recommendation

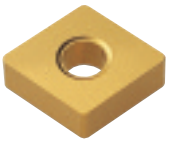
F3P d = 0.04~0.12inch
f = 0.004~0.012ipr



		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	r	Holder	Page No.
CCMT 21.51-F3P	060204			146-560 $ 12.50	145-735 $ 12.50					147-954 $ 12.50					.256	1/4	3/32	1/64	*Turning*	
CCMT 21.52-F3P	060208	145-770 $ 12.50	146-735 $ 12.50	146-753 $ 12.70	145-750 $ 12.50					145-773 $ 12.50					.256	1/4	3/32	1/32	SCACR/L	E62
CCMT 2.522-F3P	080308			146-581 $ 12.70											.319	5/16	1/8	1/32	*Boring*	
CCMT 32.51-F3P	09T304			148-630 $ 12.80	145-774 $ 12.80		145-775 $ 12.80	145-779 $ 12.80							.382	3/8	5/32	1/64	SCLCR/L	E76
CCMT 32.52-F3P	09T308		146-035 $ 12.80	146-556 $ 12.80			145-796 $ 12.80	145-797 $ 12.80				146-017 $ 10.00			.382	3/8	5/32	1/32		
CCMT 431-F3P	120404	145-867 $ 16.70		146-588 $ 16.70	145-894 $ 16.70										.508	1/2	3/16	1/64		
CCMT 432-F3P	120408	148-002 $ 16.70		148-800 $ 16.70	146-159 $ 16.70					148-001 $ 16.70					.508	1/2	3/16	1/32		

CNM_ 80º Negative Turning Inserts

CNMA

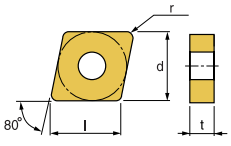




- Flat top geometry for the machining of Cast Iron & Hardened steels

- Recommendation

d = 0.04~0.08inch
f = 0.002~0.012ipr



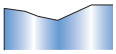
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMA 432	120408	146-096 $ 13.90								147-473 $ 13.90					.508	1/2	3/16	1/32	*Turning*	
CNMA 433	120412									147-478 $ 13.90					.508	1/2	3/16	3/64	DCLNR/L	E52
CNMA 542	160608										148-670 $ 21.50				.634	5/8	1/4	1/32	MCKNR/L	E55
CNMA 543	160612								148-666 $ 21.50	147-976 $ 21.50					.634	5/8	1/4	3/64	MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

**** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.***

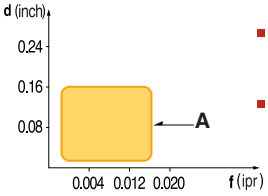
CNM_ 80° Negative Turning Inserts

CNMG-A



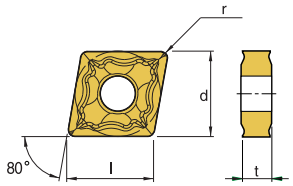


- Sharp cutting edge generate low cutting force.
- Specially designed tough main cutting edge.
- Suitable for cutting of low carbon steel, stainless steel, aluminum.



- USE
  Light & Medium
- Recommendation

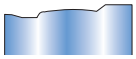
A d = 0.03~0.16inch
f = 0.002~0.016ipr



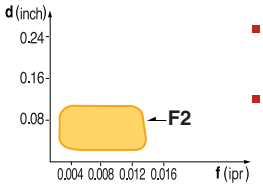
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-A	120404													**147-524** **$ 12.90**	.508	1/2	3/16	1/64	***Turning***	
																			DCLNR/L	E52
CNMG 432-A	120408			**148-753** **$ 13.90**		**147-411** **$ 13.90**		**147-525** **$ 13.90**			**148-378** **$ 13.90**			**147-526** **$ 12.90**	.508	1/2	3/16	1/32	MCKNR/L	E55
																			MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

CNMG-F2



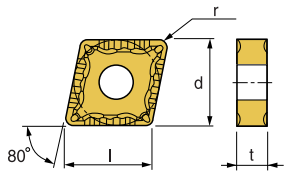


- Excellent chip control at varied depth of cutting.
- Strong cutting edge toughness due to special design.



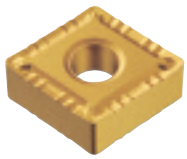
- USE
  Finishing
- Recommendation

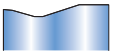
F2 d = 0.01~0.1inch
f = 0.002~0.014ipr



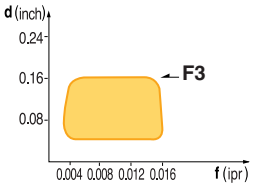
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 321-F2	120404	**146-002** **$ 12.30**	**146-003** **$ 12.30**												.508	1/2	3/16	1/64	***Turning***	
																			DCLNR/L	E52
CNMG 322-F2	110408	**146-004** **$ 12.30**	**147-512** **$ 12.30**												.457	3/8	3/16	1/32	MCKNR/L	E55
																			MCLNR/L	E55
CNMG 431-F2	120404	**146-117** **$ 13.90**													.508	1/2	3/16	1/64	MCRNR/L	E56
																			Boring	
CNMG 432-F2	120408		**147-790** **$ 13.90**										**147-791** **$ 12.90**		.508	1/2	3/16	1/32	MCLNR/L	E70
																			PCLNR/L	E73

CNMG-F3



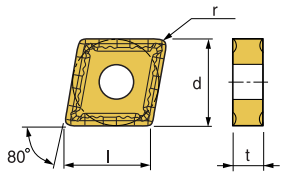


- Excellent for copying of special shape.
- Smooth chip control at shallow cut as well as deep depth of cut.



- USE
  Light & Medium
- Recommendation

F3 d = 0.03~0.16inch
f = 0.003~0.016ipr



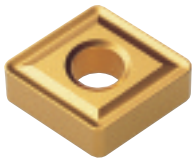
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-F3	120404														.508	1/2	3/16	1/64	***Turning***	
																			DCLNR/L	E52
CNMG 432-F3	120408	**147-518** **$ 13.90**	**147-519** **$ 13.90**				**147-520** **$ 13.90**						**147-521** **$ 12.90**		.508	1/2	3/16	1/32	MCKNR/L	E55
																			MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

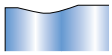
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

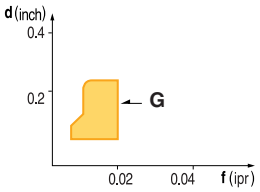
CNM_ 80º Negative Turning Inserts

CNMG-G

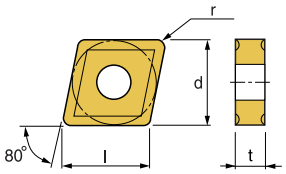




- Suitable for general cutting conditions

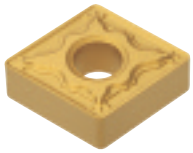


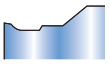
- USE
  General Cutting
- Recommendation
  G d = 0.08~0.235inch
  f = 0.01~0.02ipr



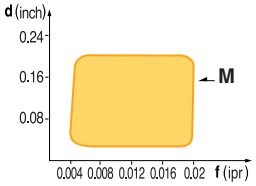
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-G	120404	**147-479 $ 13.90**		**149-058 $ 13.90**											.508	1/2	3/16	1/64	***Turning***	
CNMG 432-G	120408	**147-482 $ 13.90**													.508	1/2	3/16	1/32	DCLNR/L	E52
CNMG 433-G	120412	**148-582 $ 13.90**													.508	1/2	3/16	3/64	MCKNR/L	E55
																			MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

CNMG-M/M1

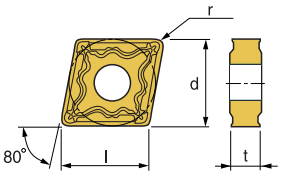




- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



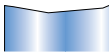
- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



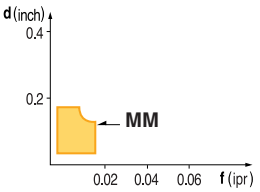
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-M	120404				**147-531 $ 13.90**			**148-819 $ 13.90**							.508	1/2	3/16	1/64	***Turning***	
CNMG 431-M1	120404			**148-757 $ 13.90**											.508	1/2	3/16	1/64	DCLNR/L	E52
CNMG 432-M1	120404	**148-293 $ 11.70**	**148-924 $ 13.90**	**147-346 $ 13.90**											.508	1/2	3/16	1/32	MCKNR/L	E55
CNMG 432-M	120408	**147-533 $ 13.90**		**146-677 $ 13.90**	**147-535 $ 13.90**										.508	1/2	3/16	1/32	MCLNR/L	E55
CNMG 433-M	120412	**148-730 $ 13.90**	**147-537 $ 13.90**		**147-538 $ 13.90**		**147-539 $ 13.90**								.508	1/2	3/16	3/64	MCRNR/L	E56
CNMG 542-M	160608														.634	5/8	1/4	1/32	***Boring***	
CNMG 543-M	160612				**148-306 $ 21.50**										.634	5/8	1/4	3/64	MCLNR/L	E70
CNMG 642-M	190608														.760	3/4	1/4	1/32	PCLNR/L	E73
CNMG 643-M	190612										**148-949 $ 28.50**				.760	3/4	1/4	3/64		

CNMG-MM

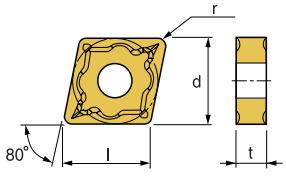




- Excellent choice for a variety of steels including Stainless Steel



- USE
  Steels / Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr



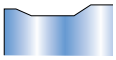
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-MM	120404		**145-646 $ 13.90**	**149-060 $ 13.90**											.508	1/2	3/16	1/64	***Turning***	
CNMG 432-MM	120408			**146-557 $ 13.90**			**146-765 $ 13.90**	**146-014 $ 13.90**							.508	1/2	3/16	1/32	DCLNR/L	E52
CNMG 433-MM	120412		**146-018 $ 13.90**					**146-019 $ 13.90**							.508	1/2	3/16	3/64	MCKNR/L	E55
																			MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

**** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.***

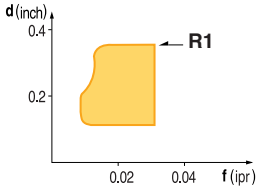
CNM_ 80º Negative Turning Inserts

CNMG-R1



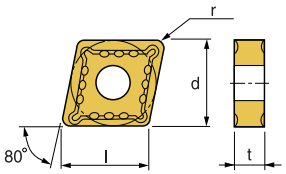


- Suitable for deep depth of cut and fast feed cutting of steel and cast iron.
- Suitable for intermittent cutting.



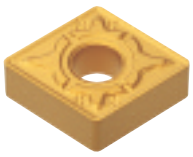
- USE
  Roughing
- Recommendation

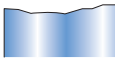
R1 d = 0.12~0.32inch
f = 0.012~0.032ipr



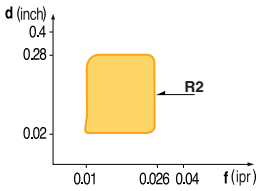
		Coated Carbide										Cermet		Uncoated Carbide					(inch)	Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 432-R1	120408	146-111 $ 13.90	146-046 $ 13.90	146-569 $ 13.90	147-485 $ 13.90	146-025 $ 10.80			147-237 $ 13.90	147-496 $ 13.90					.508	1/2	3/16	1/32	*Turning*	
CNMG 433-R1	120412	146-103 $ 13.90	146-178 $ 13.90	148-662 $ 13.90					147-323 $ 13.90	147-890 $ 13.90					.508	1/2	3/16	3/64	DCLNR/L	E52
CNMG 434-R1	120416														.508	1/2	3/16	1/16	MCKNR/L	E55
CNMG 542-R1	160608		146-026 $ 13.90												.634	5/8	1/4	1/32	MCLNR/L	E55
CNMG 543-R1	160612	146-851 $ 21.50	146-184 $ 21.50	149-048 $ 21.50	146-187 $ 21.50										.634	5/8	1/4	3/64	MCRNR/L	E56
CNMG 544-R1	160616		146-223 $ 21.50		146-028 $ 21.50										.634	5/8	1/4	1/16	*Boring*	
CNMG 642-R1	190608		146-193 $ 28.50												.760	3/4	1/4	1/32	MCLNR/L	E70
CNMG 643-R1	190612	146-215 $ 28.50	146-214 $ 28.50	146-622 $ 28.50	146-198 $ 28.50					148-751 $ 28.50					.760	3/4	1/4	3/64	PCLNR/L	E73
CNMG 644-R1	190616		148-992 $ 28.50	146-599 $ 28.50	146-033 $ 28.50										.760	3/4	1/4	1/16		

CNMG-R2



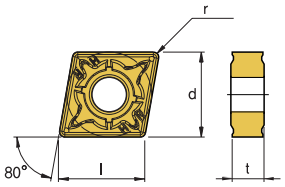


- Excellent chip control at deep depth of cut and fast feed rate.
- Strong cutting edge makes excellent cutting performance at intermittent cutting.



- 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	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 331-R2	110404														.457	3/8	3/16	1/64	*Turning*	
CNMG 431-R2	120404														.508	1/2	3/16	1/64	DCLNR/L	E52
CNMG 432-R2	120408		147-491 $ 13.90	148-756 $ 13.90						147-492 $ 13.90					.508	1/2	3/16	1/32	MCKNR/L	E55
CNMG 433-R2	120412		147-494 $ 13.90		147-495 $ 13.90										.508	1/2	3/16	3/64	MCLNR/L	E55
CNMG 542-R2	160608														.634	5/8	1/4	1/32	MCRNR/L	E56
CNMG 543-R2	160612	147-498 $ 21.50	147-499 $ 21.50			148-700 $ 21.50									.634	5/8	1/4	3/64	*Boring*	
CNMG 642-R2	190608		146-037 $ 23.90		147-500 $ 28.50										.760	3/4	1/4	1/32	MCLNR/L	E70
CNMG 643-R2	190612				147-501 $ 28.50	148-699 $ 28.50									.760	3/4	1/4	3/64	PCLNR/L	E73
CNMG 644-R2	190616														.760	3/4	1/4	1/16		

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

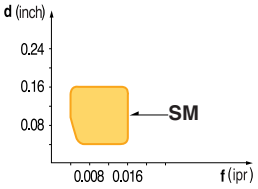
CNM_ 80º Negative Turning Inserts

CNMG-SM (SM Chipbreaker is for Stainless Steel medium feed.)

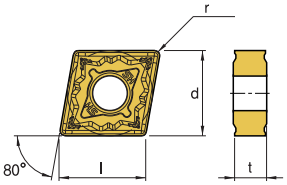




- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance have been reinforced through high rake angle of chip breaker land.



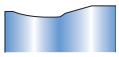
- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr



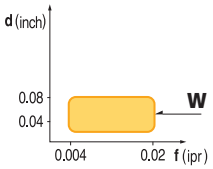
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 431-SM	120404						147-486 $ 13.90	147-487 $ 13.90			148-379 $ 13.90				.508	1/2	3/16	1/64	*Turning*	
CNMG 432-SM	120408						147-488 $ 13.90	147-489 $ 13.90			148-380 $ 13.90				.508	1/2	3/16	1/32	DCLNR/L	E52
CNMG 433-SM	120412						147-490 $ 13.90	146-040 $ 13.90			148-855 $ 13.90				.508	1/2	3/16	3/64	MCKNR/L	E55
CNMG 543-SM	160612							148-940 $ 21.50							.634	5/8	1/4	3/64	MCLNR/L	E55
CNMG 643-SM	190612			146-721 $ 28.50			148-951 $ 28.50	148-939 $ 28.50			148-952 $ 28.50				.760	3/4	1/4	3/64	MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

CNMG-W/WM Wiper Inserts

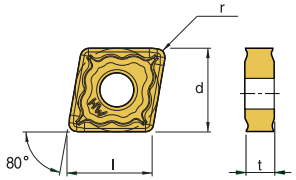




- High speed, high feed cutting is available due to the special chip pocket design.
- Specially designed cutting edge consist of recess cutting edge and wiper cutting edge guarantee superior surface finish.



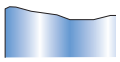
- USE
  Wiper (Finishing)
- Recommendation
  W d = 0.012~0.08inch
  f = 0.004~0.02ipr



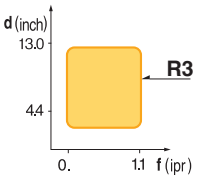
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CNMG 432-W	120408	148-632 $ 13.90													.508	1/2	3/16	1/32	*Turning*	
CNMG 432-WM	120408		146-083 $ 13.90	148-784 $ 13.90											.508	1/2	3/16	1/32	DCLNR/L	E52
CNMG 433-W	120412			146-643 $ 13.90											.508	1/2	3/16	3/64	MCKNR/L	E55
																			MCLNR/L	E55
																			MCRNR/L	E56
																			Boring	
																			MCLNR/L	E70
																			PCLNR/L	E73

CNMM-R3

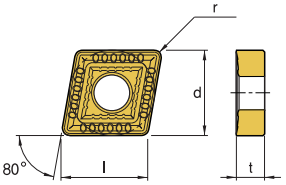




- Specially designed toughest cutting edge provides superior cutting performance at deep depth of cut and fast feed rate.
- Unique design of dot on cutting edge makes smooth chip flow and reduce cutting force.



- 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		147-504 $ 13.90		147-505 $ 13.90										.508	1/2	3/16	1/32	*Turning*	
CNMM 433-R3	120412		147-506 $ 13.90	146-663 $ 13.90											.508	1/2	3/16	3/64	DCLNR/L	E52
CNMM 543-R3	160612														.634	5/8	1/4	3/64	MCKNR/L	E55
CNMM 643-R3	190612	146-122 $ 28.50			147-508 $ 28.50										.760	3/4	1/4	3/64	MCLNR/L	E55
CNMM 644-R3	190616		147-509 $ 28.50												.760	3/4	1/4	1/16	MCRNR/L	E56
CNMM 646-R3	190624	146-779 $ 28.50													.760	3/4	1/4	3/32	*Boring*	
																			MCLNR/L	E70
																			PCLNR/L	E73

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

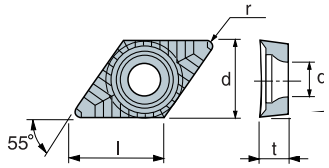
DC_T 55º Positive Turning Inserts

DCGT-AM (AM Chipbreaker is for Aluminum)



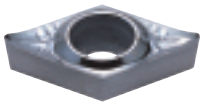
· Exclusive chip breaker for aluminum and aluminum alloy.

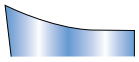
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr



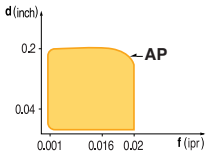
Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AM	070202												146-048 $ 16.10	.307	1/4	3/32	.008	*Turning*	
DCGT 21.52-AM	070208												146-052 $ 16.10	.307	1/4	3/32	1/32	SDJCR/L	E63
DCGT 32.50.5-AM	11T302												145-664 $ 18.80	.457	3/8	5/32	.008	SDNCN	E64
DCGT 32.51-AM	11T304												146-059 $ 18.80	.457	3/8	5/32	1/64	*Boring*	
DCGT 32.52-AM	11T308												146-063 $ 18.80	.457	3/8	5/32	1/32	SDQCR	E76
																		SDUCR	E77
																		SDZCR/L	E77

DCGT-AP (AP Chipbreaker is for Aluminum)

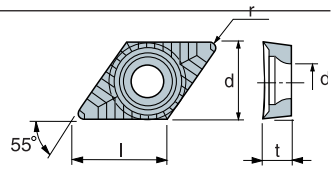




· Exclusive chip breaker for aluminum and aluminum alloy.

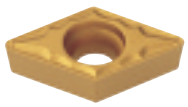


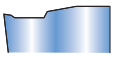
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



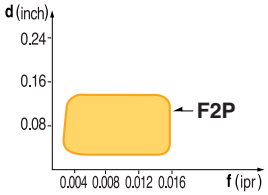
Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AP	070202												146-988 $ 16.10	.307	1/4	3/32	.008	*Turning*	
DCGT 21.51-AP	070204												146-989 $ 16.10	.307	1/4	3/32	1/64	SDJCR/L	E63
DCGT 32.50.5-AP	11T302												146-990 $ 18.80	.457	3/8	5/32	.008	SDNCN	E64
DCGT 32.51-AP	11T304											146-703 $ 74.80	146-991 $ 18.80	.457	3/8	5/32	1/64	*Boring*	
DCGT 32.52-AP	11T308											146-704 $ 74.80	146-992 $ 18.80	.457	3/8	5/32	1/32	SDQCR	E76
DCGT 32.53-AP	120404												147-764 $ 18.80	.457	3/8	5/32	3/64	SDUCR	E77
																		SDZCR/L	E77

DCMT-F1P/F2P

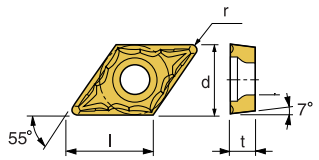




· Excellent chip control at wide range of cutting conditions.
· Suitable for stainless steel cutting.



- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



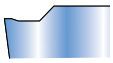
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DCMT 32.51-F1P	11T304			149-051 $ 15.90											.457	3/8	5/32	1/64	*Turning*	
DCMT 32.52-F1P	11T308														.457	3/8	5/32	1/32	SDJCR/L	E63
DCMT 21.50.5-F2P	070202												148-409 $ 11.50		.307	1/4	3/32	.008	SDNCN	E64
DCMT 21.51-F2P	070204	146-792 $ 14.30	146-793 $ 14.30	146-578 $ 14.30				149-011 $ 14.30					148-410 $ 11.50		.307	1/4	3/32	1/64	*Boring*	
DCMT 21.52-F2P	070208		146-795 $ 14.30	147-881 $ 14.30							148-457 $ 14.30				.307	1/4	3/32	1/32	SDQCR	E76
DCMT 32.50.5-F2P	11T302												148-412 $ 12.70		.457	3/8	5/32	.008	SDUCR	E77
DCMT 32.51-F2P	11T304		147-067 $ 15.90	148-736 $ 15.90	146-069 $ 15.90		147-591 $ 15.90			147-592 $ 15.90	148-459 $ 15.90				.457	3/8	5/32	1/64	SDZCR/L	E77
DCMT 32.52-F2P	11T308	147-069 $ 15.90		148-737 $ 15.90			147-593 $ 15.90			147-594 $ 15.90	148-460 $ 15.90				.457	3/8	5/32	1/32		

Quick Choice Grade Selection

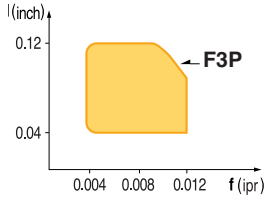
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

DCMT-F3P



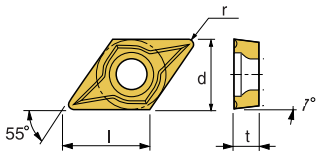


- Excellent chip control at shallow depth of cut and low feed rate.
- Excellent surface finish of work piece due to reduced cutting force.
- Suitable for fine boring.



- USE
  Medium
- Recommendation

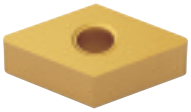
F3P d = 0.04~0.12inch
f = 0.004~0.012ipr



		Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KTM10U	PM20U	l	d	t	r	Holder	Page No.
DCMT 21.51-F3P	070204			146-615 $ 14.30											.307	1/4	3/32	1/64	*Turning*	
DCMT 32.50.5-F3P	11T302														.457	3/8	5/32	.008	SDJCR/L	E63
DCMT 32.51-F3P	11T304			146-614 $ 15.90	146-030 $ 15.90										.457	3/8	5/32	1/64	SDNCN	E64
DCMT 32.52-F3P	11T308	146-031 $ 15.90		148-663 $ 15.90	146-032 $ 15.90										.457	3/8	5/32	1/32	*Boring*	
																			SDQCR	E76
																			SDUCR	E77
																			SDZCR/L	E77

DNM_ 55º Negative Turning Inserts

DNMA

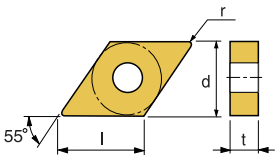




- Flat top geometry for the machining of Cast Iron & Hardened Steels

- Recommendation

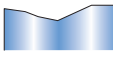
d = 0.04~0.08inch
f = 0.002~0.012ipr



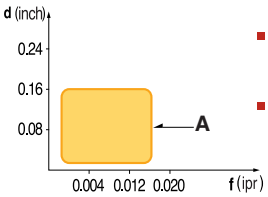
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMA 332	110408								147-090 $ 14.20	147-549 $ 14.20					.457	3/8	3/16	1/32	*Turning*	
DNMA 431	150404									147-550 $ 16.80					.610	1/2	3/16	1/64	DDJNR/L	E52
DNMA 432	150408									147-551 $ 16.80					.610	1/2	3/16	1/32	MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-A



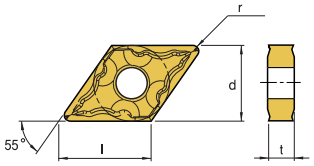


- Sharp cutting edge generate low cutting force.
- Specially designed tough main cutting edge.
- Suitable for cutting of low carbon steel, stainless steel, aluminum.



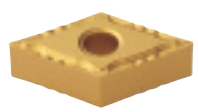
- USE
  Light & Medium
- Recommendation

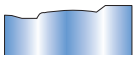
A d = 0.03~0.16inch
f = 0.002~0.016ipr



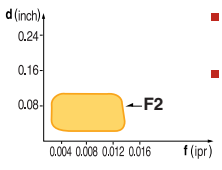
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 431-A	150404		148-158 $ 16.80	149-056 $ 16.80			147-576 $ 16.80	147-577 $ 16.80			148-381 $ 16.80			147-578 $ 13.60	.610	1/2	3/16	1/64	*Turning*	
DNMG 432-A	150408		148-159 $ 16.80				147-579 $ 17.50	147-580 $ 17.50			148-382 $ 16.80			147-581 $ 13.60	.610	1/2	3/16	1/32	DDJNR/L	E52
																			MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-F2



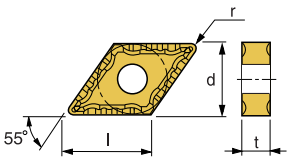


- Excellent chip control at varied depth of cutting.
- Strong cutting edge toughness due to special design.



- USE
  Finishing
- Recommendation

F2 d = 0.015~0.1inch
f = 0.002~0.014ipr

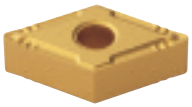


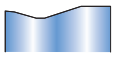
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 331-F2	110404	147-093 $ 14.20	147-094 $ 14.20							147-211 $ 14.20					.457	3/8	3/16	1/64	*Turning*	
DNMG 332-F2	110408	147-095 $ 14.20	147-096 $ 14.20										147-569 $ 11.50		.457	3/8	3/16	1/32	DDJNR/L	E52
DNMG 431-F2	150404	146-756 $ 16.80	147-570 $ 16.80												.610	1/2	3/16	1/64	MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
DNMG 432-F2	150408	146-757 $ 16.80													.610	1/2	3/16	1/32	PDUNR/L	E74

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

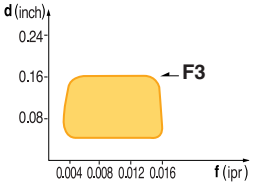
DNM_ 55° Negative Turning Inserts

DNMG-F3

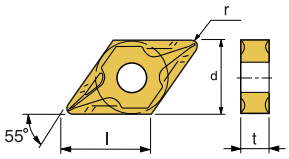




- Excellent for copying of special shape.
- Smooth chip control at shallow cut as well as deep depth of cut.



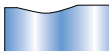
- USE
  Light & Medium
- Recommendation
  F3 d = 0.032~0.16inch
  f = 0.003~0.016ipr



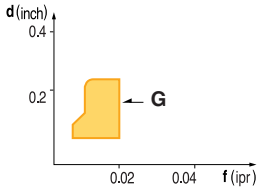
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 431-F3	150404												**147-573 $ 13.60**		.610	1/2	3/16	1/64	*Turning*	
DNMG 432-F3	150408												**147-575 $ 13.60**		.610	1/2	3/16	1/32	DDJNR/L	E52
																			MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-G

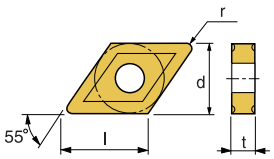




- Suitable for general cutting condition cutting.

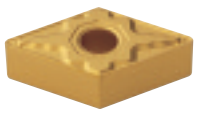


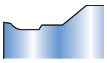
- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr



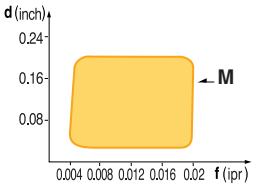
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 432-G	150408			**145-642 $ 16.80**	**147-554 $ 16.80**										.610	1/2	3/16	1/32	*Turning*	
DNMG 441-G	150604														.610	1/2	1/4	1/64	DDJNR/L	E52
																			MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-M/M1

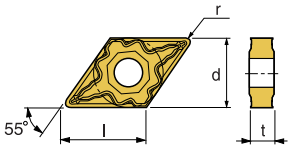




- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 331-M	110404		**147-582 $ 14.20**										**147-583 $ 11.50**		.457	3/8	3/16	1/64	*Turning*	
DNMG 332-M	110408	**147-091 $ 14.20**		**149-054 $ 14.20**									**147-585 $ 11.50**		.457	3/8	3/16	1/32	DDJNR/L	E52
																			MDJNR/L	E56
DNMG 333-M	110412												**147-587 $ 11.50**		.457	3/8	3/16	3/64	*Boring*	
																			PDSNR/L	E74
DNMG 431-M	150404	**146-238 $ 16.80**		**148-667 $ 16.80**											.610	1/2	3/16	1/64	PDUNR/L	E74
DNMG 432-M	150408	**146-258 $ 16.80**		**146-555 $ 16.80**									**147-590 $ 13.60**		.610	1/2	3/16	1/32		
DNMG 441-M	150604												**147-556 $ 13.60**		.610	1/2	1/4	1/64		
DNMG 442-M	150608	**146-295 $ 19.50**											**147-558 $ 13.60**		.610	1/2	1/4	1/32		
DNMG 431-M1	150404	**145-649 $ 16.80**	**145-650 $ 16.80**												.610	1/2	3/16	1/64		
DNMG 432-M1	150408		**148-925 $ 16.80**	**145-652 $ 16.80**	**145-651 $ 16.80**										.610	1/2	3/16	1/32		

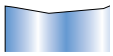
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

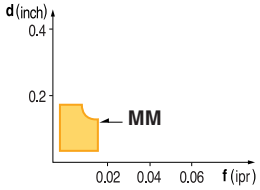
DNM_ 55º Negative Turning Inserts

DNMG-MM

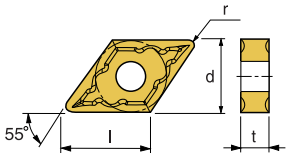




· Excellent choice for a variety of steels including Stainless Steel



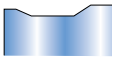
- USE
  Steels / Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr



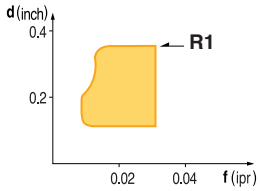
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 431-MM	150404			**148-668 $ 16.80**											.610	1/2	3/16	1/64	*Turning*	
																			DDJNR/L	E52
DNMG 432-MM	150408			**148-669 $ 16.80**											.610	1/2	3/16	1/32	MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-R1

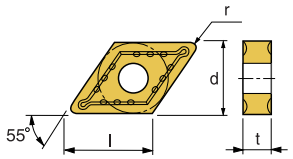




· Suitable for deep depth of cut and fast feed cutting of steel and cast iron.
· Suitable for intermittent cutting.



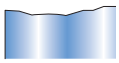
- USE
  Roughing
- Recommendation
  R1 d = 0.12~0.32inch
  f = 0.012~0.032ipr



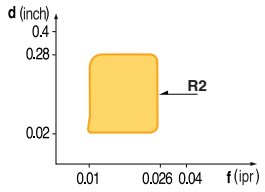
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 432-R1	150408	**146-263 $ 16.80**								**147-565 $ 16.80**					.610	1/2	3/16	1/32	*Turning*	
																			MDJNR/L	E56
DNMG 433-R1	150412	**146-268 $ 16.80**													.610	1/2	3/16	3/64	*Boring*	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-R2

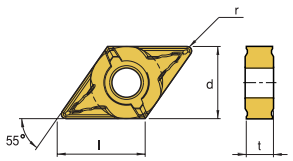




· Excellent chip control at deep depth of cut and fast feed rate.
· Strong cutting edge makes excellent cutting performance at intermittent cutting.



- USE
  Roughing
- Recommendation
  R2 d = 0.1~0.28inch
  f = 0.01~0.026ipr



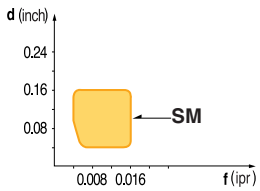
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
DNMG 432-R2	150408	**147-562 $ 16.80**			**147-564 $ 16.80**										.610	1/2	3/16	1/32	*Turning*	
																			DDJNR/L	E52
DNMG 543-R2	190412		**145-638 $ 26.70**												.711	5/8	1/4	5/16	MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

DNMG-SM (SM Chipbreaker is for Stainless Steel medium feed.)

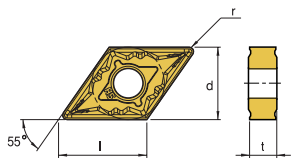




· Exclusive design for stainless steel cutting provide longer tool life
· Wear resistance have been reinforced through high rake angle of chip breaker land.



- 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	d	t	r	Holder	Page No.
DNMG 431-SM	150404						**146-767 $ 16.80**				**148-383 $ 16.80**				.610	1/2	3/16	1/64	*Turning*	
																			DDJNR/L	E52
DNMG 432-SM	150408						**147-560 $ 16.80**	**147-561 $ 16.80**			**148-384 $ 16.80**				.610	1/2	3/16	1/32	MDJNR/L	E56
																			Boring	
																			PDSNR/L	E74
																			PDUNR/L	E74

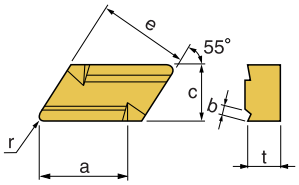
** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

KNUX 55º Negative Turning Inserts

KNUX



- USE
  General Cutting



Designation	ISO	Coated Carbide									Uncoated Carbide		(inch)						Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT20U	PTM30U	a	e	t	r	c	b	Holder	Page No.
KNUX 160405 R11				148-677 $ 22.10	147-597 $ 22.10		147-598 $ 22.10					146-853 $ 17.70	.630	.636	3/16	.0197	3/8	.087	*Turning*	
KNUX 160410 R11					147-599 $ 22.10								.630	.636	3/16	.0394	3/8	.087	CKJNR/L	E51
KNUX 160405 L11				148-676 $ 22.10			147-990 $ 22.10						.630	.636	3/16	.0197	3/8	.087		
KNUX 160410 L11			146-782 $ 22.10	146-637 $ 22.10									.630	.636	3/16	.0394	3/8	.126		

RC_ _ Positive Turning Inserts

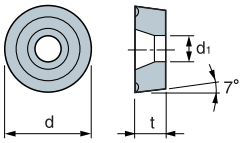
RCGT-AM (“AM” Chipbreaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy.

- USE
  Aluminum Cutting
- Recommendation

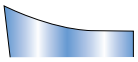
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr



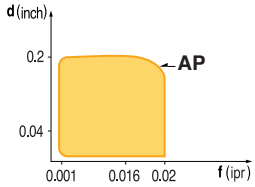
Designation	ISO	Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0803M0-AM													146-078 $ 17.70			.315	1/8	9/64	*Turning*	
RCGT 1003M0-AM													146-081 $ 24.50			.394	1/8	5/32	PRDCN	E58
RCGT 10T3M0-AM													145-665 $ 22.40			.394	5/32	11/64		
RCGT 1204M0-AM													145-666 $ 26.30			.472	3/16	11/64		

RCGT-AP (“AP” Chipbreaker is for Aluminum)



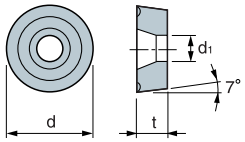


· Exclusive chip breaker for aluminum and aluminum alloy.



- USE
  Aluminum Cutting
- Recommendation

  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr

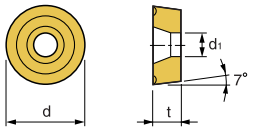


Designation	ISO	Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0602M0-AP																.236	3/32	11/128	*Turning*	
RCGT 0803M0-AP													146-315 $ 17.70			.315	1/8	9/64	PRDCN	E58
RCGT 10T3M0-AP													147-377 $ 22.40			.394	5/32	11/64		
RCGT 1204M0-AP													148-421 $ 26.30			.472	3/16	11/64		

RC_ _ Positive Turning Inserts

RCMX



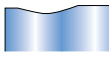


		Coated Carbide									Cermet		Uncoated Carbide				(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PM25C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCMX 1003M0				149-045 $ 14.80												.394	1/8	.142	*Turning*	
RCMX 1204M0				148-795 $ 18.80												.472	3/16	.165	PRDCN	E62
RCMX 1606M0																.630	1/4	.205		
RCMX 2006M0																.787	1/4	.256		

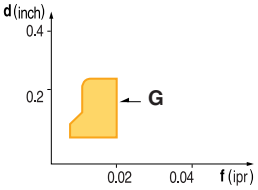
RNMG Negative Turning Inserts

RNMG-G



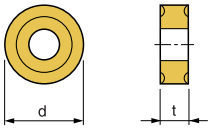


· Suitable for general cutting condition cutting.



- 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	PT22C	PT30C	PM25C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RNMG 43-G	120400			148-724 $ 14.30												1/2	3/16	13/64		
RNMG 64-G	190600			146-783 $ 27.20												3/4	1/4	5/16		
RNMG 84-G	250600			146-092 $ 55.60												1	1/4	23/64		

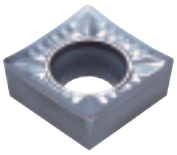
Quick Choice Grade Selection

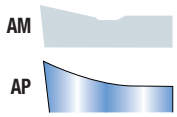
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

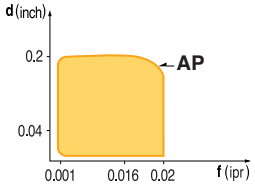
SC_T 90º Positive Turning Inserts

SCGT-AM/AP (AM & AP Chipbreakers are for Aluminum)

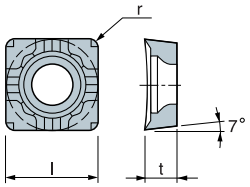




- Exclusive chip breakers for aluminum and aluminum alloy.



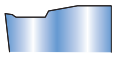
- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



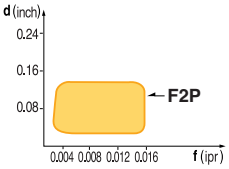
Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	t	r	Holder	Page No.
SCGT 32.51-AM	09T304												146-094 $ 19.70	3/8	5/32	1/64	*Turning*	
SCGT 32.52-AM	09T308												145-667 $ 19.70	3/8	5/32	1/32	SSBCR/L	E64
SCGT 431-AM	120404												146-101 $ 21.90	1/2	3/16	1/64	SSSCR/L	E64
SCGT 432-AM	120408												145-668 $ 21.90	1/2	3/16	1/32	*Boring*	
SCGT 32.51-AP(K)	09T304												146-993 $ 19.70	3/8	5/32	1/64	SSKCR/L	E78
SCGT 32.52-AP	09T308												146-994 $ 19.70	3/8	5/32	1/32		
SCGT 431-AP	120404												146-996 $ 21.90	1/2	3/16	1/64		
SCGT 432-AP	120408												146-995 $ 21.90	1/2	3/16	1/32		

SCMT-F2P

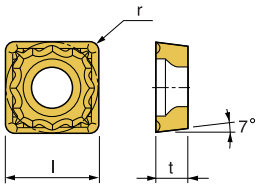




- Excellent chip control at wide range of cutting conditions.
- Suitable for stainless steel cutting.



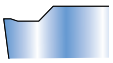
- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



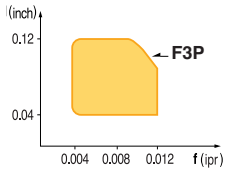
Designation	ISO	Coated Carbide							Cermet			Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	KT05C	KT10C	PT10S	PT20S	ST10P	ND100	KT10U	l	t	r	Holder	Page No.
SCMT 32.51-F2P	09T304									148-697 $ 10.40				3/8	5/32	1/64	*Turning*	
SCMT 32.52-F2P	09T308		147-605 $ 12.80	146-664 $ 12.80	146-932 $ 12.80			147-606 $ 12.80						3/8	5/32	1/32	SSBCR/L	E64
SCMT 431-F2P	120404		146-105 $ 16.70					147-949 $ 16.70						1/2	3/16	1/64	SSSCR/L	E64
SCMT 432-F2P	120408		146-106 $ 16.70											1/2	3/16	1/32	*Boring*	
																	SSKCR/L	E78

SCMT-F3P

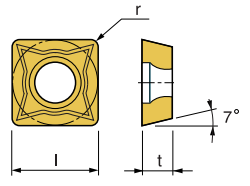




- Suitable for intermittent cutting and cast iron machining.
- Good surface finish due to low cutting force.
- Suitable for both boring and outer diameter turning.



- USE
  Medium
- Recommendation
  F3P d = 0.04~0.12inch
  f = 0.004~0.012ipr



Designation	ISO	Coated Carbide							Cermet			Diamond Coated	Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	KT10C	KT20C	PT10S	PT20S	PT30S	ND100	KT10U	l	t	r	Holder	Page No.
SCMT 21.51-F2P	070204				146-107 $ 13.60									1/4	3/32	1/64	*Turning*	
SCMT 32.51-F3P	09T304		146-110 $ 12.80		146-109 $ 12.80					146-222 $ 10.40	146-323 $ 10.40			3/8	5/32	1/64	SSBCR/L	E64
SCMT 32.52-F3P	09T308	146-324 $ 12.80	146-325 $ 12.80	146-554 $ 12.80	148-830 $ 12.80		147-955 $ 12.80							3/8	5/32	1/32	SSSCR/L	E64
SCMT 431-F3P	120404			148-690 $ 16.70										1/2	3/16	1/64	*Boring*	
SCMT 432-F3P	120408	148-960 $ 16.70					147-998 $ 16.70			147-447 $ 13.60				1/2	3/16	1/32	SSKCR/L	E78

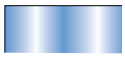
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

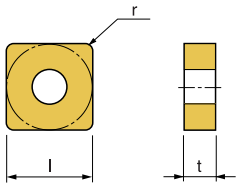
SNM_ 90º Negative Turning Inserts

SNMA





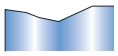
· Flat top geometry for the machining of Cast Iron & Hardened steels



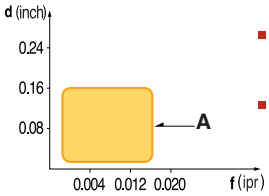
		Coated Carbide										Cermet		Uncoated Carbide		(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT10S	PT20S	KTM10U		l	t	r	Holder	Page No.
SNMA 432	120408								147-238 $ 13.90	147-475 $ 13.90						1/2	3/16	1/32	*Turning*	
SNMA 433	120412									147-738 $ 13.90						1/2	3/16	3/64	DSDNN	E53
SNMA 434	120416									147-739 $ 13.90						1/2	3/16	1/16	MSDNN	E57
																			MSKNR/L	E57
																			MSRNR/L	E58
																			Boring	
																			PSKNR/L	E70

SNMG-A

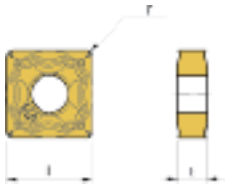




· Sharp cutting edge generate low cutting force.
· Specially designed tough main cutting edge.
· Suitable for cutting of low carbon steel, stainless steel, aluminum.

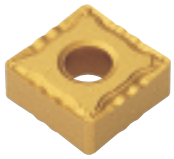


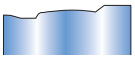
- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.14inch
  f = 0.004~0.016ipr



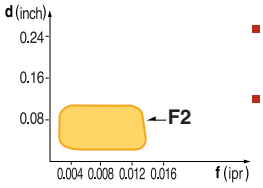
		Coated Carbide										Cermet		Uncoated Carbide		(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U		l	t	r	Holder	Page No.
SNMG 431-A	120404							147-710 $ 13.90								1/2	3/16	1/64	*Turning*	
SNMG 432-A	120408						147-712 $ 13.90	147-713 $ 13.90						147-714 $ 12.90		1/2	3/16	1/32	DDJNR/L	E52
																			MSDNN	E57
																			MSKNR/L	E57
																			MSRNR/L	E58
																			Boring	
																			PSKNR/L	E75

SNMG-F2

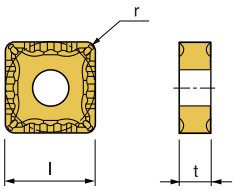




· Excellent chip control at varied depth of cutting.
· Strong cutting edge toughness due to special design.



- USE
  Finishing
- Recommendation
  F2 d = 0.015~0.1inch
  f = 0.002~0.014ipr



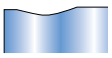
		Coated Carbide										Cermet		Uncoated Carbide		(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U		l	t	r	Holder	Page No.
SNMG 432-F2	120408		147-708 $ 13.90													1/2	3/16	1/32	*Turning*	
SNMG 644-F2	190616				147-697 $ 28.50											3/4	1/4	1/16	DDJNR/L	E52
																			MSDNN	E57
																			MSKNR/L	E57
																			MSRNR/L	E58
																			Boring	
																			PSKNR/L	E75

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

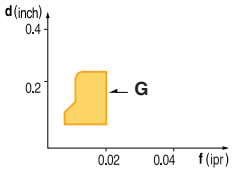
SNM_ 90° Negative Turning Inserts

SNMG-G

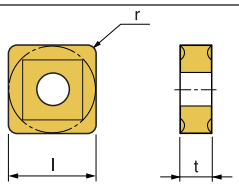




- Suitable for general cutting condition cutting.



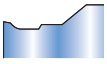
- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr



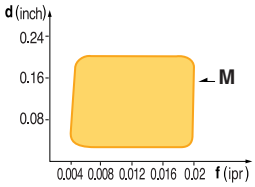
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 431-G	120404		147-740 $ 13.90		147-741 $ 13.90										1/2	3/16	1/64	*Turning*	
SNMG 432-G	120408	147-742 $ 13.90	147-743 $ 13.90	146-668 $ 13.90											1/2	3/16	1/32	DDJNR/L	E52
SNMG 542-G	150608		146-115 $ 22.10												5/8	1/4	1/32	MSDNN	E57
SNMG 543-G	150612		146-427 $ 22.10												5/8	1/4	3/64	MSKNR/L	E57
SNMG 642-G	190608	146-435 $ 28.50	146-437 $ 28.50		146-436 $ 28.50										3/4	1/4	1/32	MSRNR/L	E58
SNMG 643-G	190612									146-118 $ 28.50					3/4	1/4	3/64	*Boring*	
SNMG 644-G	190616			149-055 $ 28.50											3/4	1/4	1/16	PSKNR/L	E75
SNMG 866-G	250924				146-156 $ 58.40										1.00	3/8	3/32		

SNMG-M/MM

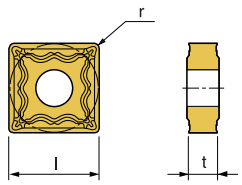




- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



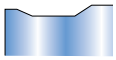
- USE
  Medium
- Recommendation
  M d = 0.04~0.2inch
  f = 0.004~0.02ipr



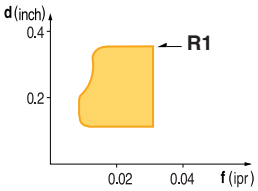
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 432-M	120408			148-774 $ 13.90			147-602 $ 13.90						147-453 $ 11.30		1/2	3/16	1/32	*Turning*	
SNMG 433-M	120412	147-389 $ 13.90		146-644 $ 13.90											1/2	3/16	3/64	DDJNR/L	E52
SNMG 432-MM	120408		148-861 $ 13.90												1/2	3/16	1/32	MSDNN	E57
																		MSKNR/L	E57
																		MSRNR/L	E58
																		Boring	
																		PSKNR/L	E75

SNMG-R1

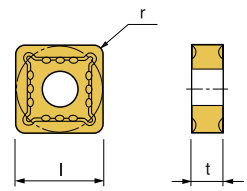




- Excellent chip control at deep depth of cut and fast feed rate.
- Strong cutting edge makes excellent cutting performance at intermittent cutting.



- USE
  Roughing
- Recommendation
  R1 d = 0.12~0.32inch
  f = 0.012~0.032ipr



Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 432-R1	120408		146-401 $ 13.90	148-698 $ 13.90											1/2	3/16	1/32	*Turning*	
SNMG 433-R1	120412	147-388 $ 13.90	147-390 $ 13.90		146-415 $ 13.90										1/2	3/16	3/64	DDJNR/L	E52
SNMG 543-R1	150612	146-428 $ 22.10			146-429 $ 22.10										5/8	1/4	3/64	MSDNN	E57
																		MSKNR/L	E57
																		MSRNR/L	E58
																		Boring	
																		PSKNR/L	E75
SNMG 643-R1	190612				146-079 $ 28.50										3/4	1/4	3/64		
SNMG 644-R1	190616									148-752 $ 28.50					3/4	1/4	1/16		

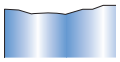
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

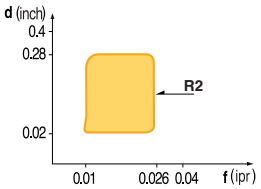
SNM_ 90º Negative Turning Inserts

SNMG(M)-R2

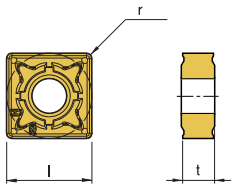




- Suitable for heavy duty cutting due to strong cutting edge.
- Wide chip control range with low cutting force



- USE
  Roughing
- Recommendation
  R2 d = 0.12~0.44inch
  f = 0.012~0.052ipr



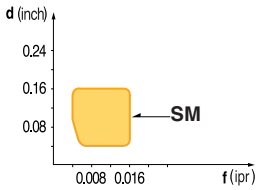
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PM20U	l	t	r	Holder	Page No.
SNMG 432-R2	120408	**147-748 $ 13.90**													1/2	3/16	1/32	*Turning*	
SNMG 433-R2	120412	**148-975 $ 13.90**			**147-753 $ 13.90**										1/2	3/16	3/64	DDJNR/L	E52
SNMG 543-R2	150612	**147-755 $ 22.10**	**146-430 $ 22.10**		**147-757 $ 22.10**										5/8	1/4	3/64	MSDNN	E57
SNMG 643-R2	190612	**146-408 $ 28.50**			**146-412 $ 28.50**	**148-626 $ 28.50**									3/4	1/4	3/64	MSKNR/L	E57
SNMG 644-R2	190616				**146-377 $ 28.50**										3/4	1/4	1/16	MSRNR/L	E58
SNMM 856-R2	250724		**146-685 $ 58.40**		**146-686 $ 58.40**									**146-688 $ 49.70**	1.00	5/16	3/32	*Boring*	
																		PSKNR/L	E75

SNMG-SM

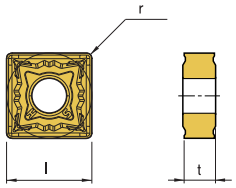




- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance have been reinforced through high rake angle of chip breaker land.



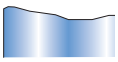
- USE
  Stainless Steel
- Recommendation
  SM d = 0.04~0.16inch
  f = 0.004~0.016ipr



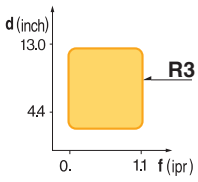
		Coated Carbide										Cermet		Uncoated Carbide	(inch)			Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	t	r	Holder	Page No.
SNMG 431-SM	120404						**147-745 $ 13.90**	**148-161 $ 13.90**							1/2	3/16	1/64	*Turning*	
SNMG 432-SM	120408						**147-746 $ 13.90**	**147-747 $ 13.90**							1/2	3/16	1/32	DDJNR/L	E52
SNMG 543-SM	150612						**148-799 $ 22.10**								5/8	1/4	3/64	MSDNN	E57
																		MSKNR/L	E57
																		MSRNR/L	E58
																		Boring	
																		PSKNR/L	E75

SNMM-R3

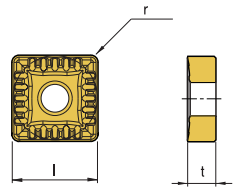




- Specially designed toughest cutting edge provides superior cutting performance at deep depth of cut and fast feed rate.
- Unique design of dot on cutting edge makes smooth chip flow and reduce cutting force.



- USE
  Heavy Duty
- Recommendation
  R3 d = 0.16~0.52inch
  f = 0.018~0.06ipr



		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.
SNMM 643-R3	190612	**147-701 $ 28.50**	**147-702 $ 28.50**		**147-703 $ 28.50**										3/4	1/4	3/64	*Turning*	
SNMM 856-R3	250724		**147-704 $ 58.40**		**147-706 $ 58.40**	**147-705 $ 58.40**								**147-707 $ 41.30**	1.00	5/16	3/32	DDJNR/L	E52
																		MSDNN	E57
																		MSKNR/L	E57
																		MSRNR/L	E58
																		Boring	
																		PSKNR/L	E75

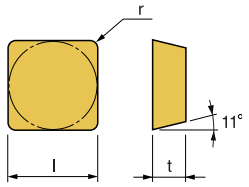
** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

SP_ _ 90º Inserts

SPG

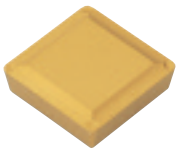


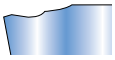


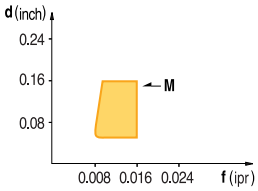


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PT20U		l	t	r	Holder	Page No.
SPG 432	120404													**146-462** **$ 14.20**		1/2	3/16	1/32		
SPG 633	190412													**146-463** **$ 27.10**		3/4	3/16	3/64		

SPMR/SPMR-F/M

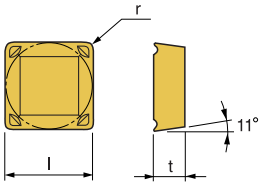






- Recommendation

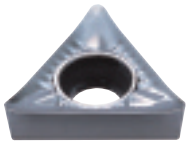
F d = 0.06~0.16inch
f = 0.008~0.016ipr

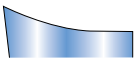


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PT20U	l	d	t	r	Holder	Page No.
SPMR 421	120308		**146-234** **$ 14.00**												0.484	3/8	1/8	1/64		
SPMR 321-F	160304		**146-247** **$ 11.30**												0.358	3/8	1/8	1/64		
SPMR 421-F	120308		**146-259** **$ 14.00**												0.484	1/2	1/8	1/64		
SPMR 422-M	120304		**146-468** **$ 14.00**	**146-625** **$ 14.00**											0.469	1/2	1/8	1/32		

TC_T 60º Positive Turning Inserts

TCGT-AM (AM Chipbreaker is for Aluminum)



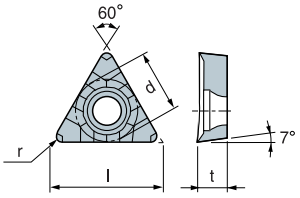


- Exclusive chip breaker for aluminum and aluminum alloy.

- USE
Aluminum Cutting

- Recommendation

AM d = 0.020~0.157inch
f = 0.002~0.020ipr



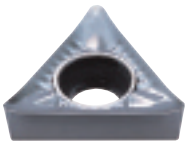
Designation	ISO	Coated Carbide										Diamond Coated		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100		KT10U	l	d	t	r	Holder	Page No.
TCGT 21.51-AM	110204													**146-120** **$ 16.30**	.433	1/4	3/32	1/64	***Turning***	
TCGT 21.52-AM	110208													**146-121** **$ 16.30**	.433	1/4	3/32	1/32	STFCR/L	E61
TCGT 32.50.5	16T302													**146-123** **$ 20.80**	.650	3/8	5/32	1/64	STGCR/L	E61
TCGT 32.51-AM	16T304													**146-135** **$ 20.80**	.650	3/8	5/32	1/64	***Boring***	
TCGT 32.52-AM	16T308													**146-137** **$ 20.80**	.650	3/8	5/32	1/32	STFCR/L	E74
																			Chamfer	
																			CT45º	E136

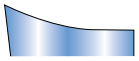
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

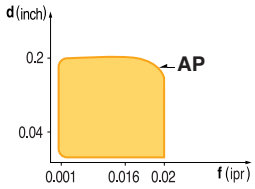
TC_T 60º Positive Turning Inserts

TCGT-AP (AP Chipbreaker is for Aluminum)

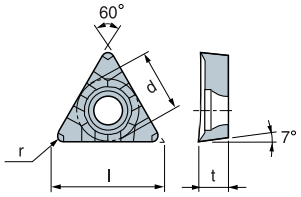




· Exclusive chip breaker for aluminum and aluminum alloy.



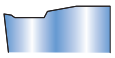
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



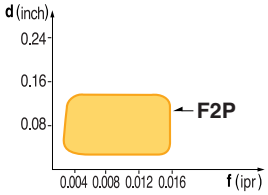
		Coated Carbide										Diamond Coated		Uncoated Carbide				(inch)	Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100		KT10U	l	d	t	r	Holder	Page No.
TCGT 21.50.5-AP	110202													146-504 $ 16.30	.433	1/4	3/32	.008	*Turning*	
TCGT 21.51-AP	110204													146-505 $ 16.30	.433	1/4	3/32	1/64	STFCR/L	E65
TCGT 21.52-AP	110208													146-506 $ 16.30	.433	1/4	3/32	1/32	STGCR/L	E65
TCGT 32.51-AP(K)	16T304											146-705 $ 82.30		146-507 $ 20.80	.650	3/8	5/32	1/64	*Boring*	
TCGT 32.52-AP(K)	16T308											146-706 $ 82.30		146-508 $ 20.80	.650	3/8	5/32	1/32	STFCR/L	E78
																			Chamfer	
																			CT45º	E136

TCM(G)T-F1P/F2P

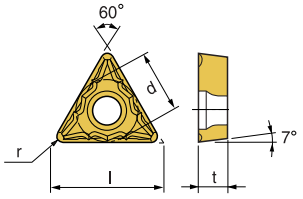




· Excellent chip control at wide range of cutting conditions.
· Suitable for stainless steel cutting.



- USE
  Medium
- Recommendation
  F2P d = 0.02~0.14inch
  f = 0.002~0.016ipr



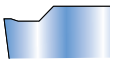
		Coated Carbide										Cermet		Uncoated Carbide				(inch)	Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PM30C	PT30C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
TCGT 1.81.51-F1P	090204													146-690 $ 12.00	.378	7/32	3/32	1/64	*Turning*	
TCMT 21.51-F1P	110204			146-606 $ 12.10								146-498 $ 9.70	146-496 $ 9.70		.433	1/4	3/32	1/64	STFCR/L	E65
TCMT 32.51-F1P	16T304														.650	3/8	5/32	1/64	STGCR/L	E65
TCMT 21.51-F2P	110204	147-053 $ 12.10	147-055 $ 12.10	149-114 $ 12.10		146-138 $ 12.10	147-647 $ 12.10	146-140 $ 12.10		147-648 $ 12.10		147-462 $ 9.70	147-463 $ 9.70		.433	1/4	3/32	1/64	*Boring*	
TCMT 21.52-F2P	110208		147-059 $ 12.10	148-732 $ 12.10	146-142 $ 12.10										.433	1/4	3/32	1/32	STFCR/L	E78
TCMT 32.51-F2P	16T304	147-045 $ 14.50		148-731 $ 14.50			147-650 $ 14.50			147-651 $ 14.50					.650	3/8	5/32	1/64	*Chamfer*	
TCMT 32.52-F2P	16T308	147-049 $ 14.50	147-051 $ 14.50		146-613 $ 14.50		147-652 $ 14.50			147-653 $ 14.50					.650	3/8	5/32	1/32	CT45º	E136

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

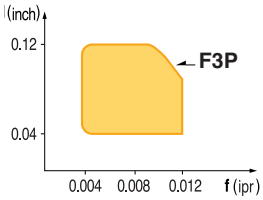
TC_T 60° Positive Turning Inserts

TCMT-F3P



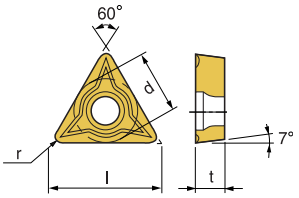


- Suitable for intermittent cutting and cast iron machining.
- Good surface finish due to low cutting force.
- Suitable for both boring and outer diameter turning.



- USE
  Medium
- Recommendation

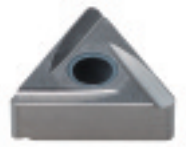
F3P d = 0.04~0.12inch
f = 0.004~0.012ipr

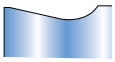


		Coated Carbide									Cermet		Uncoated Carbide						Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM35C	MT20C	MM30P	KT05C	KT10C	PT10S	PT20S	KTM30U	PM20U	l	d	t	r	Holder	Page No.
TCMT 1.81.51-F3P	090204			146-602 $ 11.40											.378	7/32	3/32	1/64	*Turning*	
TCMT 1.81.52-F3P	090208			146-662 $ 11.40											.378	7/32	3/32	1/32	STFCR/L	E65
TCMT 21.51-F3P	110204			148-811 $ 12.10	146-503 $ 12.10					147-956 $ 12.10		146-499 $ 9.70			.433	1/4	3/32	1/64	STGCR/L	E65
TCMT 21.52-F3P	110208	146-509 $ 12.10	148-163 $ 12.10		146-144 $ 12.10										.433	1/4	3/32	1/32	*Boring*	
TCMT 32.51-F3P	16T304	146-778 $ 14.50		148-702 $ 14.50											.650	3/8	5/32	1/64	STFCR/L	E78
TCMT 32.52-F3P	16T308	146-497 $ 14.50		148-707 $ 14.50		147-400 $ 14.50		147-986 $ 14.50		148-832 $ 14.50			147-401 $ 11.80		.650	3/8	5/32	1/32	*Chamfer*	
																			CT45°	E136

TN_ _ 60° Negative Turning Inserts

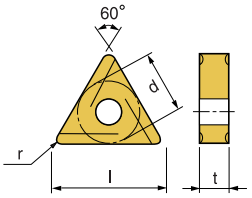
TNGG





- Recommendation

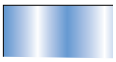
d = 0.04~0.16inch
f = 0.004~0.016ipr



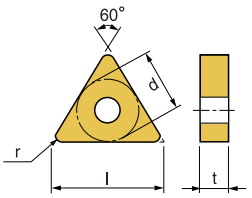
		Coated Carbide										Cermet		Uncoated Carbide					Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PM30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
TNGG 431R	220404												147-208 $ 30.50		.866	1/2	3/16	1/64	Same as below (TNM_)	
																			DTJNR/L	E53

TNMA(M)





- Flat top geometry for the machining of Cast Iron & Hardened steels

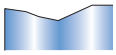


		Coated Carbide										Cermet	Uncoated Carbide						Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	KT15C	PT20S	KTM10U	PM20U	l	d	t	r	Holder	Page No.
TNMA 332	160408									148-745 $ 12.10	146-146 $ 16.80				.650	3/8	3/16	1/32	*Turning*	
TNMA 333	160412									147-608 $ 12.10	146-148 $ 16.80				.650	3/8	3/16	3/64	DTJNR/L	E53
TNMA 432	220408	146-762 $ 17.10								147-609 $ 17.10					.866	1/2	3/16	1/32	MTCNN	E58
TNMA 433	220412									147-610 $ 17.10					.866	1/2	3/16	1/32	MTFNR/L	E59
TNMA 434	220416														.866	1/2	3/16	1/16	MTENN	E59
TNMA 544	270616														1.083	5/8	1/4	1/16	MTGNR/L	E60
TNMM 432 B40	220408														.866	1/2	3/16	1/32	MTJNR/L	E60
																			Boring	
																			MTFNR	E71
																			MTUNR	E72
																			PTFNR/L	E75

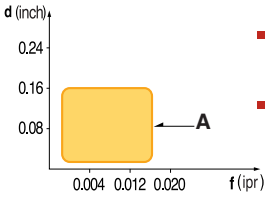
TNMG 60° Negative Turning Inserts

TNMG-A

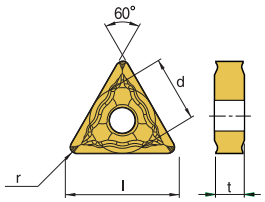




- Sharp cutting edge generate low cutting force.
- Specially designed tough main cutting edge.
- Suitable for cutting of low carbon steel, stainless steel, aluminum.



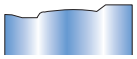
- USE
  Light & Medium
- Recommendation
  A d = 0.03~0.16inch
  f = 0.002~0.016ipr



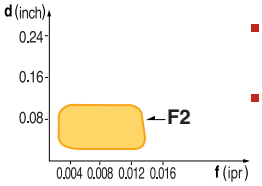
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PM30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
TNMG 331-A	160404						147-631 $ 12.10	147-632 $ 12.10						147-633 $ 11.40	.650	3/8	3/16	1/64	*Turning*	
TNMG 332-A	160408		148-164 $ 12.10	149-068 $ 12.10			147-634 $ 12.10	147-635 $ 12.10						147-636 $ 11.40	.650	3/8	3/16	1/32	DTJNR/L MTCNN MTFNR/L	E53 E58 E59
TNMG 431-A	220404														.866	1/2	3/16	1/64	MTENN MTGNR/L MTJNR/L	E59 E60 E60
TNMG 432-A	220408			148-754 $ 17.10										148-375 $ 13.70	.866	1/2	3/16	1/32	*Boring* MTFNR MTUNR PTFNR/L	 E71 E72 E75

TNMG-F2

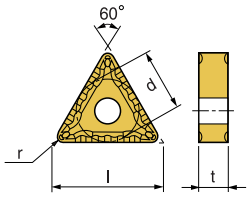




- Excellent chip control at varied depth of cutting.
- Strong cutting edge toughness due to special design.



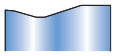
- USE
  Finishing
- Recommendation
  F2 d = 0.012~0.1inch
  f = 0.002~0.014ipr



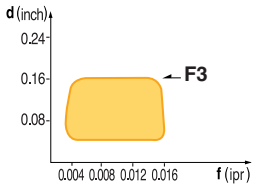
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PM30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
TNMG 432-F1	220408														.866	1/2	3/16	1/32	*Turning*	
TNMG 331-F2	160404	147-626 $ 12.10	147-627 $ 12.10												.650	3/8	3/16	1/64	DTJNR/L MTCNN MTFNR/L	E53 E58 E59
TNMG 332-F2	160408	146-729 $ 12.10		149-052 $ 12.10											.650	3/8	3/16	1/32	MTENN MTGNR/L MTJNR/L	E59 E60 E60
TNMG 432-F2	220408		148-165 $ 17.10												.866	1/2	3/16	1/32	*Boring* MTFNR MTUNR PTFNR/L	 E71 E72 E75

TNMG-F3

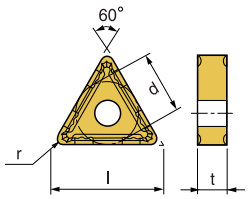




- Excellent for copying of special shape.
- Smooth chip control at shallow cut as well as deep depth of cut.



- USE
  Light & Medium
- Recommendation
  F3 d = 0.032~0.16inch
  f = 0.003~0.016ipr



Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PM30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
TNMG 332-F3	160408														.650	3/8	3/16	1/32	*Turning*	
TNMG 432-F3	220408	146-632 $ 17.10													.866	1/2	3/16	1/32	DTJNR/L MTCNN MTFNR/L MTENN MTGNR/L MTJNR/L	E53 E58 E59 E59 E60 E60
																			Boring MTFNR MTUNR PTFNR/L	 E71 E72 E75

Quick Choice Grade Selection

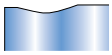
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

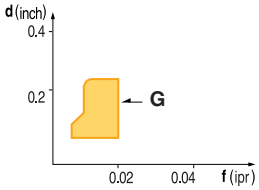
TNMG 60º Negative Turning Inserts

TNMG-G



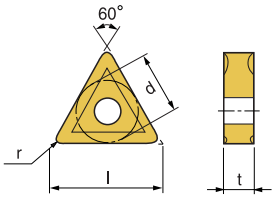


- Suitable for general cutting condition cutting.



- USE
  General Cutting
- Recommendation

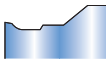
G d = 0.16~0.4inch
f = 0.02~0.04ipr



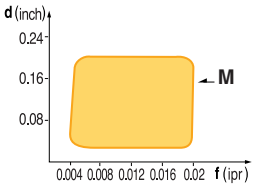
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 321-G	160304				146-270 $ 11.30										.650	3/8	1/8	1/64	*Turning*	
TNMG 322-G	160308				146-093 $ 11.30										.650	3/8	1/8	1/32	DTJNR/L	E53
TNMG 332-G	160408			148-661 $ 11.30											.650	3/8	3/16	1/32	MTCNN	E58
TNMG 431-G	220404		148-172 $ 17.10	148-783 $ 17.10											.886	1/2	3/16	1/64	MTFNR/L	E59
TNMG 432-G	220408			146-313 $ 17.10											.886	1/2	3/16	1/32	MTENN	E59
TNMG 433-G	220412				146-633 $ 17.10										.886	1/2	3/16	3/64	MTGNR/L	E60
TNMG 434-G	220416														.886	1/2	3/16	1/16	MTJNR/L	E60
TNMG 438-G	220432				146-726 $ 17.10										.886	1/2	3/16	1/8	*Boring*	
TNMG 542-G	270608		146-646 $ 27.20	149-039 $ 27.20											1.083	5/8	1/4	1/32	MTFNR	E71
TNMG 543-G	270612	146-647 $ 27.20	146-648 $ 27.20	146-362 $ 27.20											1.083	5/8	1/4	3/64	MTUNR	E72
TNMG 544-G	270616	146-649 $ 27.20			148-550 $ 27.20										1.083	5/8	1/4	1/16	PTFNR/L	E75

TNMG-M/M1



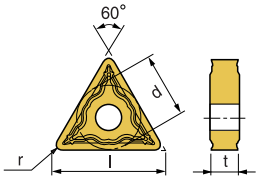


- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation

M d = 0.04~0.2inch
f = 0.004~0.02ipr



Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 331-M	160404	147-611 $ 12.10											146-565 $ 9.90		.650	3/8	3/16	1/64	*Turning*	
TNMG 331-M1	160404			146-558 $ 12.10											.650	3/8	3/16	1/64	DTJNR/L	E53
TNMG 332-M	160408			148-764 $ 12.10	147-641 $ 12.10								147-642 $ 9.90		.650	3/8	3/16	1/32	MTCNN	E58
TNMG 333-M	160412		148-978 $ 12.10										147-643 $ 9.90		.650	3/8	3/16	3/64	MTFNR/L	E59
TNMG 431-M	220404			146-572 $ 17.30											.886	1/2	3/16	1/64	MTENN	E59
TNMG 432-M	220408			148-771 $ 17.10	147-645 $ 17.10										.886	1/2	3/16	1/32	MTGNR/L	E60
TNMG 432-M1	220408			149-022 $ 17.10											.886	1/2	3/16	1/32	MTJNR/L	E60
TNMG 433-M	220412	146-634 $ 17.10		149-059 $ 17.10											.886	1/2	3/16	3/64	*Boring*	
																			MTFNR	E71
																			MTUNR	E72
																			PTFNR/L	E75

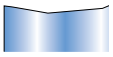
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

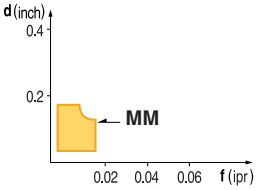
TNMG 60° Negative Turning Inserts

TNMG-MM

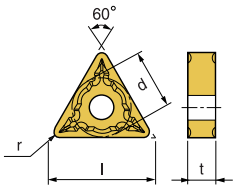




- Excellent choice for a variety of steels including Stainless Steel



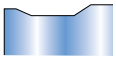
- USE
  Steels / Stainless Steels
- Recommendation
  MM d = 0.04~0.16inch
  f = 0.004~0.016ipr



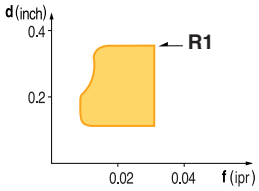
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 331-MM	160404														.650	3/8	3/16	1/64	***Turning***	
																			DTJNR/L	E53
TNMG 332-MM	160408			**149-631 $ 12.10**											.650	3/8	3/16	1/32	MTCNN	E58
																			MTFNR/L	E59
TNMG 431-MM	220404			**146-571 $ 17.10**											.886	1/2	3/16	1/64	MTENN	E59
																			MTGNR/L	E60
TNMG 432-MM	220408			**149-040 $ 17.10**											.886	1/2	3/16	1/32	MTJNR/L	E60
																			Boring	
																			MTFNR	E71
																			MTUNR	E72
																			PTFNR/L	E75

TNMG-R1

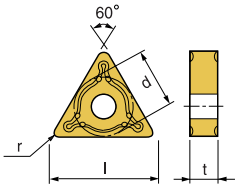




- Excellent chip control at deep depth of cut and fast feed rate.
- Strong cutting edge makes excellent cutting performance at intermittent cutting.



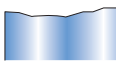
- USE
  Roughing
- Recommendation
  R1 d = 0.1~0.28inch
  f = 0.010~0.026ipr



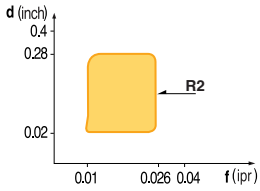
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 332-R1	160408				**146-573 $ 12.10**					**148-976 $ 12.10**					.650	3/8	3/16	1/32	***Turning***	
																			DTJNR/L	E53
TNMG 333-R1	160412	**147-618 $ 12.10**	**147-619 $ 12.10**							**148-977 $ 12.10**					.650	3/8	3/16	3/64	MTCNN	E58
																			MTFNR/L	E59
TNMG 432-R1	220408	**146-619 $ 17.10**			**146-621 $ 17.10**										.886	1/2	3/16	1/32	MTENN	E59
																			MTGNR/L	E60
TNMG 433-R1	220412	**146-639 $ 17.10**			**146-638 $ 17.10**										.886	1/2	3/16	3/64	MTJNR/L	E60
																			Boring	
																			MTFNR	E71
TNMG 543-R1	270612		**148-863 $ 27.20**	**149-082 $ 27.20**											1.083	5/8	1/4	3/64	MTUNR	E72
																			PTFNR/L	E75

TNMG-R2

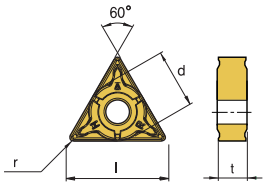




- Suitable for heavy duty cutting due to strong cutting edge.
- Wide chip control range with low cutting force



- 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	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 432-R2	220408	**147-621 $ 17.10**			**147-623 $ 17.10**										.866	1/2	3/16	1/32	***Turning***	
																			DTJNR/L	E53
TNMG 433-R2	220412	**147-624 $ 17.10**			**147-625 $ 17.10**										.866	1/2	3/16	3/64	MTCNN	E58
																			MTFNR/L	E59
																			MTENN	E59
																			MTGNR/L	E60
																			MTJNR/L	E60
																			Boring	
																			MTFNR	E71
																			MTUNR	E72
																			PTFNR/L	E75

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

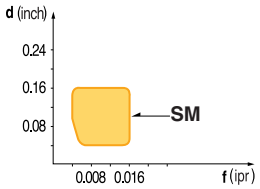
TNMG 60º Negative Turning Inserts

TNMG-SM



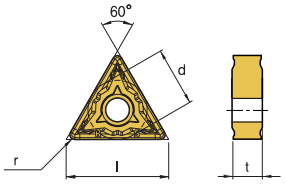


- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance have been reinforced through high rake angle of chip breaker land.



- USE
  Stainless Steel
- Recommendation

SM d = 0.04~0.16inch
f = 0.004~0.016ipr

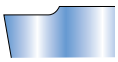


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TNMG 331-SM	160404						147-612 $ 12.10	146-169 $ 12.10							.650	3/8	3/16	1/64	*Turning*	
TNMG 332-SM	160408						147-613 $ 12.10	147-614 $ 12.10							.650	3/8	3/16	1/32	DTJNR/L	E53
TNMG 432-SM	220408						147-615 $ 17.10	147-616 $ 17.10							.886	1/2	3/16	1/32	MTCNN	E58
																			MTFNR/L	E59
																			MTENN	E59
																			MTGNR/L	E60
																			MTJNR/L	E60
																			Boring	
																			MTFNR	E71
																			MTUNR	E72
																			PTFNR/L	E75

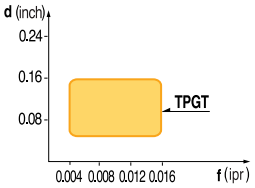
TPGT 60º Positive Turning Inserts

TPGT



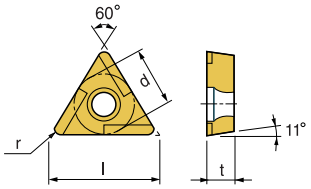


- Wide chip control area from light cutting to medium cutting.



- Recommendation

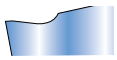
d =0.04~0.16inch
f = 0.004~0.016ipr

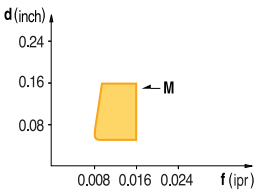


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TPGT 221	110304		147-329 $ 19.80	149-050 $ 19.80											.433	1/4	1/8	1/64		
TPGT 331	160404														.650	3/8	3/16	1/64		
TPGT 221L	110304											146-655 $ 22.30			.433	1/4	1/8	1/64		
TPGT 222L	110308														.433	1/4	1/8	1/32		

TPMR-F/TPMR-M

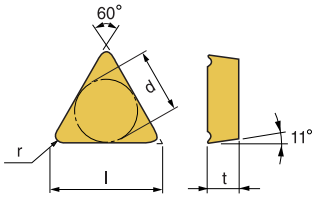






- Recommendation

M d = 0.06~0.16inch
f = 0.008~0.016ipr



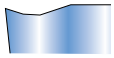
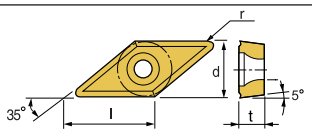
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
TPMR 221-F	110304														.433	1/4	1/8	1/64		
TPMR 321-F	160304	146-085 $ 13.30		146-576 $ 13.30											.650	3/8	1/8	1/64		
TPMR 222-M	110308		146-659 $ 12.60	146-575 $ 12.60											.433	1/4	1/8	1/32		
TPMR 321-M	160304	146-716 $ 13.30													.650	3/8	1/8	1/64		
TPMR 322-M	160308			148-723 $ 13.30			147-655 $ 13.30			147-656 $ 13.30					.650	3/8	1/8	1/32		
TPMR 432-M	220408				147-957 $ 25.20										.886	1/2	3/16	1/32		

Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

V_ _ T 35º Positive Turning Inserts

VBMT/VBMT-F2P

		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.
VBMT 331	160404	146-725 $ 21.00		148-725 $ 21.00	146-846 $ 21.00										.650	3/8	3/16	1/64	*Boring*	
VBMT 332	160408	146-727 $ 21.00		148-726 $ 21.00	146-849 $ 21.00										.650	3/8	3/16	1/32	SVQBR/L	E79
VBMT 32.51-F2P	16T304							145-633 $ 15.90							.650	3/8	5/32	1/64	SVUBR/L	E79
VBMT 331-F2P	160404				146-171 $ 22.90										.650	3/8	3/16	1/64		
VBMT 332-F2P	160408		146-176 $ 22.90					145-622 $ 21.00			145-623 $ 21.00				.650	3/8	3/16	1/32		

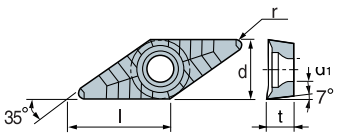
VCGT-AM (AM Chip breaker is for Aluminum)



- Exclusive chip breaker for aluminum and aluminum alloy.

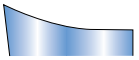
- USE
  Aluminum Cutting
- Recommendation

AP d = 0.020~0.157inch
f = 0.002~0.020ipr

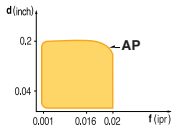


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 221-AM	110304												145-670 $ 20.90	.354	1/4	1/8	1/64	*Turning*	
VCGT 222-AM	110308												145-671 $ 20.90	.354	1/4	1/8	1/32	SVJCR/L	E65
VCGT 330.5-AM	160402												145-672 $ 22.50	.650	3/8	3/16	.008		
VCGT 331-AM	160404												146-177 $ 22.50	.650	3/8	3/16	1/64		
VCGT 332-AM	160408												146-180 $ 22.50	.650	3/8	3/16	1/32		
VCGT 333-AM	160412												146-181 $ 22.50	.650	3/8	3/16	3/64		

VCGT-AP (AP Chip breaker is for Aluminum)

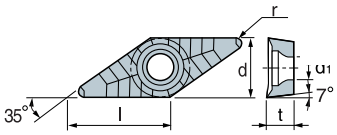



- Exclusive chip breaker for aluminum and aluminum alloy.



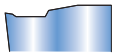
- USE
  Aluminum Cutting
- Recommendation

AP d = 0.005~0.2inch
f = 0.001~0.02ipr

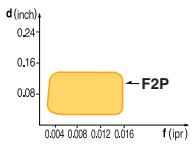


		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 330.5-AP	160402													.650	3/8	3/16	.008	*Turning*	
VCGT 331-AP	160404											147-149 $ 28.10	146-850 $ 22.50	.650	3/8	3/16	1/64	SVJCR/L	E65
VCGT 332-AP	160408												146-545 $ 22.50	.650	3/8	3/16	1/32		
VCGT 333-AP	160412												146-852 $ 22.50	.650	3/8	3/16	3/64		

VCMT-F2P

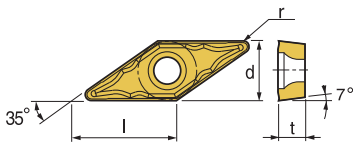



- Excellent chip control at wide range of cutting conditions.
- Suitable for stainless steel cutting.



- USE
  Medium
- Recommendation

F2P d = 0.02~0.14inch
f = 0.002~0.016ipr



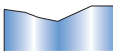
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
VCMT 331-F2P	160404										148-461 $ 21.10				.650	3/8	3/16	1/64	*Turning*	
VCMT 332-F2P	160408			148-788 $ 21.10							148-462 $ 21.10				.650	3/8	3/16	1/32	SVJCR/L	E65

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

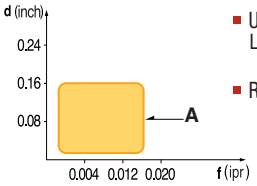
VNMG 35º Negative Turning Inserts

VNMG-A



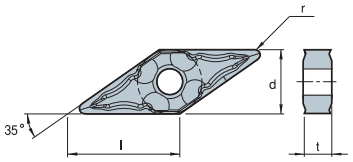


- Sharp cutting edge generate low cutting force.
- Specially designed tough main cutting edge.
- Suitable for cutting of low carbon steel, stainless steel, aluminum.



- USE
  Light & Medium
- Recommendation

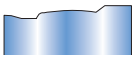
A d = 0.03~0.16inch
f = 0.002~0.016ipr



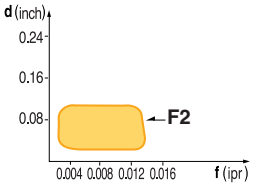
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
VNMG 331-A	160404										**148-385 $ 17.60**			**145-546 $ 14.10**	.654	3/8	3/16	1/64	*Turning*	
																			DVJNR/L	E54
VNMG 332-A	160408										**148-386 $ 17.60**			**145-547 $ 14.10**	.654	3/8	3/16	1/32	MVJNR/L	E61

VNMG-F2



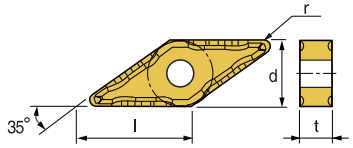


- Excellent chip control at varied depth of cutting.
- Strong cutting edge toughness due to special design.



- USE
  Finishing
- Recommendation

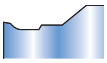
F2 d = 0.012~0.1inch
f = 0.002~0.014ipr



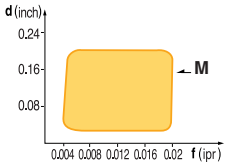
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
VNMG 330.5-F2	160402		**147-659 $ 17.60**										**147-660 $ 14.10**		.654	3/8	3/16	.008	*Turning*	
																			DVJNR/L	E54
VNMG 331-F2	160404		**148-166 $ 17.60**	**146-674 $ 17.60**						**147-477 $ 17.60**			**147-661 $ 14.10**		.654	3/8	3/16	1/64	MVJNR/L	E61
VNMG 332-F2	160408		**147-251 $ 17.60**	**146-585 $ 17.60**									**147-662 $ 14.10**		.654	3/8	3/16	1/32		

VNMG-M/M1



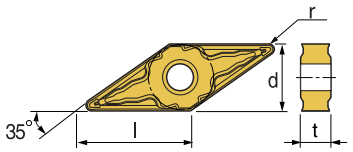


- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation

M d = 0.04~0.2inch
f = 0.004~0.02ipr



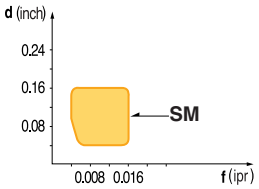
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
VNMG 331-M	160404			**148-772 $ 17.60**			**148-778 $ 17.60**								.653	3/8	3/16	1/64	*Turning*	
																			DVJNR/L	E54
VNMG 332-M	160408			**146-587 $ 17.60**			**147-667 $ 17.60**			**147-668 $ 17.60**					.653	3/8	3/16	1/32	MVJNR/L	E61
																			Boring	
VNMG 332-M1	160408			**145-657 $ 17.60**											.653	3/8	3/16	1/32	MVUNR/L	E72
VNMG 333-M	160412	**148-910 $ 17.60**		**146-698 $ 17.60**	**148-866 $ 17.60**										.653	3/8	3/16	3/64		
VNMG 333-M1	160412		**145-658 $ 17.60**	**149-046 $ 17.60**											.653	3/8	3/16	3/64		
VNMG 431-M	220404														.870	1/2	3/16	1/64		
VNMG 432-M	220408			**146-667 $ 15.30**											.870	1/2	3/16	1/32		

VNMG-SM



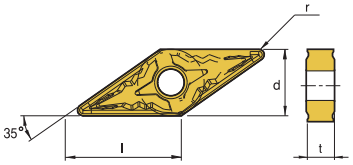


- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance have been reinforced through high rake angle of chip breaker land.



- USE
  Stainless Steel
- Recommendation

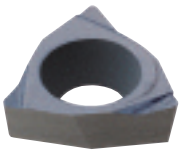
SM d = 0.04~0.16inch
f = 0.004~0.016ipr

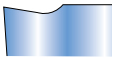


Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	PTM30U	l	d	t	r	Holder	Page No.
VNMG 332-SM	160408										**148-390 $ 17.60**				.654	3/8	3/16	1/32	*Turning*	
																			DVJNR/L	E54
																			MVJNR/L	E61

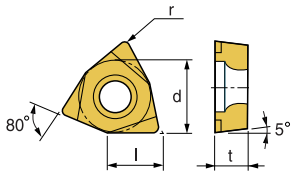
W_ _ T 80º Positive Turning Inserts

WBGT





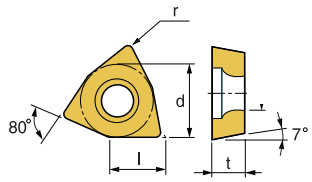
- Wide chip control area from light cutting to medium cutting.



		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.
WBGT 1.210.5L	020102											147-220 $ 41.20			.142	5/32	1/16	.008		
WBGT 1.51.50.5L	S30202											147-696 $ 41.20			.189	3/16	3/32	.008		

WCMT-C20/C21

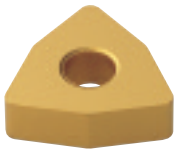


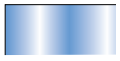


		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM25C	PM35P	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WCMT 1.81.51-C21	030204					146-241 $ 16.40								146-536 $ 15.50	.149	7/32	3/32	1/64	*Boring*	
WCMT 1.81.52-C20	030208					146-242 $ 16.40								146-537 $ 15.50	.149	7/32	3/32	1/32	SWLCR/L	E79
WCMT 21.52-C20	040208					146-237 $ 16.40								147-155 $ 15.50	.169	1/4	3/32	1/32		
WCMT 2.522-C20	050308					146-236 $ 17.60	148-431 $ 17.60								.212	5/16	1/8	1/32		
WCMT 32.52-C20	06T308			149-034 $ 17.60		146-235 $ 17.60	148-432 $ 17.60							146-539 $ 39.70	.256	3/8	5/32	1/32		
WCMT 432-C20	080408					146-855 $ 21.50									.342	1/2	3/16	1/32		
WCMT 433-C20	080412					146-000 $ 21.50								146-563 $ 20.40	.342	1/2	3/16	3/64		

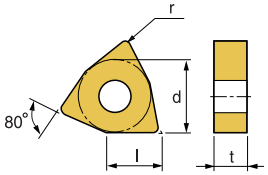
WNMA 80º Negative Turning Inserts

WNMA





- 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	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMA 332	160408								147-428 $ 11.70	147-474 $ 11.70					.256	3/8	3/16	1/32	*Turning*	
WNMA 333	160412									147-469 $ 11.70					.256	3/8	3/16	3/64	DWLNR/L	E54
WNMA 432	220404								147-429 $ 14.50	147-672 $ 14.50					.343	1/2	3/16	1/32	MWLNR/L	E61
WNMA 433	220408									147-673 $ 14.50					.343	1/2	3/16	3/64	*Boring*	
																			MWLNR/L	E73

Quick Choice Grade Selection

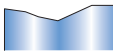
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

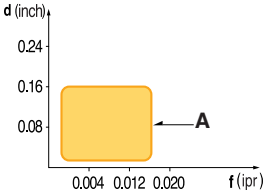
WNMG 80° Negative Turning Inserts

WNMG-A

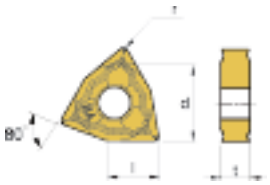




- Sharp cutting edge generate low cutting force.
- Specially designed tough main cutting edge.
- Suitable for cutting of low carbon steel, stainless steel, aluminum.



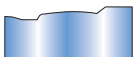
- USE
  Light & Medium
- Recommendation
  A d = 0.032~0.16inch
  f = 0.004~0.016ipr



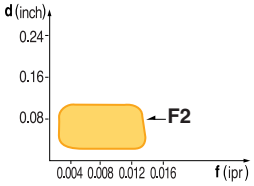
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 431-A	080404		148-167 $ 14.50	146-675 $ 14.50			147-688 $ 14.50	147-689 $ 14.50			148-422 $ 14.50			147-690 $ 12.60	.343	1/2	3/16	1/64	*Turning*	
																			DWLNR/L	E54
WNMG 432-A	080408					147-415 $ 14.50	147-691 $ 14.50	147-692 $ 14.50			148-423 $ 14.50			147-693 $ 12.60	.343	1/2	3/16	1/32	MWLNR/L	E61
																			Boring	
																			MWLNR/L	E73

WNMG-F2/F3

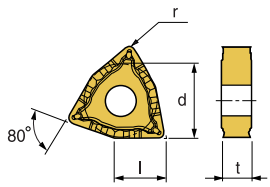




- Excellent chip control at varied depth of cutting.
- Strong cutting edge toughness due to special design.



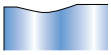
- USE
  Finishing
- Recommendation
  F2 d = 0.01~0.1inch
  f = 0.002~0.014ipr
  F3 d = 0.03~0.2inch
  f = 0.003~0.016ipr



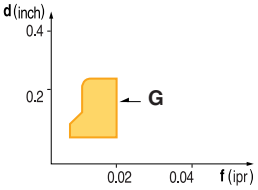
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 332-F2	060408	148-823 $ 11.70		146-605 $ 17.60									147-952 $ 12.60		.256	3/8	3/16	1/32	*Turning*	
																			DWLNR/L	E54
WNMG 431-F2	080404	145-655 $ 12.10													.343	1/2	3/16	1/64	MWLNR/L	E61
																			Boring	
WNMG 432-F2	080408	148-971 $ 14.50	147-687 $ 14.50												.343	1/2	3/16	1/32	MWLNR/L	E73
WNMG 432-F3	080408	148-973 $ 14.50													.343	1/2	3/16	1/32		

WNMG-G

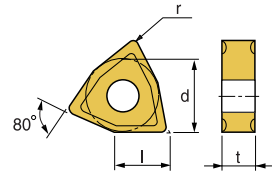




- Suitable for general cutting condition cutting.



- USE
  General Cutting
- Recommendation
  G d = 0.16~0.4inch
  f = 0.02~0.04ipr



Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG4 32-G	080408		146-860 $ 14.50		146-861 $ 14.50										.343	1/2	3/16	1/32	*Turning*	
																			DWLNR/L	E54
																			MWLNR/L	E61
																			Boring	
																			MWLNR/L	E73

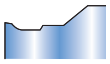
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

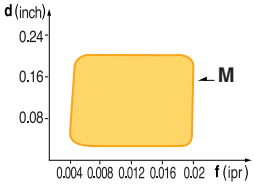
WNMG 80° Negative Turning Inserts

WNMG-M/M1



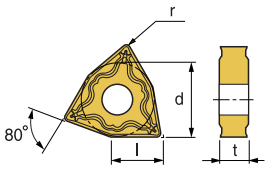


- Wide available chip control range from medium-finishing to medium-roughing.
- Suitable chip breaker for CNC machining



- USE
  Medium
- Recommendation

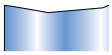
M d = 0.04~0.2inch
f = 0.004~0.02ipr



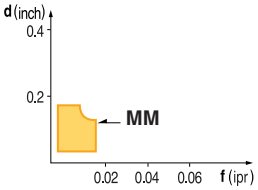
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PTM50C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 331-M	060404	147-254 $ 11.70	148-321 $ 11.70												.256	3/8	3/16	1/64	*Turning*	
WNMG 332-M	060408	146-049 $ 11.70	147-253 $ 11.70												.256	3/8	3/16	1/32	DWLNR/L	E54
WNMG 333-M	060412		147-252 $ 11.70	146-654 $ 11.70											.256	3/8	3/16	3/64	MWLNR/L	E61
WNMG 431-M	080404		146-050 $ 14.50	146-607 $ 14.50											.343	1/2	3/16	1/64	*Boring*	
WNMG 432-M	080408	146-864 $ 14.50	147-694 $ 14.50	148-773 $ 14.50	147-695 $ 14.50										.343	1/2	3/16	1/32	MWLNR/L	E73
WNMG 433-M	080412	148-972 $ 14.50													.343	1/2	3/16	3/64		
WNMG 332-M1	060408		148-954 $ 11.70												.256	3/8	3/16	1/32		
WNMG 432-M1	080408	148-970 $ 14.50				145-639 $ 14.50		145-660 $ 14.50							.343	1/2	3/16	1/32		

WNMG-MM



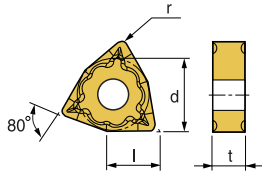


- Excellent choice for a variety of steels including Stainless Steel



- USE
  Steels / Stainless Steels
- Recommendation

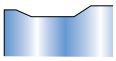
MM d = 0.04~0.16inch
f = 0.004~0.016ipr



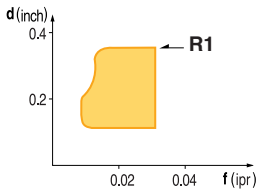
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-MM	080408			145-868 $ 14.50			146-769 $ 14.50	146-188 $ 14.50							.343	1/2	3/16	1/32	*Turning*	
WNMG 433-MM	080412						146-770 $ 14.50								.343	1/2	3/16	3/64	DWLNR/L	E54
																			MWLNR/L	E61
																			Boring	
																			MWLNR/L	E73

WNMG-R1



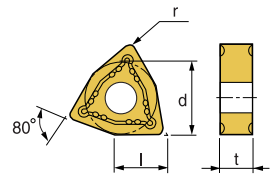


- Excellent chip control at deep depth of cut and fast feed rate.
- Strong cutting edge makes excellent cutting performance at intermittent cutting.



- USE
  Roughing
- Recommendation

R1 d = 0.1~0.28inch
f = 0.010~0.026ipr



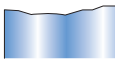
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PT40C	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-R1	080408	146-863 $ 14.50	148-169 $ 14.50	148-781 $ 14.50	146-857 $ 14.50	146-194 $ 14.50				146-195 $ 14.50					.343	1/2	3/16	1/32	*Turning*	
WNMG 433-R1	080412		146-045 $ 14.50	145-559 $ 23.40	146-862 $ 14.50	146-199 $ 14.50									.343	1/2	3/16	3/64	DWLNR/L	E54
																			MWLNR/L	E61
																			Boring	
																			MWLNR/L	E73

** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.*

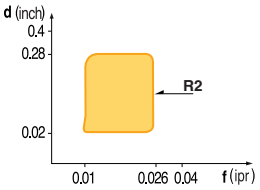
WNMG 80º Negative Turning Inserts

WNMG-R2



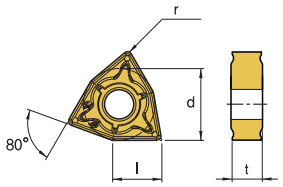


- Suitable for heavy duty cutting due to strong cutting edge.
- Wide chip control range with low cutting force



- USE
  Roughing
- Recommendation

R2 d = 0.12~0.44inch
f = 0.012~0.052ipr



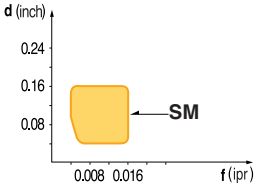
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 332-R2	060408									147-885 $ 11.70					.256	3/8	3/16	1/32	*Turning*	
WNMG 432-R2	080408	147-680 $ 14.50	147-681 $ 14.50		148-170 $ 14.50					148-919 $ 14.50					.343	1/2	3/16	1/32	DWLNR/L MWLNR/L *Boring*	E54 E61
WNMG 433-R2	080412		147-683 $ 14.50		147-684 $ 14.50					147-685 $ 14.50					.343	1/2	3/16	3/64	MWLNR/L	E73

WNMG-SM



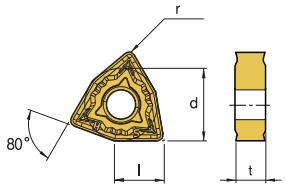


- Exclusive design for stainless steel cutting provide longer tool life
- Wear resistance have been reinforced through high rake angle of chip breaker land.



- USE
  Stainless Steel
- Recommendation

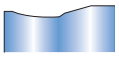
SM d = 0.04~0.16inch
f = 0.004~0.016ipr



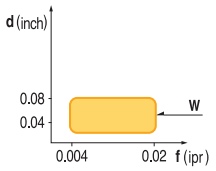
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KT10U	l	d	t	r	Holder	Page No.
WNMG 331-SM	060404							146-201 $ 11.70							.256	3/8	3/16	1/64	*Turning*	
WNMG 332-SM	060408						147-674 $ 11.70	146-202 $ 11.70							.256	3/8	3/16	1/32	DWLNR/L MWLNR/L *Boring*	E54 E61
WNMG 431-SM	080404						147-675 $ 14.50	146-204 $ 14.50			148-424 $ 14.50				.343	1/2	3/16	1/64	MWLNR/L	E73
WNMG 432-SM	080408						147-676 $ 14.50	147-677 $ 14.50			148-425 $ 14.50				.343	1/2	3/16	1/32		
WNMG 433-SM	080412							147-678 $ 14.50							.343	1/2	3/16	3/64		

WNMG-W/WF/WM (Wiper Insert)



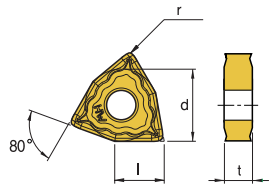


- High speed, high feed cutting is available due to the special chip pocket design.
- Specially designed cutting edge consist of recess cutting edge and wiper cutting edge guarantee superior surface finish.



- USE
  Wiper (Finishing)
- Recommendation

W d = 0.012~0.08inch
f = 0.004~0.02ipr



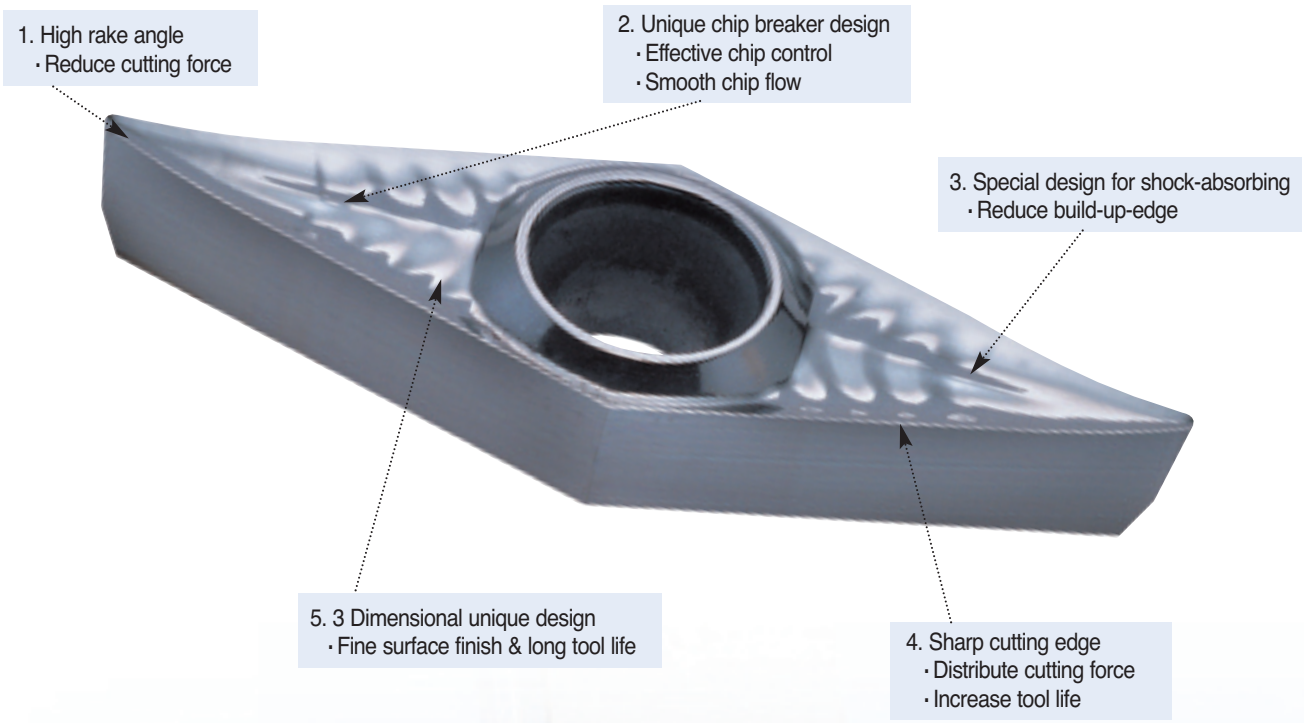
		Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
WNMG 432-W	080408		147-397 $ 14.50												.343	1/2	3/16	1/32	*Turning*	
WNMG 432-WF	080408		148-968 $ 16.70	146-730 $ 14.50											.343	1/2	3/16	1/32	DWLNR/L MWLNR/L *Boring*	E54 E61
WNMG 432-WM	080408		148-966 $ 16.70	146-723 $ 14.50											.343	1/2	3/16	1/32	MWLNR/L	E73

**** The grade PT20C is being discontinued. Available only while quantities last. PT22C has replaced PT20C.***

Quick Choice Grade Selection

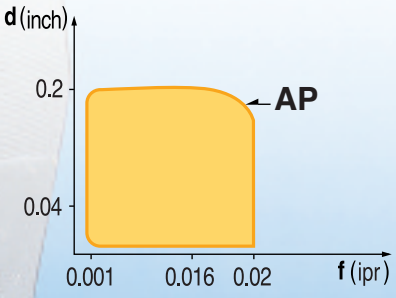
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

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 provide smooth chip flow and chip breaking at the same time, thus cutting force become slower and longer tool life can be acquired.
2) High rake angle of main cutting edge to reduce cutting force and pro- long tool life.
3) "AP" type chip breaker equipped with mirror face on top face through special buffing process. This mirror face prevent sticking of work piece material on cutting edge and provide smooth chip flow.

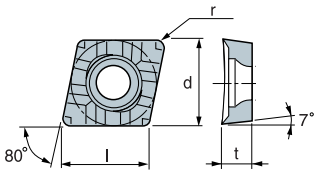
Turning Inserts for Aluminum

CCGT-AM (AM Chip breaker is for Aluminum)



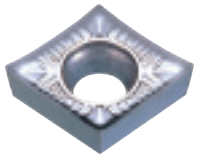
- High stability of cutting edge secures great performance in high speed and interrupted cutting
- High speed of medium and interrupted operation

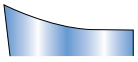
- USE
  Aluminum Cutting
- Recommendation
  d = 0.020~0.157inch
  f = 0.002~0.020ipr



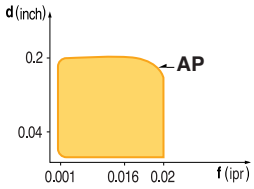
Designation	ISO	Coated Carbide										Cermet		Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	PT10S	PT20S	KTM10U	l	d	t	r	Holder	Page No.
CCGT 21.50.5-AM	060202													145-661 $ 18.50	.256	1/4	3/32	.008	*Turning*	
CCGT 32.50.5-AM	09T302													145-662 $ 18.80	.382	3/8	5/32	.008	SCACR/L	E58
CCGT 32.51-AM	09T304													145-683 $ 18.80	.382	3/8	5/32	1/64	SCLCR/L	E59
CCGT 430.5-AM	120402													145-684 $ 21.90	.508	1/2	3/16	.008	*Boring*	
CCGT 431-AM	120404													145-685 $ 21.90	.508	1/2	3/16	1/64	SCLCR/L	E71
CCGT 432-AM	120408													145-686 $ 21.90	.508	1/2	3/16	1/32		

CCGT-AP (AP Chipbreaker is for Aluminum)

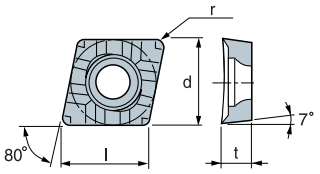




- Exclusive chip breaker for aluminum and aluminum alloy.



- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



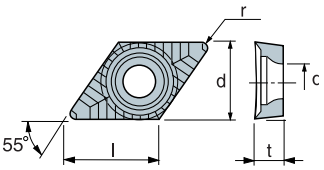
Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
CCGT 21.51-AP	060204												146-024 $ 16.10	.256	1/4	3/32	1/64	*Turning*	
CCGT 32.50.5-AP	09T302												146-027 $ 18.80	.382	3/8	5/32	.008	SCACR/L	E58
CCGT 32.51-AP	09T304											146-701 $ 74.80	146-011 $ 18.80	.382	3/8	5/32	1/64	SCLCR/L	E59
CCGT 32.52-AP	09T308												146-012 $ 18.80	.382	3/8	5/32	1/32	*Boring*	
CCGT 431-AP	120404												146-627 $ 21.90	.508	1/2	3/16	1/64	SCLCR/L	E71
CCGT 432-AP	120408												146-023 $ 21.90	.508	1/2	3/16	1/32		

DCGT-AM (AM Chip breaker is for Aluminum)



- Exclusive chip breaker for aluminum and aluminum alloy.

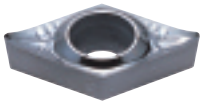
- USE
  Aluminum Cutting
- Recommendation
  AP d = 0.020~0.157inch
  f = 0.002~0.020ipr

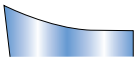


Designation	ISO	Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
DCGT 21.50.5-AM	070202												146-048 $ 16.10	.307	1/4	3/32	.008	*Turning*	
DCGT 21.52-AM	070208												146-052 $ 16.10	.307	1/4	3/32	1/32	SDJCR/L	E59
DCGT 32.50.5-AP	11T302												145-664 $ 18.80	.457	3/8	5/32	.008	SDNCN	E60
DCGT 32.52-AP	11T308												146-063 $ 18.80	.457	3/8	5/32	1/32	*Boring*	
																		SDQCR/L	E72
																		SDUCR/L	E72
																		SDZCR/L	E73

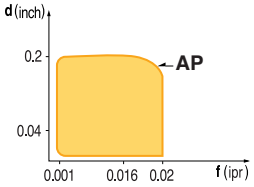
Turning Inserts for Aluminum

DCGT-AP (AP Chipbreaker is for Aluminum)



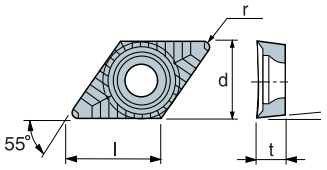


· Exclusive chip breaker for aluminum and aluminum alloy.



- USE
  Aluminum Cutting
- Recommendation

AP d = 0.005~0.2inch
f = 0.001~0.02ipr



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.
DCGT 21.50.5-AP	070202												146-988 $ 16.10	.307	1/4	3/32	.008	*Turning*	
DCGT 21.51-AP	070204												146-989 $ 16.10	.307	1/4	3/32	1/64	SDJCR/L	E59
DCGT 32.50.5-AP	11T302												146-990 $ 18.80	.457	3/8	5/32	.008	SDNCN	E60
DCGT 32.51-AP	11T304											146-703 $ 74.80	146-991 $ 18.80	.457	3/8	5/32	1/64	*Boring*	
DCGT 32.52-AP	11T308											146-704 $ 74.80	146-992 $ 18.80	.457	3/8	5/32	1/32	SDQCR/L	E72
DCGT 32.53-AP	120404												147-764 $ 18.80	.457	3/8	5/32	3/64	SDUCR/L	E72
																		SDZCR/L	E73

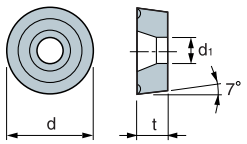
RCGT-AM ("AM" Chip breaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy.

- USE
  Aluminum Cutting
- Recommendation

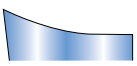
AP d = 0.020~0.157inch
f = 0.002~0.020ipr



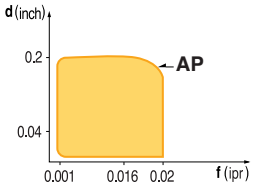
Designation	ISO	Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0803M0-AM													146-078 $ 17.70			.315	1/8	.008	*Turning*	
RCGT 1003M0-AP													146-081 $ 24.50			.394	1/8	9/64	PRDCN	E58
RCGT 10T3M0-AM													145-665 $ 22.40			.394	5/32	1/64		
RCGT 1204M0-AM													145-666 $ 26.30			.472	3/16	1/32		

RCGT-AP ("AP" Chipbreaker is for Aluminum)



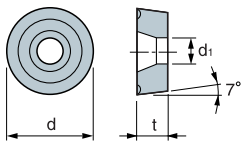


· Exclusive chip breaker for aluminum and aluminum alloy.



- USE
  Aluminum Cutting
- Recommendation

AP d = 0.005~0.2inch
f = 0.001~0.02ipr



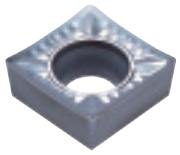
Designation	ISO	Coated Carbide									Cermet		Uncoated Carbide		(inch)				Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT10S	PT20S	KT10U	PM20U	l	d	t	d1	Holder	Page No.
RCGT 0602M0-AP																.236	3/32	1/64	*Turning*	
RCGT 0803M0-AP													146-315 $ 17.70			.315	1/8	.008	PRDCN	E58
RCGT 10T3M0-AP													147-377 $ 22.40			.394	5/32	1/64		
RCGT 1204M0-AP													148-421 $ 26.30			.472	3/16	1/32		

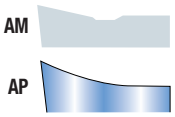
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

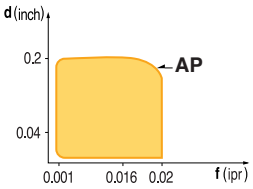
Turning Inserts for Aluminum

SCGT-AM/AP (AM & AP Chip breakers are for Aluminum)

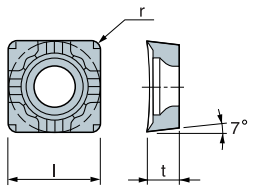




・Exclusive chip breakers for aluminum and aluminum alloy.

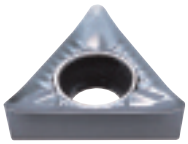


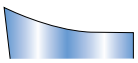
- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr
  AP d = 0.005~0.2inch
  f = 0.001~0.02ipr



		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												146-094 $ 19.70	3/8	5/32	1/64	*Turning*	
SCGT 431-AM	120404												146-101 $ 21.90	1/2	3/16	1/64	SSBCR/L	E60
SCGT 432-AM	120408												145-668 $ 21.90	1/2	3/16	1/32	SSSCR/L	E60
SCGT 32.51-AP(K)	09T304												146-993 $ 19.70	3/8	5/32	1/64	*Boring*	
SCGT 32.52-AP	09T308												146-994 $ 19.70	3/8	5/32	1/32	SSKCR/L	E73
SCGT 431-AP	120404												146-996 $ 21.90	1/2	3/16	1/64		
SCGT 432-AP	120408												146-995 $ 21.90	1/2	3/16	1/32		

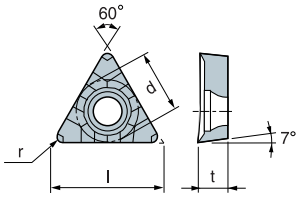
TCGT-AM (AM Chip breaker is for Aluminum)





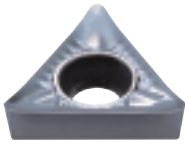
・Exclusive chip breaker for aluminum and aluminum alloy.

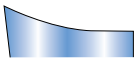
- USE
  Aluminum Cutting
- Recommendation
  AM d = 0.020~0.157inch
  f = 0.002~0.020ipr



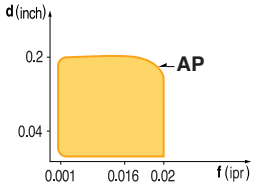
		Coated Carbide										Diamond Coated	Uncoated Carbide	(inch)				Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P	ND100	KT10U	l	d	t	r	Holder	Page No.
TCGT 21.51-AM	110204												146-120 $ 16.30	.433	1/4	3/32	1/64	*Turning*	
TCGT 21.52-AM	110208												146-121 $ 16.30	.433	1/4	3/32	1/32	STFCR/L	E61
TCGT 32.50.5	16T302												146-123 $ 20.80	.650	3/8	5/32	1/64	STGCR/L	E61
TCGT 32.51-AM	16T304												146-135 $ 20.80	.650	3/8	5/32	1/64	*Boring*	
TCGT 32.52-AM	16T308												146-137 $ 20.80	.650	3/8	5/32	1/32	STFCR/L	E74
																		Chamfer	
																		CT45°	E136

TCGT-AP (AP Chipbreaker is for Aluminum)

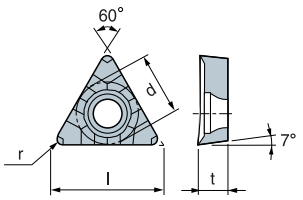




・Exclusive chip breaker for aluminum and aluminum alloy.



- 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												146-504 $ 16.30	.433	1/4	3/32	.008	*Turning*	
TCGT 21.51-AP	110204												146-505 $ 16.30	.433	1/4	3/32	1/64	STFCR/L	E61
TCGT 21.52-AP	110208												146-506 $ 16.30	.433	1/4	3/32	1/32	STGCR/L	E61
TCGT 32.51-AP(K)	16T304											146-705 $ 82.30	146-507 $ 20.80	.650	3/8	5/32	1/64	*Boring*	
TCGT 32.52-AP(K)	16T308											146-706 $ 82.30	146-508 $ 20.80	.650	3/8	5/32	1/32	STFCR/L	E74

Turning Inserts for Aluminum

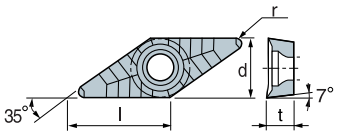
VCGT-AM (AM Chip breaker is for Aluminum)



· Exclusive chip breaker for aluminum and aluminum alloy.

- USE
  Aluminum Cutting
- Recommendation

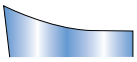
AP d = 0.020~0.157inch
f = 0.002~0.020ipr



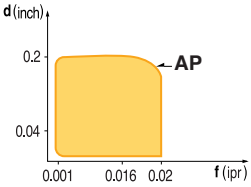
		Coated Carbide											Diamond Coated	Uncoated Carbide				(inch)	Applicable Holders	
Designation	ISO	PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	ST10P		ND100	KT10U	l	d	t	r	Holder	Page No.
VCGT 222-AM	110308													145-671 $ 20.90	.354	1/4	1/8	1/32	*Turning* SVJCR/L	E61
VCGT 330.5-AM	160402													145-672 $ 22.50	.650	3/8	3/16	.008		
VCGT 331-AM	160404													146-177 $ 22.50	.650	3/8	3/16	1/64		
VCGT 332-AM	160408													146-180 $ 22.50	.650	3/8	3/16	1/32		
VCGT 333-AM	160412													146-181 $ 22.50	.650	3/8	3/16	3/64		

VCGT-AP (AP Chipbreaker is for Aluminum)



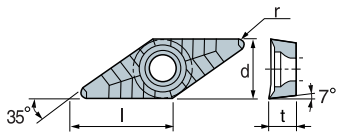


· Exclusive chip breaker for aluminum and aluminum alloy.



- 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 330.5-AP	160402														.650	3/8	3/16	.008	*Turning* SVJCR/L	E61
VCGT 331-AP	160404												147-149 $ 28.10	146-850 $ 22.50	.650	3/8	3/16	1/64		
VCGT 332-AP	160408													146-545 $ 22.50	.650	3/8	3/16	1/32		
VCGT 333-AP	160412													146-852 $ 22.50	.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 of additional grinding process, thus cost savings can be acquired.

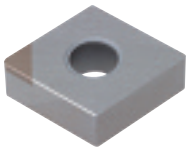
· Suitable for sintered alloy, hard material, heat treated alloy · Excellent surface finish at the cutting of hardened steel.
· Excellent for cast iron cutting

Recommended Cutting Condition

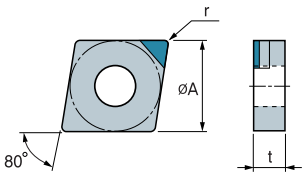
*For additional technical information see page **E195**

Work piece	Speed (sfm)	Feed Turning(ipr) Milling(ipt)	Depth (inch)	1st Recommended Grade
Gray Cast Iron (180~230HB)	1325 ~ 3275 1325 ~ 3275	0.004 ~ 0.02 0.004 ~ 0.02	0.005 ~ 0.04 0.005 ~ 0.04	KB350 KB360
Heat Treated Steel (over HRC45)	325 ~ 450	0.001 ~ 0.012	0.005 ~ 0.04	KB320 KB330
High Temp Alloy (over HRC45)	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

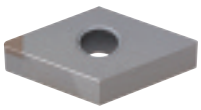
CNMA



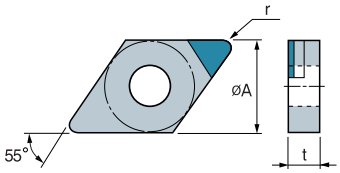
		C.B.N.						(inch)	Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r		Holder	Page No.
CNMA 432	120408	**146-131** **$ 115.20**	**147-886** **$ 115.20**	**147-965** **$ 115.20**	1/2	3/16	1/32		***Turning***	
									DCLNR/L	E52
									MCKNR/L	E55
									MCLNR/L	E55
									Boring	
									MCLNR/L	E70
									PCLNR/L	E73



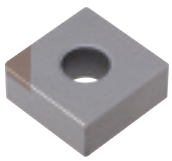
DNMA



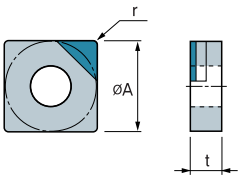
		C.B.N.						(inch)	Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r		Holder	Page No.
DNMA 432	120408	**146-132** **$ 115.20**			1/2	3/16	1/32		***Turning***	
									DDJNR/L	E52
									MDJNR/L	E56
									Boring	
									PDSNR/L	E74
									PDUNR/L	E74



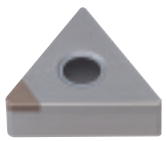
SNMA



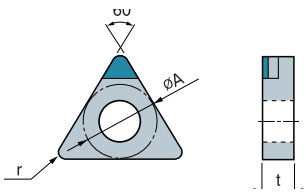
		C.B.N.						(inch)	Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r		Holder	Page No.
SNMA 432	120408	**146-133** **$ 115.20**			1/2	3/16	1/32		***Turning***	
									DDJNR/L	E52
SNMA 433	120412	**146-134** **$ 115.20**			1/2	3/16	3/64		MSDNN	E57
									MSKNR/L	E57
									MSRNR/L	E58
									Boring	
									PSKNR/L	E75



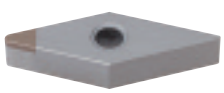
TNMA



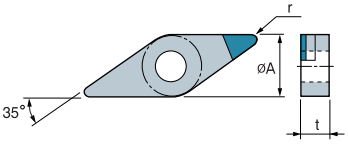
		C.B.N.						(inch)	Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r		Holder	Page No.
TNMA 332	160408	**146-139** **$ 111.50**			3/8	3/16	1/32		***Turning***	
									DTJNR/L	E53
TNMA 432	220408	**146-141** **$ 115.20**			1/2	3/16	1/32		MTFNR/L	E59
									MTENN	E59
									MTJNR/L	E60
									Boring	
									PTFNR/L	E75



VNMA



		C.B.N.						(inch)	Applicable Holders	
Designation	ISO	KB320	KB350	KB360	A	t	r	Hole	Holder	Page No.
VNMA 331	160402			**147-968** **$ 122.80**	3/8	3/16	1/64		***Turning***	
									DVJNR/L	E54
									MVJNR/L	E61



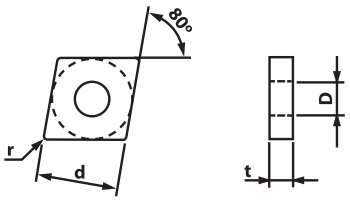
CERAMIC Inserts

CNGA

*For additional technical information see page **E197**



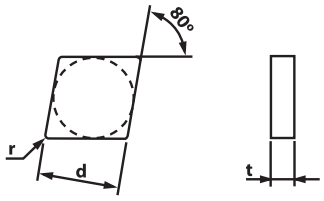
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
CNGA 431	120404	**149-416 $ 15.40**	**149-418 $ 16.00**		.500	.187	.016	*Turning*	
CNGA 432	120408	**149-420 $ 15.40**	**149-422 $ 16.00**		.500	.187	.031	DCLNR/L	E52
CNGA 433	120412	**149-424 $ 15.40**	**149-426 $ 16.00**		.500	.187	.047	MCKNR/L	E51
CNGA 434	120416	**149-428 $ 15.40**	**149-430 $ 14.30**		.500	.187	.063	MCLNR/L	E51
CNGA 452	120708	**149-432 $ 18.50**	**149-434 $ 19.50**		.500	.313	.031	MCRNR/L	E52
CNGA 453	120712	**149-436 $ 18.50**	**149-438 $ 19.50**		.500	.313	.047	*Boring*	
								MCLNR/L	E70
								PCLNR/L	E69



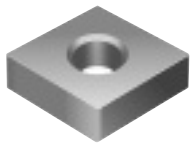
CNGN



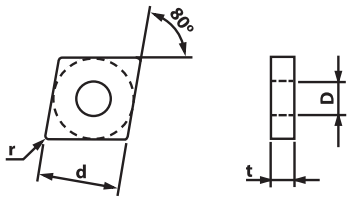
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
CNGN 431	150404	**149-400 $ 15.40**	**149-402 $ 16.00**		.500	.187	.016	*Turning*	
CNGN 432	150408	**149-404 $ 15.40**	**149-406 $ 16.00**		.500	.187	.031		
CNGN 433	150412	**149-408 $ 15.40**	**149-410 $ 16.00**		.500	.187	.047		
CNGN 434	150416	**149-412 $ 15.40**	**149-414 $ 16.00**		.500	.187	.063		



CNMA



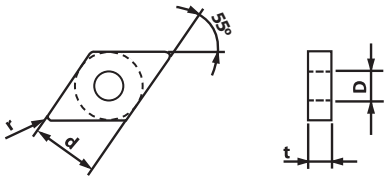
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
CNMA 432	150404			**149-558 $ 25.60**	.500	.187	.031	*Turning*	
CNMA 433	150412			**149-592 $ 28.00**				DCLNR/L	E52
CNMA 434	150416			**149-562 $ 25.60**	.500	.187	.063	MCKNR/L	E55
CNMA 544	160416			**149-564 $ 37.20**	.625	.250	.063	MCLNR/L	E55
								MCRNR/L	E56
								Boring	
								MCLNR/L	E67
								PCLNR/L	E73



DNGA



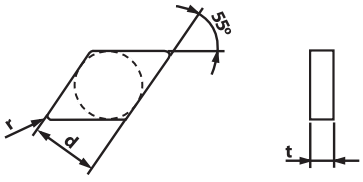
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
DNGA 431	150404	**149-448 $ 21.70**	**149-450 $ 22.70**		.500	.187	.016	*Turning*	
DNGA 432	150408	**149-452 $ 21.70**	**149-454 $ 22.70**		.500	.187	.031	DDJNR/L	E52
DNGA 441	150604	**149-456 $ 22.90**	**149-458 $ 24.10**		.500	.250	.016	MDJNR/L	E56
DNGA 442	150608	**149-460 $ 22.90**	**149-462 $ 24.10**		.500	.250	.031	*Boring*	
DNGA 443	150612	**149-464 $ 22.90**	**149-466 $ 24.10**		.500	.250	.047	PDSNR/L	E74
								PDUNR/L	E74



DNGN



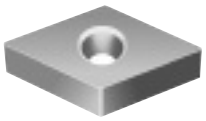
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
DNGN 432	150408	**149-440 $ 21.70**			.500	.187	.031		
DNGN 433	150412	**149-442 $ 21.70**			.500	.187	.047		
DNGN 442	150608	**149-444 $ 22.90**			.500	.250	.031		
DNGN 443	150612	**149-446 $ 22.90**			.500	.250	.047		



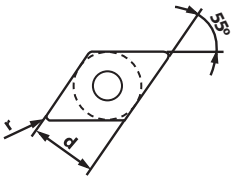
CERAMIC Inserts

DNMA

*For additional technical information see page **E197**



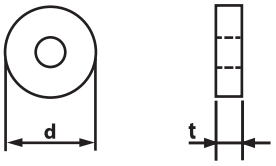
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
DNMA 443	150612			**149-576 $ 40.10**	.500	.250	.047	*Turning*	
								MDJNR/L	E52
								Boring	
								PDSNR/L	E74
								PDUNR/L	E74



RNGA



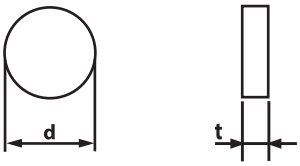
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	Applicable Holders: Holder	Page No.
RNGA 43	120400	**149-480 $ 17.50**	**149-482 $ 18.40**		.500	.187		



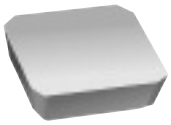
RNG



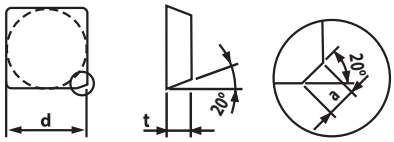
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	Applicable Holders: Holder	Page No.
RNG 32	090300	**149-470 $ 13.30**			.375	.125	*Turning*	
							CRGNR/L	E50
RNG 33	090400	**149-472 $ 14.10**	**149-474 $ 14.70**		.375	.187		
RNG 43	120400	**149-476 $ 17.50**	**149-478 $ 18.40**		.500	.187		



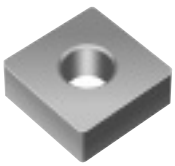
SEKN (For Milling)



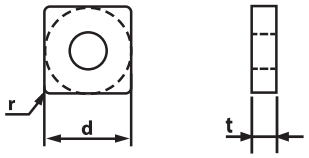
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S300	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
SEKN 42 AFTN	1203AFTN			**149-556 $ 34.60**	.500	.125	.079	*Milling*	
								FM 45	E125



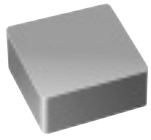
SNGA



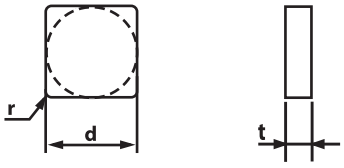
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
SNGA 432	120408	**149-586 $ 14.00**			.500	.187	.031	*Turning*	
								DDJNR/L	E52
SNGA 433	120412	**149-588 $ 14.00**	**149-590 $ 14.70**		.500	.187	.047	MSDNN	E57
								MSKNR/L	E57
								MSRNR/L	E58
								Boring	
								PSKNR/L	E75



SNGN



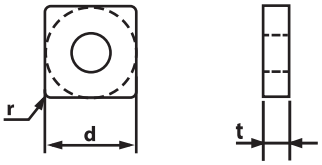
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
SNGN 432	120408	**149-580 $ 14.00**			.500	.187	.031	*Turning*	
								CSRNR/L	E50
SNGN 433	120412	**149-582 $ 14.00**	**149-584 $ 14.70**		.500	.187	.047		



SNMA



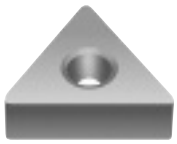
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
SNMA 433	120412			**149-560 $ 25.60**	.500	.187	.047	*Turning*	
								MSDNN	E57
SNMA 434	120416			**149-594 $ 25.60**	.500	.187	.063	MSKNR/L	E57
								MSRNR/L	E58
								Boring	
								PSKNR/L	E70



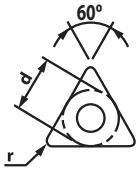
CERAMIC Inserts

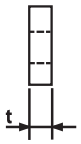
TNGA

*For additional technical information see page **E197**



Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
TNGA 222	110308	**149-403 $ 12.00**	**149-401 $ 12.70**		.250	.125	.031	*Turning*	
TNGA 331	160404	**149-520 $ 13.20**	**149-522 $ 13.90**		.375	.187	.016	DTJNR/L	E53
TNGA 332	160408	**149-524 $ 13.20**	**149-526 $ 13.90**		.375	.187	.031	MTCNN	E58
TNGA 333	160412	**149-528 $ 13.20**	**149-529 $ 13.90**		.375	.187	.047	MTENN	E59
TNGA 432	220408	**149-530 $ 20.00**			.500	.187	.031	MTFNR/L	E59
TNGA 433	220412	**149-532 $ 20.00**			.500	.187	.047	MTGNR/L	E60
TNGA 434	220416	**149-534 $ 20.00**			.500	.187	.063	MTJNR/L	E60
								Boring	
								MTFNR/L	E71
								MTUNR/L	E72
								PTFNR/L	E75

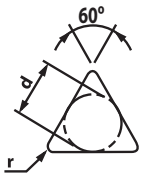




TNG



Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
TNG 321	160304	**149-500 $ 12.90**			.375	.125	.016	*Turning*	
TNG 332	160408	**149-502 $ 13.20**	**149-504 $ 13.90**		.375	.187	.031	CTGNR/L	E50
TNG 333	160412	**149-506 $ 13.20**			.375	.187	.047		
TNG 431	220404	**149-508 $ 20.00**			.500	.187	.016		
TNG 432	220408	**149-510 $ 20.00**			.500	.187	.031		
TNG 433	220412	**149-512 $ 20.00**			.500	.187	.047		

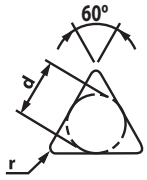


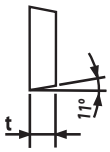


TPG

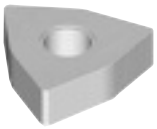


Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
TPG 221	110304	**149-536 $ 17.10**	**149-538 $ 18.00**		.250	.125	.016		
TPG 222	110408	**149-540 $ 17.10**	**149-542 $ 18.00**		.250	.125	.031		
TPG 321	160304	**149-544 $ 18.30**	**149-546 $ 19.00**		.375	.125	.016		
TPG 322	160308	**149-548 $ 18.30**	**149-550 $ 19.00**		.375	.125	.031		
TPG 323	160312	**149-552 $ 18.30**	**149-554 $ 19.00**		.375	.125	.047		

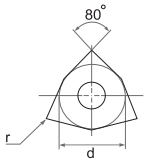




WNGA



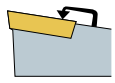
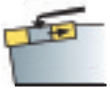
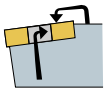
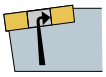
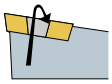
Designation	ISO	CERAMIC GP100	CERAMIC GP300	CERAMIC S400	(inch) d	(inch) t	(inch) r	Applicable Holders: Holder	Page No.
WNGA 432	080408		**149-628 $ 22.40**	**149-630 $ 34.70**	.500	.187	.031		
WNGA 433	080412		**149-632 $ 22.40**	**149-634 $ 34.70**	.500	.187	.047		





Turning Toolholder Code System

1 Method of Mounting of Insert

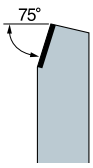
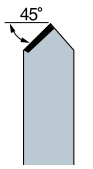
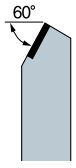
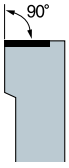
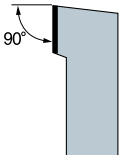
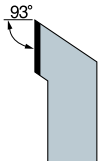
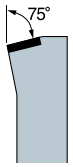
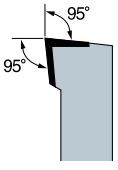
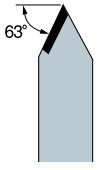
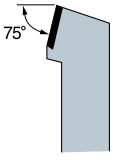
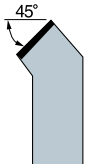
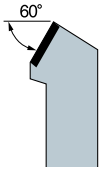
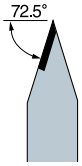
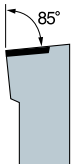
 Top clamping without hole	 Top clamping with hole (Double Clamp Lock)	 Top and Hole clamping (Multi clamp, Pin and Clamp)	 Hole Clamping (Pin Lock)
C	D	M	P
 Screw on			
S			

2 Insert Shape

			
C	D	E	K
			
L	R	S	T
			
V	W		

M S K N R
1 2 3 4 5

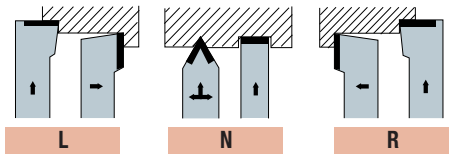
3 Holder Style

				
B	D	E	F	G
				
J	K	L	N	R
				
S	T	V	Y	

4 Clearance Angle of Insert

	
B	C
	
N	P

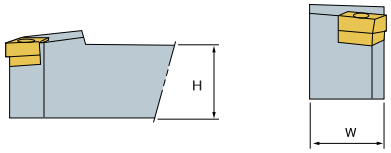
5 Hand of Tool



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



8 Insert Size IC

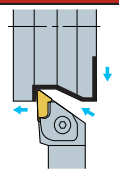
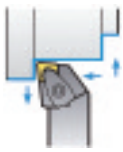
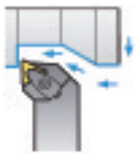
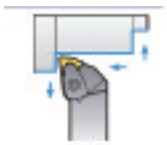
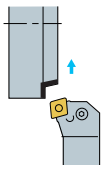
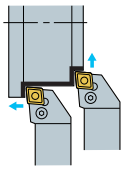
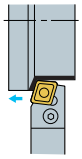
Number of 1/8″ of inscribed circle

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

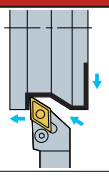
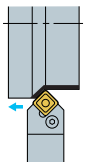
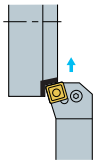
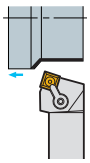
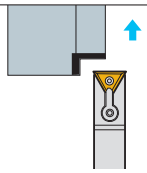
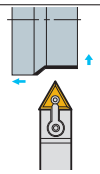
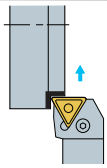
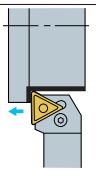
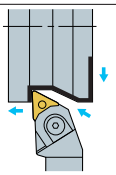
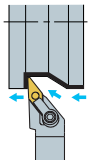
9 Qualified Surface & Length

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

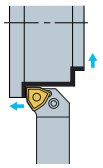
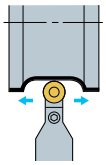
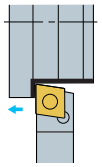
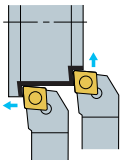
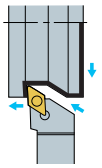
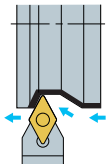
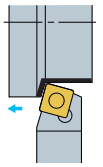
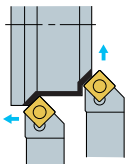
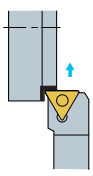
Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
CKJNR/L P. E51		2525-M16 3232-P16	●	●			KN□□ 1604□□ P. E18
DCLNR/L P. E52		16-4D 20-4D	●		●		CN□□ 43 □ P. E9-13, E42,43
DDJNR/L P. E52		16-4D 20-4D	●	●			DN□□ 43 □ P. E15-17, E42,43
DSDNN P. E53		16-4D	●	●			SN□□ 43 □ P. E21-23, E42, E44
DTJNR/L P. E53		16-4D 20-4D	●	●			TN□□ 43 □ P. E26-30, E42, E45
DVJNR/L P. E54		16-3D	●	●			VN□□ 33 □ P. E32, E42
DWLNR/L P. E54		16-4D	●		●		WN□□ 43 □ P. E33 - E36
MCKNR/L P. E55		12-4B 16-4D 20-4D 86-4D 16-4D-3 86-4D-3			●		CN□□ 43 □ 44 □ P. E9-13, E42,43
MCLNR/L P. E55		12-4B 16-4D 85-4D 20-5D 20-6D 24-8E	●		●		CN□□ 32 □ 43 □ 54 □ 64 □ 86 □ P. E9-13, E42-43
MCRNR/L P. E56		16-4D 20-4D 20-5D 20-6D 24-6E	●				CN□□ 43 □ 54 □ 64 □ 86 □ P. E9-13, E43

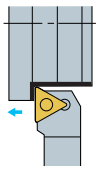
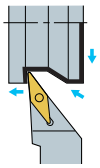
Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
MDJNR/L ☞ P. E56		12-4B 16-4D 20-4D 24-4D	●	●			DN☐☐ 33 ☐ 43 ☐ 44 ☐ ☞ P. E15-17, E42,43
MSDNN ☞ P. E57		12-4B 16-4D 85-4D 20-5 85-5D 24-6E	●	●			SN☐☐ 32 ☐ 43 ☐ 54 ☐ 64 ☐ 85 ☐ ☞ P. E 21-23, E42- E44
MSKNR/L ☞ P. E57		16-4D 20-5D 20-6D 24-6E			●		SN☐☐ 32 ☐ 43 ☐ 54 ☐ 64 ☐ ☞ P. E21-23, E42- E44
MSRNR/L ☞ P. E58		12-4B 16-4D 20-5D 20-6D 24-6E	●				SN☐☐ 32 ☐ 43 ☐ 54 ☐ 64 ☐ 85 ☐ ☞ P. E21-23, E42- E44
MTCNN ☞ P. E58		12-4B	●				TN☐☐ 33 ☐ 32.5 ☐ 44 ☐ ☞ P. E26-30, E45
MTENN ☞ P. E59		10-3B 12-3B 16-4D 20-5D	●	●			TN☐☐ 33 ☐ 32.5 ☐ 44 ☐ ☞ P. E26-30, E40, E45
MTFNR/L ☞ P. E59		12-3B 16-3D 16-4D 20-5D			●		TN☐☐ 33 ☐ 43 ☐ 54 ☐ ☞ P. E26-30, E40, E45
MTGNR/L ☞ P. E60		10-3B 12-3B 16-3D 16-4D 20-4D 16-5D 20-5D	●				TN☐☐ 21.5 ☐ 33 ☐ 43 ☐ 54 ☐ ☞ P. E26-30, E42-E45
MTJNR/L ☞ P. E60		10-3B 12-3B 16-3D 16-4D 20-4D 20-5D	●	●	●		TN☐☐ 33 ☐ 43 ☐ ☞ P. E26-30, E42, E45
MVJNR/L ☞ P. E61		8-3A 12-3C 16-3D 20-4D	●	●			VN☐☐ 33 ☐ ☞ P. E32, E42

Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
MWLNR/L ☞ P. E61		12-3B 12-4D 16-4D 20-4D	●		●		WN☐☐ 43 ☐ ☞ P. E33-36
PRDCN ☞ P. E62		2525-M12	●	●			RCMX MO ☐ MO ☐ ☞ P. E19
Screw On System **SCACR/L** ☞ P. E62		06-2J 08-3K 12-4B	●				CC☐☐ 21.5 ☐ 32.5 ☐ ☞ P. E8-9
SCLCR/L ☞ P. E63		06-2 12-3 08-2 16-3 08-3 12-4 10-3 16-4	●		●		CC☐T 21.5☐ 32.5 ☐ ☞ P. E8-9
SDJCR/L ☞ P. E63		06-2J 10-3A 08-2K 12-3B 10-2A 16-3D 12-2B	●	●			DC☐T 21.5☐ 32.5 ☐ ☞ P. E15
SDNCN ☞ P. E64		06-2J 08-2K 08-3A 10-3A 12-3B	●	●			DC☐T 21.5☐ 32.5 ☐ ☞ P. E15
SSBCR/L ☞ P. E64		08-3K 10-3A 12-4B	●				SC☐T 32.5 ☐ 43 ☐ ☞ P. E20
SSSCR/L ☞ P. E64		10-3A 12-4B	●		●		SC☐T 32.5 ☐ 43 ☐ ☞ P. E20
STFCR/L ☞ P. E65		06-1.8J 08-2K 10-2A 10-3A 12-3B			●		TC☐T 1.81.5 ☐ 21.5 ☐ 32.5 ☐ ☞ P. E25-26

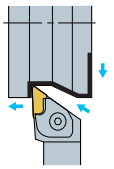
Turning Toolholder Index

Cutting Shape		Cat. No.	Turning	Copying	Facing	Chamfering	Available Inserts
Screw On System **STGCR/L** P. E65		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. E25-26
SVJCR/L P. E65		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. E31

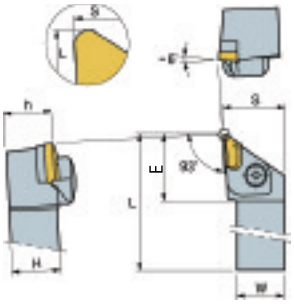
External Turning Toolholders

CKJNR/L





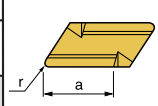
Feed direction



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	145-857	261.00	0.984	0.984	5.900	1.260	0.984	1.260	KN☐☐1604☐☐R
	3232-P16	145-858	287.50	1.26	1.260	6.900	1.575	1.260	1.260	
CKJNL	2525-M16	145-715	261.00	0.984	0.984	5.900	1.260	0.984	1.260	KN☐☐1604☐☐L
	3232-P16	146-266	287.50	1.26	1.260	6.900	1.575	1.260	1.260	



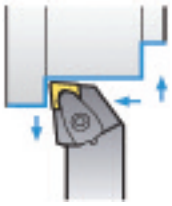
P. E18

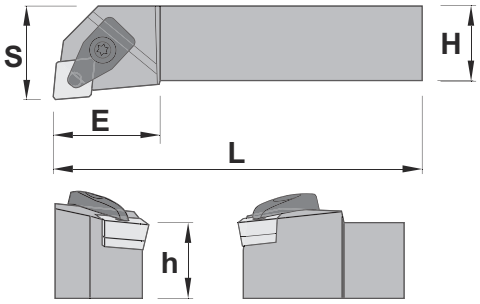
Parts						
						
Clamp	Clamping Screw	Spring	Pin	Shim	Shim Screw	Wrench
CTH6R1 **146-151** **$ 34.20**	CHX0625 **146-541** **$ 26.90**	SR3 **146-153** **$ 3.30**	PN0515 **146-152** **$ 4.20**	SK33C **146-955** **$ 23.20**	SHX0310 **146-155** **$ 9.10**	HW20L **146-954** **$ 2.90**
CTH6L1 **146-542** **$ 37.80**	CHX0625 **146-541** **$ 26.90**	SR3 **146-153** **$ 3.30**	PN0515 **146-152** **$ 4.20**	SK33CL **146-264** **$ 23.20**	SHX0310 **146-155** **$ 9.10**	HW20L **146-954** **$ 2.90**

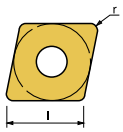
External Turning Toolholders

DCLNR/L







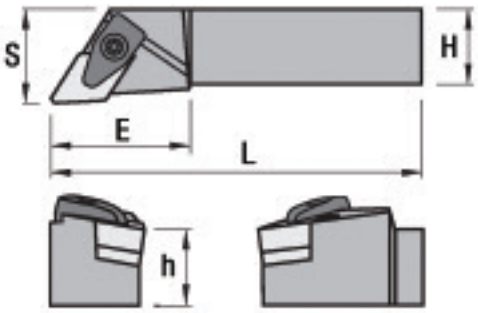
Ref	Holder Style				Application						Inserts	Parts					
Comment	L Style, Approach Angle 95°				Turning, Facing												
DCLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-4D	**148-292**	**110.20**	**149-012**	**104.70**	1.000	1.000	6.000	1.250	1.000	1.25	CN□□43□	DLM4	WTCW521	ICSN-432	STD040090	1/8"	SP4
20-4D	**148-294**	**143.30**	**148-295**	**143.30**	1.250	1.250	6.000	1.500	1.250	1.25		**149-015**	**149-017**	**146-908**	**149-013**	Hex	**149-019**
												$ 5.30	**$ 2.00**	**$ 9.20**	**$ 3.00**		**$ 1.20**

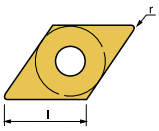
☞ P. E9-13, E42,43

DDJNR/L







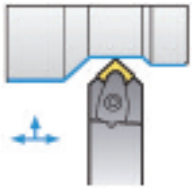
Ref	Holder Style				Application						Inserts	Parts					
Comment	J Style, Approach Angle 93°				Turning, Copying												
DDJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-4D	**148-296**	**110.20**	**148-297**	**104.70**	1.000	1.000	6.000	1.250	1.000	1.535	DN□□43□	DLM4	WTCW521	IDSN-432	STD040090	1/8"	SP4
20-4D	**148-298**	**143.30**	**148-301**	**143.30**	1.250	1.250	6.000	1.500	1.250	1.535		**149-015**	**149-017**	**146-907**	**149-013**	Hex	**149-019**
												$ 5.30	**$ 2.00**	**$ 8.20**	**$ 3.00**		**$ 1.20**

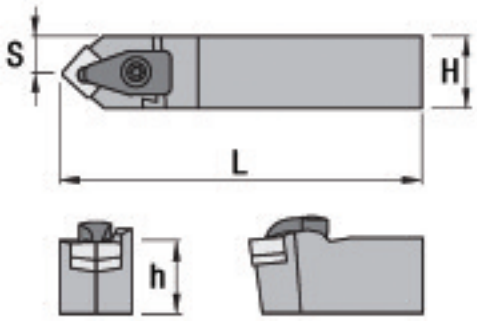
☞ P. E15-17, E42-43

External Turning Toolholders

DSDNN





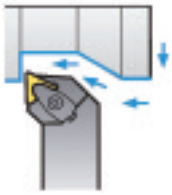


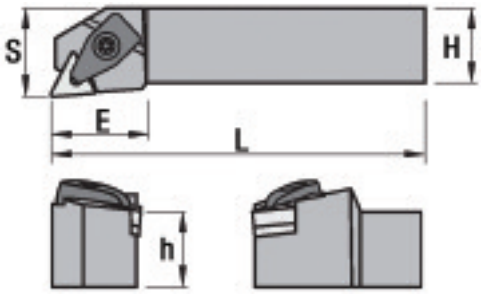
Ref	Holder Style				Application						Inserts	Parts					
Comment	D Style, Approach Angle 45°				Turning, Copying												
DSDNN	Code #	Price $			H	W	L	S	h			Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-4D	148-302	110.20			1.000	1.000	6.000	1.375	1.000		SN□□43□	DLM4 **149-015 $ 5.30**	WTCW521 **149-017 $ 2.00**	ISSN-432 **146-903 $ 9.00**	STD040090 **149-013 $ 3.00**	1/8" Hex	SP4 **149-019 $ 1.20**

P. E21-23, E42, E44

DTJNR/L







Ref	Holder Style				Application						Inserts	Parts					
Comment	J Style, Approach Angle 93°				Turning, Copying												
DTJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-4D 20-4D	148-156 148-346	110.20 143.30	148-345 148-347	110.20 143.30	1.000 1.250	1.000 1.250	6.000 6.000	1.250 1.500	1.000 1.250	1.375 1.250	TN□□43□	DLM4 **149-015 $ 5.30**	WTCW521 **149-017 $ 2.00**	ITSN-432 **146-901 $ 10.30**	STD040090 **149-013 $ 3.00**	1/8" Hex	SP4 **149-019 $ 1.20**

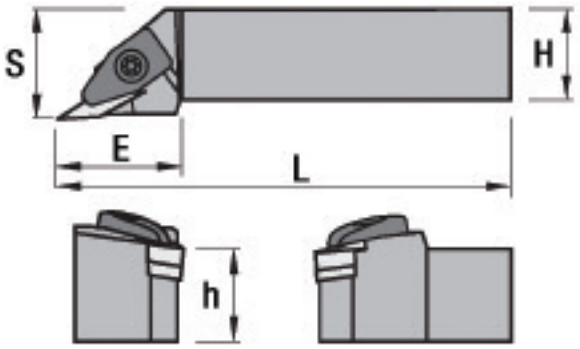
P. E26-30, E42, E45

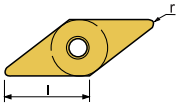
External Turning Toolholders

DVJNR/L





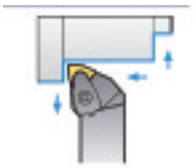


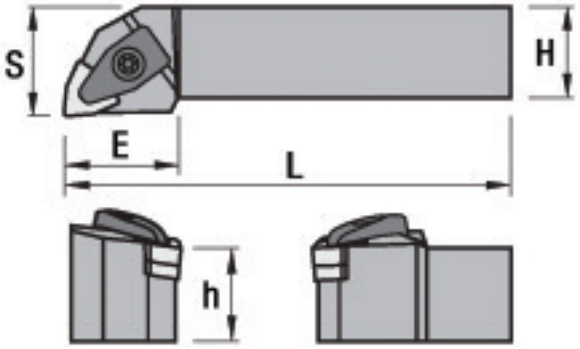
Ref	Holder Style				Application						Inserts	Parts					
Comment	J Style, Approach Angle 93°				Turning, Copying												
DVJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-3D	148-349	128.90	148-350	95.40	1.000	1.000	6.000	1.250	1.000	1.750	VN□□33□	DLM4 **149-015** **$ 5.30**	WTCW521 **149-017** **$ 2.00**	IVSN-332 **146-983** **$ 7.50**	STD040090 **149-013** **$ 3.00**	1/8" Hex	SP4 **149-019** **$ 1.20**

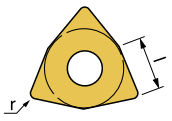
☞ P. E32, E42

DWLNR/L







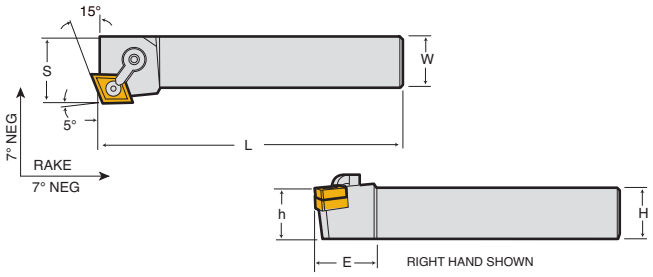
Ref	Holder Style				Application						Inserts	Parts					
Comment	L Style, Approach Angle 95°				Turning, Facing												
DWLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Shim Screw	Wrench	Spring
16-4D	148-351	121.60	148-352	103.60	1.000	1.000	6.000	1.250	1.000	1.250	WN□□43□	DLM5 **149-016** **$ 5.60**	WTCW626 **149-018** **$ 2.00**	IWSN-432 **146-906** **$ 13.00**	STC035085 **149-014** **$ 3.00**	1/8" Hex	SP5 **149-020** **$ 1.20**

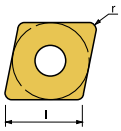
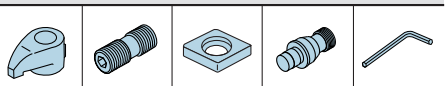
☞ P. E33-36

External Turning Toolholders

MCKNR/L





Ref	Holder Style	Application	Inserts	Parts
Comment	K style, Approach Angle 75°	Facing		

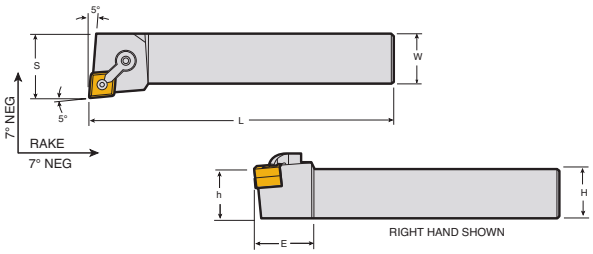
MCKNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin	Wrench
16-4D 20-4D	145-820 145-822	104.90 118.20	145-821 145-823	104.90 118.20	1.000 1.250	1.000 1.250	6.000 6.000	1.250 1.500	1.000 1.000	1.25 1.25	CN☐☐43☐	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN-432 146-908 $ 9.20	NL-46 146-912 $ 4.50	
20-5D	145-824	141.20	145-825	118.20	1.250	1.250	6.000	1.500	1.375	1.47	CN☐☐54☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN-533 146-909 $ 11.30	NL-58 146-913 $ 4.70	
20-6D	145-826	128.20	145-827	128.20	1.250	1.250	6.000	1.500	1.500	1.44	CN☐☐64☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN-633 146-910 $ 12.80	NL-68 146-914 $ 5.40	

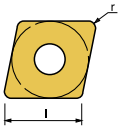
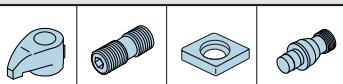
P. E9-13, E42,43

MCLNR/L



Kits Also Available
P. E182



Ref	Holder Style	Application	Inserts	Parts
Comment	L style, Approach Angle 95º	Turning, Facing		

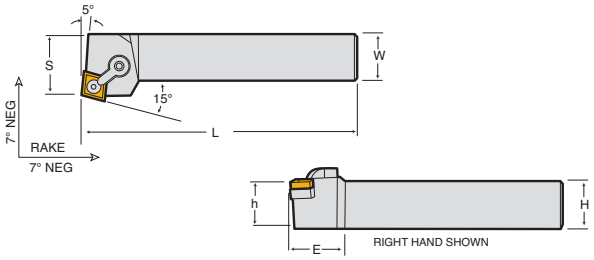
MCLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin
12-3B 16-3D					0.750 1.000	0.750 1.000	4.500 6.000`	1.000 1.250	0.750 1.000	0.866 0.866	CN☐☐33☐	CL20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN 322 148-286 $ 7.80	NL-33 145-769 $ 4.70
12-4B 16-4D 20-4D	145-780 145-828 145-838	96.70 104.90 118.20	145-745 145-829 145-782	96.70 104.90 118.20	0.750 1.000 1.250	0.750 1.000 1.250	4.500 6.000 6.000	1.000 1.250 1.500	0.750 1.000 1.250	1.200 1.200 1.300	CN☐☐43☐	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN 432 146-908 $ 9.20	NL-46 146-912 $ 4.50
20-5D	145-830	118.20	145-831	123.70	1.250	1.250	6.000	1.500	1.250	1.370	CN☐☐54☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN 533 146-909 $ 11.30	NL-58 146-913 $ 4.70
20-6D 24-6E	145-832 145-834	128.20 168.70	145-833	128.20	1.250 1.500	1.250 1.500	6.000 7.000	1.500 2.000	1.250 1.500	1.370 1.496	CN☐☐64☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN 633 146-910 $ 12.80	NL-68 146-914 $ 5.40

P. E9-13, E42-43

External Turning Toolholders

MCRNR/L





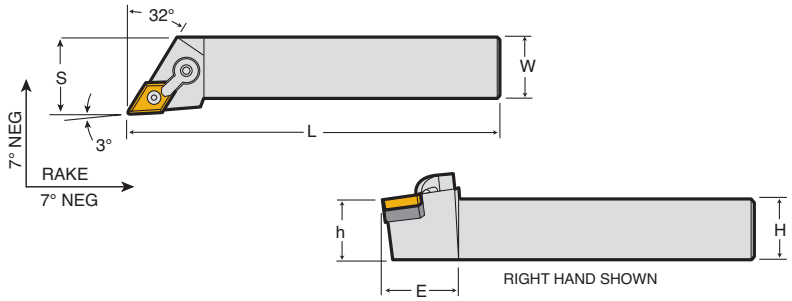
Ref	Holder Style				Application						Inserts	Parts			
Comment	R style, Approach Angle 75°				Turning, Facing										
MCRNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
16-4D 20-4D	145-835 145-837	104.90 118.20	145-836 145-778	104.90 118.20	1.000 1.250	1.000 1.250	6.000 6.000	1.25 1.50	1.000 1.250	1.24 1.24	CN□□43□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN-432 146-908 $ 9.20	NL-46 146-912 $ 4.50
20-5D	145-839	118.20	145-840	118.20	1.250	1.250	6.000	1.50	1.250	1.34	CN□□54□	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN-533 146-909 $ 11.30	NL-58 146-913 $ 4.70
20-6D 24-6E	145-841 145-843	128.20 157.10	145-842 145-844	194.80 222.80	1.250 1.500	1.250 1.500	6.000 7.000	1.25 2.00	1.250 1.500	1.24 1.49	CN□□64□	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ICSN-633 146-910 $ 12.80	NL-68 146-914 $ 5.40

P. E9-13, E43

MDJNR/L



Kits Also Available
P. E182



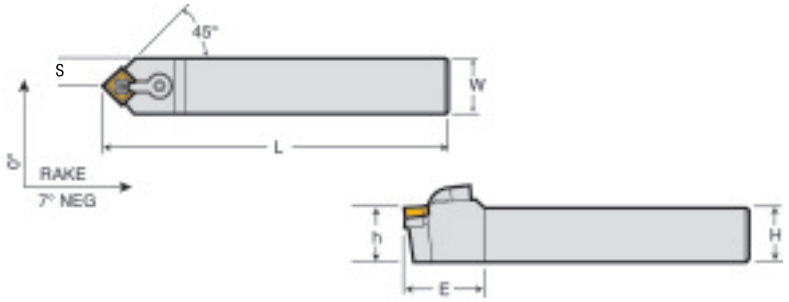
Ref	Holder Style				Application						Inserts	Parts			
Comment	J style, Approach Angle 93°				Turning,Copying										
MDJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin
12-3B 16-3D					0.750 1.000	0.750 1.000	4.500 6.000	1.000 1.000	0.750 0.750	0.984 0.984	DN□□33□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10		NL-33 145-769 $ 4.70
12-4B 16-4D 20-4D 24-4D	146-328 145-845 145-847	96.70 104.90 118.20	146-330 145-846 145-848	96.70 104.90 166.60	0.750 1.000 1.250	0.750 1.000 1.250	4.500 6.000 6.000	1.000 1.250 1.500	0.750 1.000 1.250	1.200 1.250 1.240	DN□□43□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	IDSN-432 146-907 $ 8.20	NL-46 146-912 $ 4.50

P. E15-17, E42-43

External Turning Toolholders

MSDNN



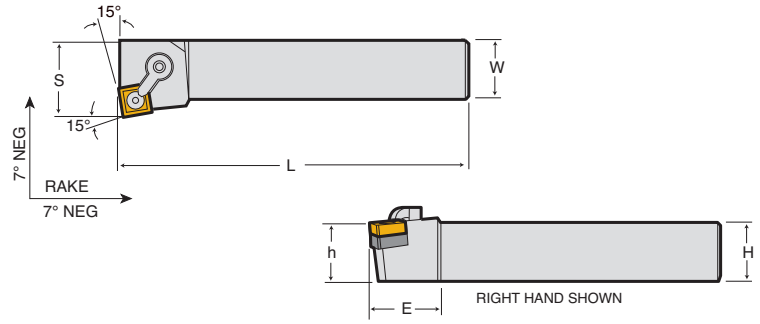


Ref	Holder Style		Application						Inserts	Parts				
Comment	D style, Approach Angle 45°		Turning, Copying											
MSDNN	Code #	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	
12-4B	145-860	166.70	0.750	0.750	4.500	0.375	0.750	1.375	SN☐☐43☐	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ISSN-432 146-903 $ 9.00	NL-46 146-912 $ 4.50	
16-4D 85-4D	145-799 145-759	104.90 118.20	1.000 1.250	1.000 1.000	6.000 6.000	0.500 0.500	1.000 1.000	1.375 1.375		CL-9 146-916 $ 8.20	XNS-59 146-921 $ 2.10	ISSN-432 146-903 $ 9.00	NL-46 146-912 $ 4.50	
20-5E 85-5D	147-227 145-763	194.80 194.80	1.250 1.250	1.250 1.000	7.000 6.000	0.625 0.500	1.250 1.250	1.610 1.610	SN☐☐54☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ISSN-533 146-904 $ 10.50	NL-58 146-913 $ 4.70	
20-6D 24-6E	145-866 147-404	194.80 222.80	1.250 1.500	1.250 1.500	6.000 7.000	0.625 0.750	1.250 1.500	1.750 1.750	SN☐☐64☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ISSN-633 146-905 $ 12.50	NL-68 146-914 $ 5.40	

P. E21-23, E42, E44

MSKNR/L





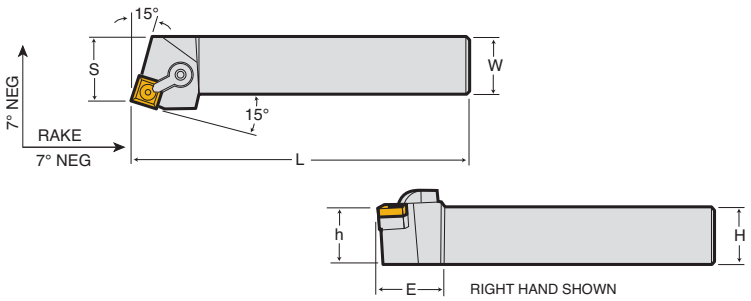
Ref	Holder Style				Application						Inserts	Parts				
Comment	K style, Approach Angle 75°				Facing											
MSKNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	
16-4D	145-849	104.90	145-850	104.90	1.000	1.000	6.000	1.250	1.000	1.250	SN☐☐43☐	CL-9 146-916 $ 8.20	XNS-59 146-921 $ 2.10	ISSN-432 146-903 $ 9.00	NL-46 146-912 $ 4.50	
20-6D 24-6E	145-853 145-855	128.20 167.10			1.250 1.500	1.250 1.500	6.000 7.000	1.500 2.000	1.250 1.500	1.560 1.560	SN☐☐64☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ISSN-633 146-905 $ 12.50	NL-68 146-914 $ 5.40	

P. E21-23, E42, E44

External Turning Toolholders

MSRNR/L



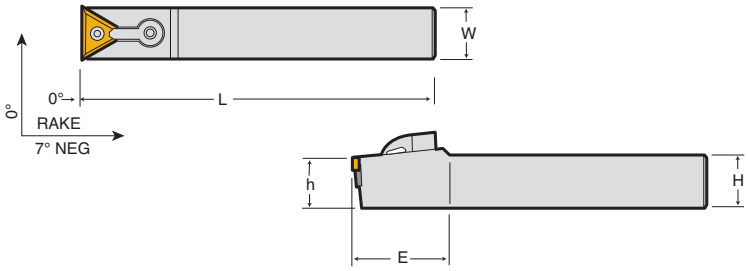


Ref	Holder Style				Application						Inserts	Parts				
Comment	R style, Approach Angle 75°				Turning											
MSRNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	
12-4B 16-4D	145-869 145-800	166.70 104.90	145-870 145-801	166.70 104.90	0.750 1.000	0.750 1.000	4.500 6.000	0.878 1.128	0.750 1.000	1.230 1.230	SN☐☐43☐	CL-12 146-917 $ 8.20	XNS-48 146-922 $ 2.10	ISSN-432 146-903 $ 9.00	NL-46 146-912 $ 4.50	
20-5D	145-802	118.20	145-803	118.20	1.250	1.250	6.000	1.350	1.250	1.375	SN☐☐54☐	CL-12 146-917 $ 8.20	XNS-59 146-921 $ 2.10	ISSN-533 146-904 $ 10.50	NL-58 146-913 $ 4.70	
20-6D 24-6E	145-804 145-806	128.20 167.10	145-805 145-807	128.20 167.10	1.250 1.500	1.250 1.500	6.000 7.000	1.318 1.818	1.250 1.500	1.500 1.500	SN☐☐64☐	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ISSN-633 146-905 $ 12.50	NL-68 146-914 $ 5.40	

P. E21-23, E42, E44

MTCNN





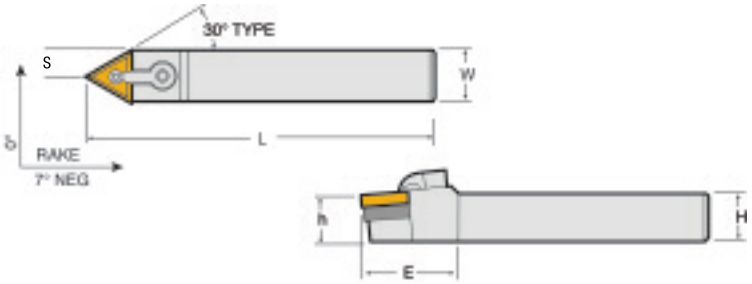
Ref	Holder Style		Application						Inserts	Parts				
Comment	C Style		Turning											
MTCNN	Code #	Price $	H	W	L	h	E			Clamp	Clamp Screw	Shim	Pin	
12-4B	145-859	94.00	0.750	0.750	4.500	0.750	1.430		TN☐☐43☐	CL-12 146-917 $ 8.20	XNS-59 146-921 $ 2.10	ITSN-432 146-901 $ 10.30	NL-46 146-912 $ 4.50	

P. E26-30 ,45

External Turning Toolholders

MTENN





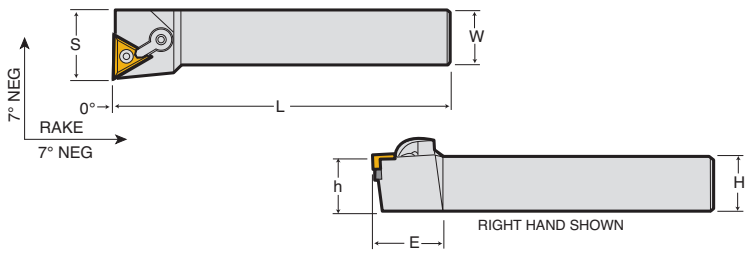
Ref	Holder Style	Application	Inserts	Parts			
Comment	E Style 60° Approach Angle	Turning, Copying					

MTENN	Code #	Price $	H	W	L	S	h	E	Clamp	Clamp Screw	Shim	Pin
10-3B 12-3B	145-889 145-890	159.50 166.70	0.625 0.750	0.625 0.750	4.500 4.500	0.313 0.375	0.625 0.750	1.125 1.125	TN□□33□	CL-6 146-915 $ 8.20	XNS-36 146-919 $ 2.10	ITSN-332 147-114 $ 6.70	NL-34L 146-911 $ 4.70
16-4D	145-754	115.20	1.000	1.000	6.000	0.500	1.000	1.250	TN□□43□	CL-9 146-916 $ 8.20	XNS-59 146-921 $ 2.10	ITSN-432 146-901 $ 10.30	NL-46 146-912 $ 4.50
20-5D	145-896	194.80	1.250	1.250	6.000	0.625	1.250	1.625	TN□□54□	CL-9 146-916 $ 8.20	XNS-510 146-920 $ 2.10	ITSN-533 146-902 $ 13.10	NL-58 146-913 $ 4.70

P. E26-30, E40, E45

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 16-3D	145-760 145-787	166.70 117.90	145-761	166.70	0.750 1.000	0.750 1.000	4.500 6.000	1.000 1.250	0.750 1.000	0.787 0.787	TN□□33□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ITSN-332 147-114 $ 6.70	NL-34L 146-911 $ 4.70
16-4D	147-370	117.90	147-272	117.90	1.000	1.000	6.000	1.250	1.000	0.984	TN□□43□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ITSN-433 146-977 $ 10.30	NL-46 146-912 $ 4.50
20-5D	147-277	194.80	147-273	194.80	1.250	1.250	6.000	1.500	1.250	1.299	TN□□54□	CL-12 146-917 $ 8.20	XNS-510 146-920 $ 2.10	ITSN-533 146-902 $ 13.10	NL-58 146-913 $ 4.70

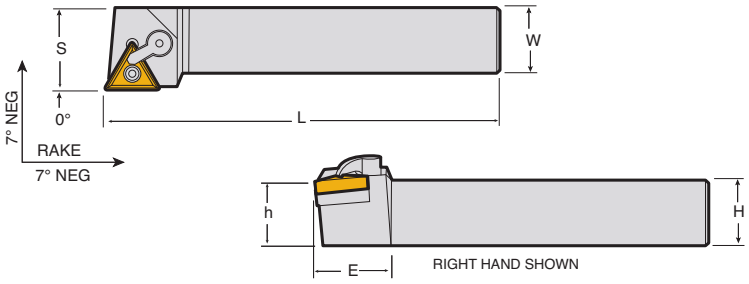
P. E26-40, E45

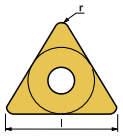
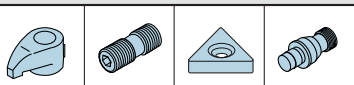
External Turning Toolholders

MTGNR/L



Kits Also Available
P. E183



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	145-861	159.50	145-862	159.50	0.625	0.625	4.500	0.875	0.625	1.120	CL-6	XNS-36	ITSN-332	NL-34L
12-3B	145-863	96.70	145-864	96.70	0.750	0.750	4.500	1.000	0.750	1.120	146-915	146-919	147-114	146-911
16-3D	145-812	104.90	145-813	104.90	1.000	1.000	6.000	1.250	1.000	1.120	$ 8.20	$ 2.10	$ 6.70	$ 4.70
16-4D	145-814	115.20	145-815	115.20	1.000	1.000	6.000	1.250	1.000	1.300	CL-9	XNS-59	ITSN-432	NL-46
20-4D	145-816	128.20	145-817	128.20	1.250	1.250	6.000	1.500	1.250	1.300	146-916	146-921	146-901	146-912
											$ 8.20	$ 2.10	$ 10.30	$ 4.50
16-5D	145-730	177.40			1.000	1.000	6.000	1.250	1.000	1.440	CL-12	XNS-510	ITSN-533	NL-58
20-5D	145-818	138.70	145-819	138.70	1.250	1.250	6.000	1.500	1.250	1.440	146-917	146-920	146-902	146-913
											$ 8.20	$ 2.10	$ 13.10	$ 4.70

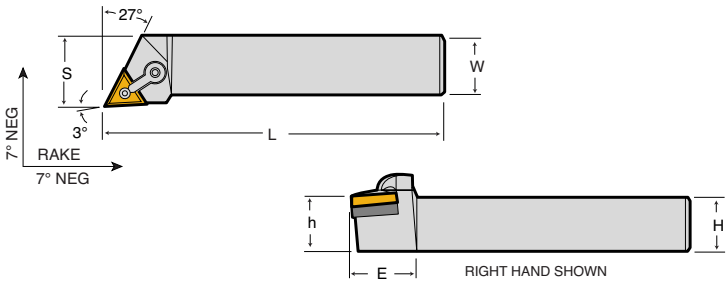
TN□□33□ | TN□□43□ | TN□□54□

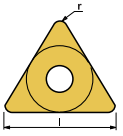
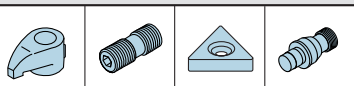
P. E26-30, E42,45

MTJNR/L



Kits Also Available
P. E183



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	145-891	167.30	145-892	167.30	0.625	0.625	4.500	0.875	0.625	1.120	CL-6	XNS-36	ITSN-332	NL-34L
											146-915	146-919	147-114	146-911
											$ 8.20	$ 2.10	$ 6.70	$ 4.70
12-3D	145-887	166.70	145-888	166.70	0.750	0.750	6.000	1.000	0.750	1.100	CL-20	XNS-48	ITSN-332	NL-34L
16-3D	145-783	177.40	148-323	177.40	1.000	1.000	6.000	1.250	1.000	1.299	146-918	146-922	147-114	146-911
											$ 8.20	$ 2.10	$ 6.70	$ 4.70
16-4D	145-757	177.40	145-756	177.40	1.000	1.000	6.000	1.250	1.000	1.325	CL-20	XNS-48	ITSN-432	NL-46
20-4D	147-147	194.80	147-213	194.80	1.250	1.250	6.000	1.500	1.250	1.325	146-918	146-922	146-901	146-912
											$ 8.20	$ 2.10	$ 10.30	$ 4.50
20-5D	147-033	194.80	147-035	194.80	1.250	1.250	6.000	1.500	1.250	1.440	CL-12	XNS-510	ITSN-533	NL-58
											146-917	146-920	146-902	146-913
											$ 8.20	$ 2.10	$ 13.10	$ 4.70

TN□□33□ | TN□□43□ | TN□□54□

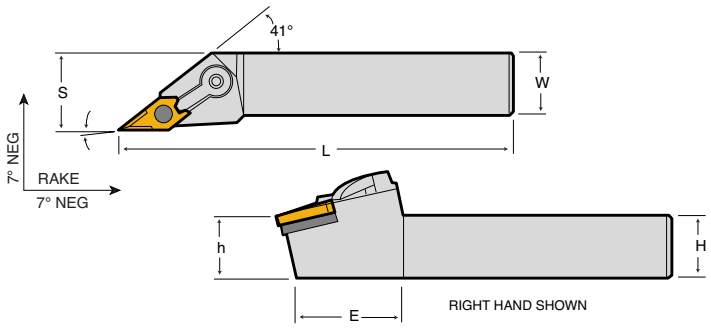
P. E26-30, E42, E45

External Turning Toolholders

MVJNR/L



Kits Also Available
P. E183



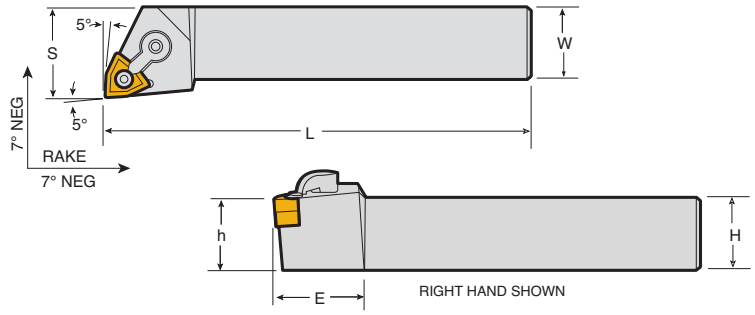
Ref	Holder Style				Application						Inserts	Parts				
Comment	J style, Approach Angle 93°				Turning, Copying											
MVJNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	
8-3A					0.500	0.500	4.000	0.750	0.500	0.610						
12-3C	147-265	130.60	147-417	130.60	0.750	0.750	5.000	1.000	0.750	1.660	VN□□33□	CL-30	XNS-59	IVSN-322	NL-34L	
16-3D	145-893	136.00	145-738	136.50	1.000	1.000	6.000	1.250	1.000	1.660		147-214	146-921	146-983	146-911	
												$ 14.40	$ 2.10	$ 7.50	$ 4.70	
20-4D	147-226	308.00	147-225	308.00	1.250	1.250	6.000	1.500	1.250	2.000	VN□□43□	CL-30	XNS-510	IVSN-433	NL-46	
												147-214	146-920	148-287	146-912	
												$ 14.40	$ 2.10	$ 9.90	$ 4.50	

P. E32, E42

MWLNR/L



Kits Also Available
P. E183



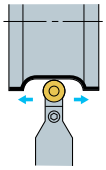
Ref	Holder Style				Application						Inserts	Parts				
Comment	L style, Approach Angle 95°				Turning, Facing											
MWLNR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Clamp	Clamp Screw	Shim	Pin	
12-3B	145-744	166.70	147-148	166.70	0.750	0.750	4.500	1.000	0.750	1.000						
16-3D					1.000	1.000	6.000	1.250	1.000	1.000	WN□□33□	CL-6	XNS-36	IWSN-322	NL-34L	
												146-915	146-919	147-139	146-911	
												$ 8.20	$ 2.10	$ 13.10	$ 4.70	
12-4B	145-875	107.10	145-876	107.10	0.750	0.750	4.500	1.000	0.750	1.250		CL-20	XNS-48	IWSN-432	NL-46	
16-4D	145-808	104.90	145-809	104.90	1.000	1.000	6.000	1.250	1.000	1.250		146-918	146-922	146-906	146-912	
20-4D	145-810	118.20	145-811	118.20	1.250	1.250	6.000	1.500	1.250	1.250	WN□□43□	$ 8.20	$ 2.10	$ 13.00	$ 4.50	

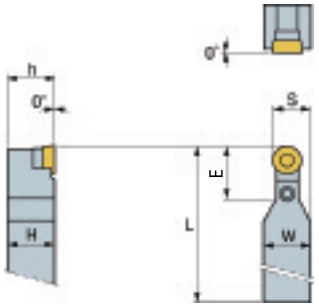
P. E33-36

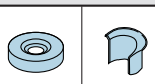
External Turning Toolholders

PRDCN



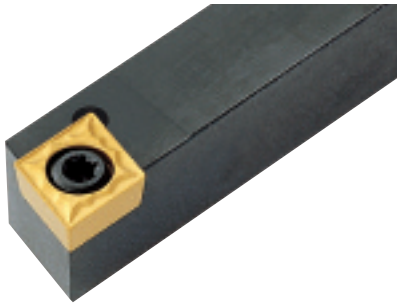


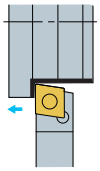


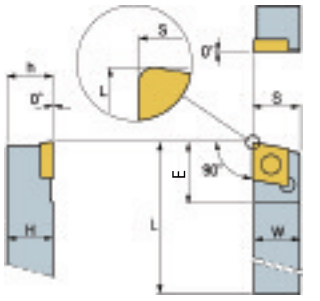
Ref	Holder Style		Application						Inserts	Parts				
Comment	D style		Turning, Copying											
PRDCN	Code #	Price $	H	W	L	S	h	E		Lever	Screw	Shim	Shim Pin	Wrench
12-10B	148-243	99.30	0.750	0.750	4.500	0.500	0.750	0.866	RCMX 1003 M0	LR10 148-227 $ 20.30	VHX0514 148-228 $ 11.90	SR10 148-229 $ 5.70	SP3 146-929 $ 5.30	HW20L 146-954 $ 2.90
16-12D	145-719	96.80	1.000	1.000	6.000	0.728	1.000	0.945	RCMX 1204 M0	LR12 145-723 $ 20.30	VHX0617 146-926 $ 10.20	SR12 145-725 $ 5.70	SP3 146-929 $ 5.30	HW25L 146-956 $ 2.90

☞ P. E19

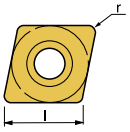
SCACR/L







Right-hand shown

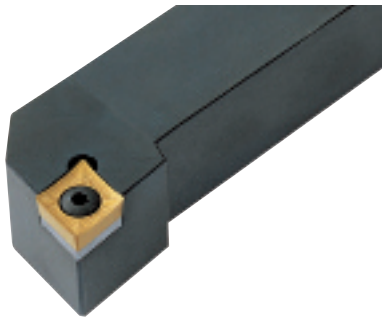
Ref	Holder Style				Application						Inserts	Parts			
Comment	A style, Approach Angle 90°				Turning											
SCACR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	
06-2J					0.375	0.375	2.750	0.375	0.375	0.394	CC□□21.5□	FTKA02565 146-930 $ 12.30	-	-	TW07P 146-939 $ 13.20
08-3K	146-327	64.50	145-993	64.50	0.500	0.500	3.150	0.500	0.500	0.630	CC□□32.5□	FTGA03508 146-931 $ 11.40	-	-	TW15P 146-940 $ 15.20
12-4B •	146-718	89.50	146-719	89.50	0.750	0.750	4.500	1.000	0.750	0.984	CC□T43□	FTGA0411F 146-944 $ 10.40	SC42S 146-936 $ 11.50	SHXN0610F 145-998 $ 17.60	TW15P 146-940 $ 15.20

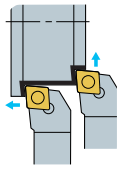
• Available only while quantities last

☞ P. E8-9

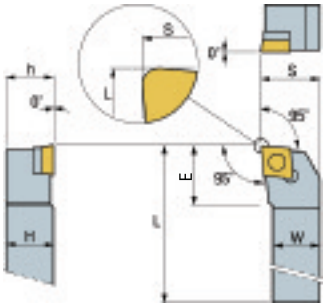
External Turning Toolholders

SCLCR/L





Feed direction



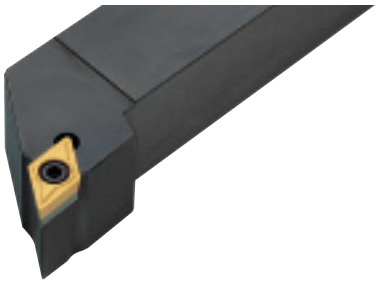
Right-hand shown

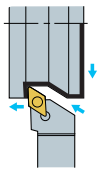
Ref	Holder Style				Application						Inserts	Parts			
Comment	L style, Approach Angle 95°				Turning, Facing										
SCLCR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
06-2J	146-981	62.10	147-291	62.10	0.375	0.375	2.750	0.500	0.375	0.394	CC□T 21.5□	FTKA02565	-	-	TW07P
08-2A •	146-784	66.00	146-785	66.00	0.500	0.500	4.000	0.625	0.500	0.490		146-930			146-939
												$ 12.30			$ 13.20
08-3A					0.500	0.500	4.000	0.625	0.500	0.630	CC□T 32.5□	FTGA03508	-	-	TW15P
10-3A	146-257	69.20	146-787	69.20	0.625	0.625	4.000	0.750	0.625	0.630		146-931			146-940
12-3B	146-788	75.30	147-215	75.30	0.750	0.750	4.500	1.000	0.750	0.630		$ 11.40			$ 15.20
16-3D	146-352	79.50	146-353	79.50	1.000	1.000	6.000	1.250	1.000	0.670					
12-4B	145-994	75.30	146-789	75.30	0.750	0.750	4.500	1.000	0.750	0.984	CC□T 43□	FTGA0411F	SC42S	SHXN0610F	TW15P
16-4D	146-790	94.70	146-791	94.70	1.000	1.000	6.000	1.250	1.000	1.024		146-944	146-936	145-998	146-940
												$ 10.40	$ 11.50	$ 17.60	$ 15.20

• Available only while quantities last

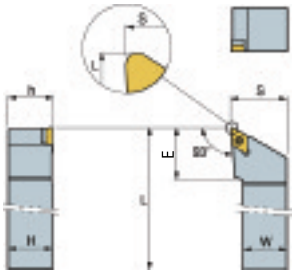
☞ P. E8-9

SDJCR/L





Feed direction



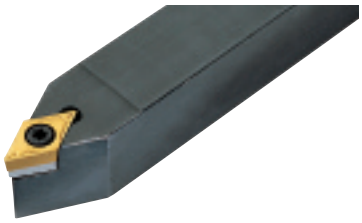
Right-hand shown

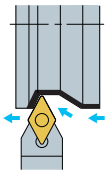
Ref	Holder Style				Application						Inserts	Parts			
Comment	J style, Approach Angle 93°				Turning, Copying										
SDJCR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E		Screw	Shim	Shim Screw	Wrench
12-3B	145-798	89.50	147-146	89.50	0.750	0.750	4.500	1.000	0.750	0.945	DC□T 32.5□	FTGA03512	SD32S	SHXN0509F	TW15P
16-3D	145-985	94.70	147-230	94.70	1.000	1.000	6.000	1.250	1.000	1.142		146-933	146-937	146-935	146-940
												$ 11.40	$ 11.50	$ 17.40	$ 15.20

☞ P. E14,15

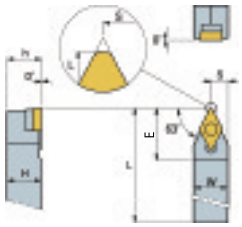
External Turning Toolholders

SDNCN





Feed direction

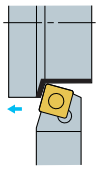


Ref	Holder Style	Application	Inserts	Parts
Comment	N style, Approach Angle 63°	Turning, Copying		

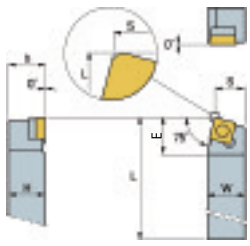
SDNCN	Code #	Price $	H	W	L	S	h	E	Inserts	Screw	Shim	Shim Screw	Wrench
12-3B	145-986	89.50	0.750	0.750	4.500	0.375	0.750	1.181	DC□T 32.5□ ☞ P. E14, 15	FTGA03512 146-933 $ 11.40	SD32S 146-937 $ 11.50	SHXN0509F 146-935 $ 17.40	TW15P 146-940 $ 15.20

SSBCR





Feed direction

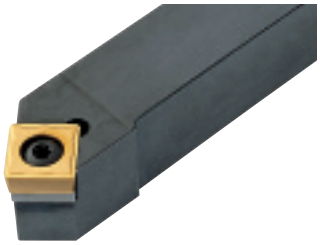


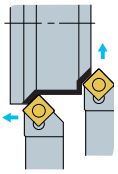
Right-hand shown

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	Inserts	Screw	Shim	Shim Screw	Wrench
08-3K	145-989	62.10			0.500	0.500	3.150	0.450	0.500	0.630	SC□T32.5□	FTGA03508 146-931 $ 11.40	-	-	TW15P 146-940 $ 15.20
12-4B	145-995	89.50			0.750	0.750	4.500	0.600	0.750	0.984	SC□T 43□ ☞ P. E20	FTGA0411F 146-944 $ 10.40	SS42S 145-997 $ 11.50	SHXN0610F 145-998 $ 17.60	TW15P 146-940 $ 15.20

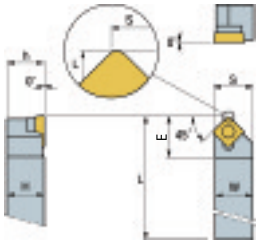
SSSCR





Feed direction

Right-hand shown

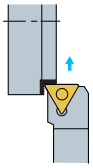


Ref	Holder Style	Application	Inserts	Parts
Comment	S style, Approach Angle 45°	Turning, Facing		

SSSCR	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Inserts	Screw	Shim	Shim Screw	Wrench
10-3A	145-992	69.20			0.625	0.625	4.000	0.670	0.625	0.610	SC□T32.5□	FTGA03512 146-933 $ 11.40	SS32S 148-665 $ 11.50	SHXN0509F 146-935 $ 17.40	TW15P 146-940 $ 15.20
12-4B	145-996	89.50			0.750	0.750	4.500	0.659	0.750	0.945	SC□T 43□ ☞ P. E20	FTGA0411F 146-944 $ 10.40	SS42S 145-997 $ 11.50	SHXN0610F 145-998 $ 17.60	TW15P 146-940 $ 15.20

STFCR

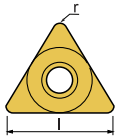




Feed direction



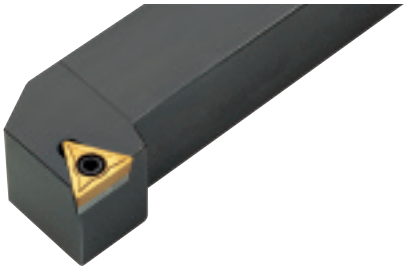
Right-hand shown

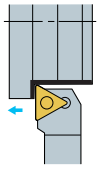
Ref	Holder Style	Application	Inserts	Parts
Comment	F style, Approach Angle 90°	Facing		   

STFCR	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Inserts	Screw	Shim	Shim Screw	Wrench
10-2A	145-777	157.90			0.625	0.625	4.000	0.750	0.625	0.551	TC□T 21.5□	FTKA02565 146-930 $ 12.30	-	-	TW07P 146-939 $ 13.20
12-3B	145-987	75.30			0.750	0.750	4.500	1.000	0.750	0.748	TC□T 32.5□	FTGA03512 146-933 $ 11.40	ST32S 145-999 $ 14.90	SHXN0509F 146-935 $ 17.40	TW15P 146-940 $ 15.20

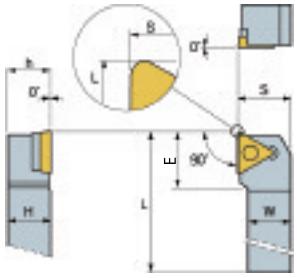
P. E25-26

STGCR/L

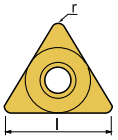




Feed direction



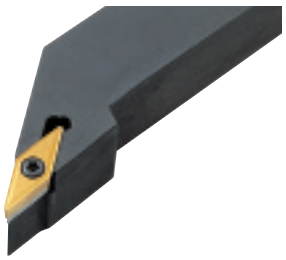
Right-hand shown

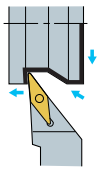
Ref	Holder Style	Application	Inserts	Parts
Comment	G style, Approach Angle 90°	Turning		   

STGCR/L	Code # Right	Price $	Code # Left	Price $	H	W	L	S	h	E	Inserts	Screw	Shim	Shim Screw	Wrench
08-2K 10-2A	145-988	62.10	146-713	62.10	0.500 0.625	0.500 0.625	3.150 4.000	0.625 0.750	0.500 0.625	0.551 0.827	TC□T 21.5□	FTKA02565 146-930 $ 12.30	-	-	TW07P 146-939 $ 13.20
08-3K 12-3B 16-3D	146-583 145-991 145-793	73.20 89.50 183.90	146-714 146-715	73.20 89.50	0.500 0.750 1.000	0.500 0.750 1.000	3.150 4.500 6.000	0.625 1.000 1.250	0.500 0.750 1.000	0.551 0.827 0.827	TC□T 32.5□	FTGA03512 146-933 $ 11.40	ST32S 145-999 $ 14.90	SHXN0509F 146-935 $ 17.40	TW15P 146-940 $ 15.20

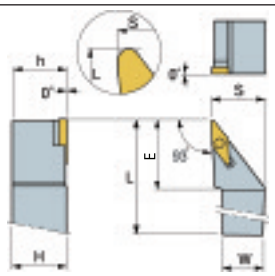
P. E25-26

SVJCR/L

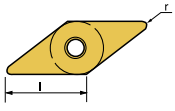




Feed direction



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	Inserts	Screw	Shim	Shim Screw	Wrench
12-3C 16-3D	148-061 147-229	93.90 102.80	147-382	102.80	0.750 1.000	0.750 1.000	5.000 6.000	1.000 1.250	0.750 1.000	1.575 1.575	VC□T 33□	FTGA03512 146-933 $ 11.40	SV32S 146-950 $ 14.40	SHXN0509F 146-935 $ 17.40	TW15P 146-940 $ 15.20

P. E31

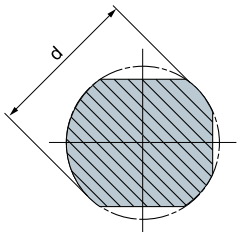
Boring Bar Code System

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

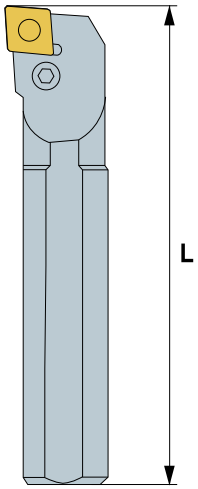
Two characters to describe bar diameter(Number of sixteenth's)



03 : 0.1875
04 : 0.250
05 : 0.3125
06 : 0.37
08 : 0.50
10 : 0.625
12 : 0.750
16 : 1.0
20 : 1.250
24 : 1.50
28 : 1.750
32 : 2.0
36 : 2.25
40 : 2.50

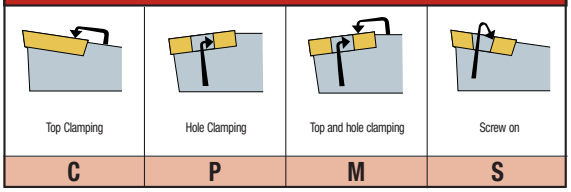
S	24	U	M	C
1	2	3	4	5

3 Type of Bar



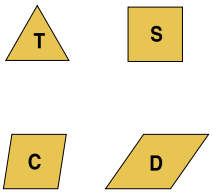
F : 3
G : 3.5
H : 4
J : 4.5
K : 5.0
L : 5.5
M : 6
N : 6.5
P : 6.75
Q : 7.0
R : 8.0
S : 10.3
T : 12.0
U : 14.0
V : 16.0
W : 18.0
Y : 20.0
X : Special length

4 Method of Mounting Insert



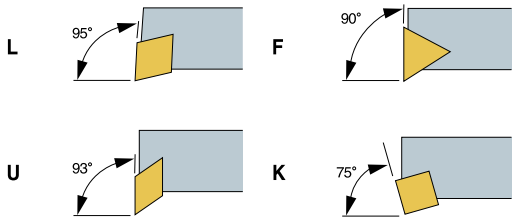
Top Clamping	Hole Clamping	Top and hole clamping	Screw on
C	P	M	S

5 Insert Shape



C : 80°Rhombic
D : 55° Rhombic
R : Round
S : Square
T : Triangle
V : 35°Rhombic
W : 80°Trigon

6 Bar Geometry

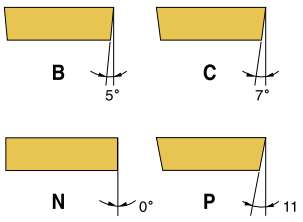


F : 90°
K : 75°
L : 95°
P : 117.5°
Q : 107.5°
U : 93°
S : 62.5°
Z : Negative 5° pull boring

L N R 4 □

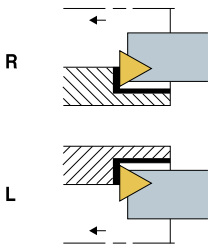
6 7 8 9 10

7 Insert Clearance Angle



B : 5°
C : 7°
D : 15°
E : 20°
F : 25°
G : 30°
N : 0°
P : 11°

8 Hand of Bar



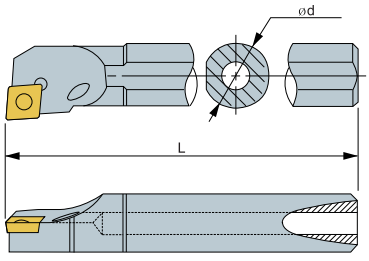
R : Right Hand
L : Left Hand
N : Neutral

9 Insert Size IC

(Inscribed Circle)

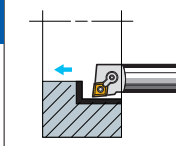
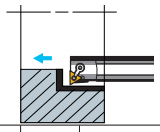
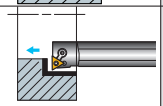
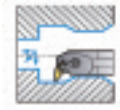
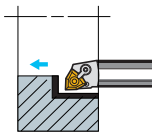
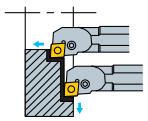
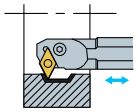
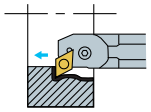
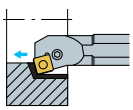
1.2 : 0.156
1.5 : 0.188
1.8 : 0.219
2 : 0.25
2.5 : 0.3125
3 : 0.375
4 : 0.5
5 : 0.625
6 : 0.75
8 : 1.0
10 : 1.250

Boring Bar with Coolant Hole

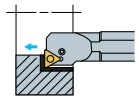
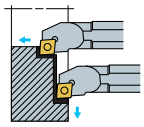
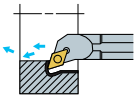
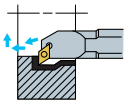
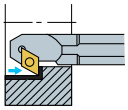
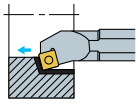


10 Manufacturing Option

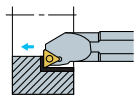
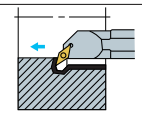
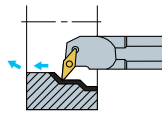
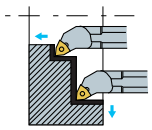
Boring Bar Index

Cutting Shape		Cat. No.	Facing	Copying	Through hole machining	Blind hole machining	Copying and Relief	Back Copying	Available Inserts
Clamp System **MCLNR/L** ☞ P. E70		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. E9-13, E42,43
MTFNR/L ☞ P. E71		S20V-MTFNR-4 S32V-MTFNR-4 A16T-MTFNR/L-4	●		●	●			TN☐☐ 33 ☐ 43 ☐ 54 ☐ ☞ P. E26-30,E45
MTUNR/L ☞ P. E72		S32V-MTUNR-4	●		●	●			TN☐☐ 33 ☐ 43 ☐ 54 ☐ ☞ P. E26-30, E45
MVUNR/L ☞ P. E72		A16T-MVUNR/L- 4		●	●	●			VN☐☐ 43 ☐ ☞ P. E32
MWLNR/L ☞ P. E73		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. E33-36
Lever Lock System **PCLNR/L** ☞ P. E73		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☐☐ 64 ☐ CN☐☐ 43 ☐ ☞ P. E9-13, E42,E43
PDSNR ☞ P. E74		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. E15-17, E42-44
PDUNR ☞ P. E74		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. E15-17, E42-44
PSKNR/L ☞ P. E75		S16T-PSKNR/L 4 S20U-PSKNR/L 4 S24V-PSKNR/L 4 A16R-PSKNR/L 4 A20S-PSKNR/L 4			●				SN☐☐ 43 ☐ ☞ P. E21-23, E42, E44

Boring Bar Index

Cutting Shape		Cat. No.	Facing	Copying	Through hole machining	Blind hole machining	Copying and Relief	Back Copying	Available Inserts
Lever Lock System **PTFNR/L** ☞ P. E75		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. E26-30, E40, E43
Screw On System **SCLCR/L** ☞ P. E76		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. E76		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		●	●	●			DC□T 21.5□ 32.5□ ☞ P. E15
SDUCR ☞ P. E77		A12Q-SDQCR/L 2 A16R-SDQCR/L 2 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. E15
SDZCR/L ☞ P. E 77		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. E15
SSKCR/L ☞ P. E78		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. E20

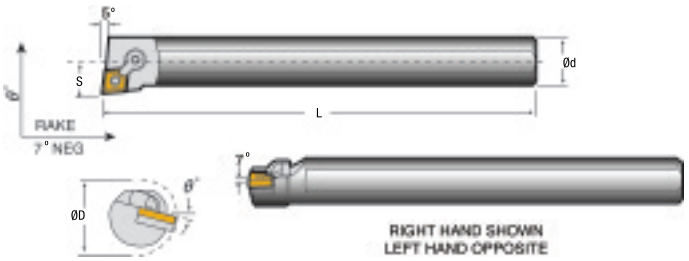
Boring Bar Index

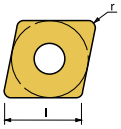
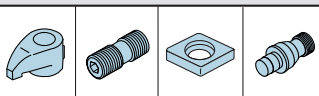
Cutting Shape		Cat. No.	Facing	Copying	Through hole machining	Blind hole machining	Copying and Relief	Back Copying	Available Inserts
Screw On System **STFCR/L** ☞ P. E78		S06M-STFCR/L 1.8 S08M-STFCR/L 1.8 S08M-STFCR/L 2 S10R-STFCR/L 2 S12S-STFCR/L 2 S12S-STFCR/L 3 S16T-STFCR/L 3 S20U-STFCR/L 3 S24V-STFCR/L 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. E25-26
SVQBR ☞ P. E79		S20U-SVQBR/L 3 S24V-SVQBR /L 3 A20S-SVQBR /L 3					●		VB□T 33 □ ☞ P. E31
SVUBR/L ☞ P. E79		S20U-SVUBR/L 3 S24V-SVUBR/L 3 A20S-SVUBR/L 3		●	●		●		VB□T 33 □ ☞ P. E31
SWLCR/L ☞ P. E79		S16T-SWLCR/L 4 S20U-SWLCR/L 4 A16R-SWLCR/L 4 A20S-SWLCR/L 4	●		●	●			WCMT 43 □ ☞ P. E33

Boring Bars

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°	Inserts	Clamp	Clamp Screw	Shim	Pin
S16T-MCLNR/L4	145-872	183.40	145-871	183.40	1.280	1.00	12.0	0.640	14°	CN□□43□	CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN-432 146-908 $ 9.20	NL-46 146-912 $ 4.50
S20U-MCLNR/L4	145-874	250.50	145-873	250.50	1.530	1.25	14.0	0.765	14°					
S24U-MCLNR/L4	145-884	451.10	145-762	451.10	1.780	1.50	14.0	0.890	11°					
S32V-MCLNR/L4	147-270	793.00			2.400	2.00	16.0	1.281	11°					
※ A16T-MCLNR/L4	148-363	144.60	148-364	123.20	1.280	1.00	12.0	0.640			CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	ICSN-432 146-908 $ 9.20	NL-46 146-912 $ 4.50
※ A20U-MCLNR/L4	148-365	223.10	148-367	189.90	1.530	1.25	14.0	0.765						

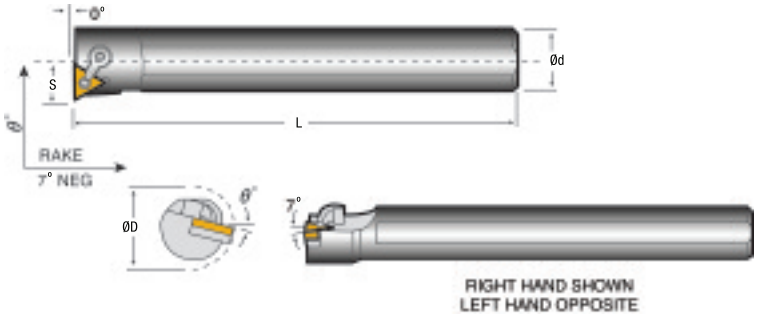
※ Coolant Hole Boring Bar

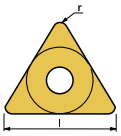
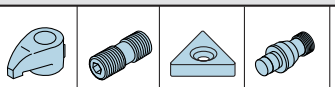
☞ P. E9-13, E42-43

Boring Bars

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	**147-271**	**268.30**			1.470	1.25	14.0	0.765	10°	CL-20 **146-918** **$ 8.20**	XNS-48 **146-922** **$ 2.10**	ITSN-432 **146-901** **$ 10.30**	NL-46 **146-912** **$ 4.50**
S32U-MTFNR-4	**145-882**	**793.00**			2.562	2.00	16.0	1.281	11°				
※ A16T-MTFNR/L-4	**148-370**	**123.20**	**148-371**	**123.20**	1.280	1.00	12.0	.641	10°	CL-9 **146-916** **$ 8.20**	XNS-59 **146-921** **$ 2.10**	ITSN-432 **146-901** **$ 10.30**	NL-46 **146-912** **$ 4.50**

TNM□ 43□

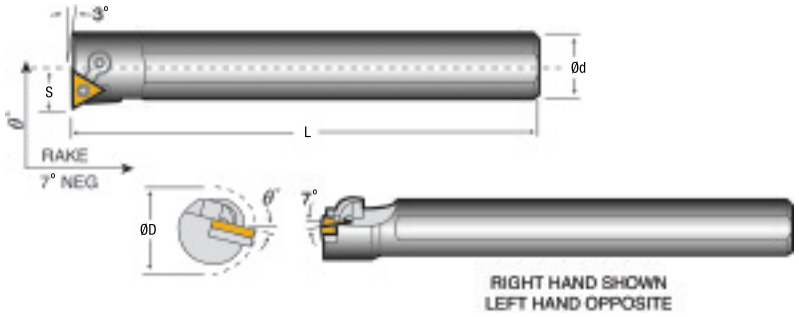
※ Coolant Hole Boring Bar

P. E26-30, E45

Boring Bars

MTUNR





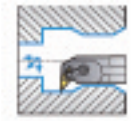
Ref	Holder Style	Application	Inserts	Parts				
Comment	Neg. 3° edge cutting edge angle	Facing, Through hole, Blind hole machining						

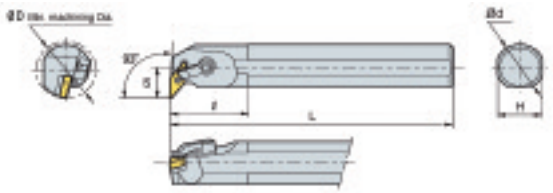
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	S	θ°			Inserts	Clamp	Clamp Screw	Shim	Pin
S24U-MTUNR-4	145-772	673.90			2.000	1.50	14.0	1.125	11°			TNM□ 43□	CL-20 **146-918** **$ 8.20**	XNS-48 **146-922** **$ 2.10**	ITSN-432 **146-901** **$ 10.30**	NL-46 **146-912** **$ 4.50**
S32U-MTUNR-4	145-883	894.90			2.562	2.00	14.0	1.281	11°				CL-9 **146-916** **$ 8.20**	XNS-59 **146-921** **$ 2.10**	ITSN-432 **146-901** **$ 10.30**	NL-46 **146-912** **$ 4.50**

P. E26-30, E45

MVUNR/L







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	L	S	H	ℓ		Inserts	Clamp	Clamp Screw	Shim	Pin
※	A16T-MVUNR/L-4	148-361	141.70	148-362	141.70	1.200	1	8.0	0.640	0.921	1.417		VN□□43□	CL-30 **147-214** **$ 14.40**	XNS-59 **146-921** **$ 2.10**	IVSN-433 **148-287** **$ 9.90**	NL-46 **146-912** **$ 4.50**

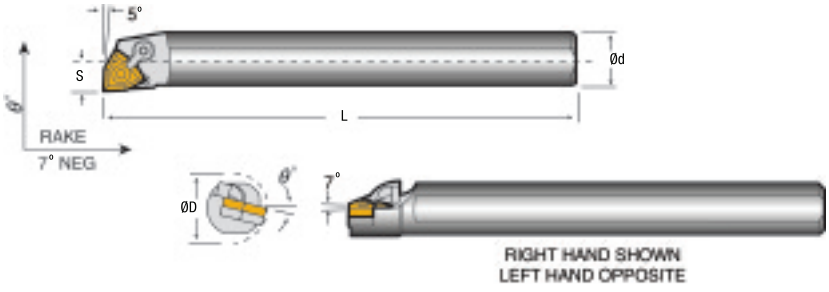
※ Coolant Hole Boring Bar

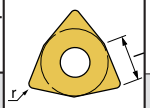
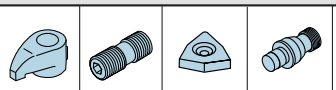
P. E32

Boring Bars

MWLNR/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-MWLNR/L-4 S20U-MWLNR/L-4	145-881 145-877	183.40 250.50	145-879 145-878	183.40 250.50	1.280 1.530	1.00 1.25	12.0 14.0	0.640 0.765	14° 14°			CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	IWSN-432 146-906 $ 13.00	NL-44 146-985 $ 4.70
S24U-MWLNR/L-4	145-865	292.40	145-880	292.40	1.780	1.50	14.0	0.890	11°			CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	IWSN-432 146-906 $ 13.00	NL-46 146-912 $ 4.50
※ A16T-MWLNR/L-4 ※ A20U-MWLNR/L-4	148-353 148-355	144.60 189.90	148-354 148-356	123.20 189.90	1.280 1.530	1.00 1.25	12.0 14.0	0.640 0.765				CL-20 146-918 $ 8.20	XNS-48 146-922 $ 2.10	IWSN-432 146-906 $ 13.00	NL-46 146-912 $ 4.50

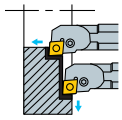
※ Coolant Hole Boring Bar

WNM□ 43□

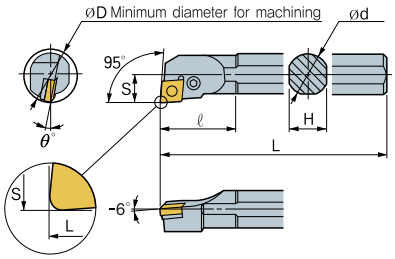
☞ P. E33-36

PCLNR/L

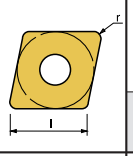
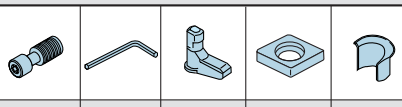




Feed direction



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	145-903	201.30	145-904	201.30	1.200	1.000	0.921	12.0	0.640	-12°	1.575	VHX0613A 146-941 $ 15.10	HW25L 146-956 $ 2.90	LV4A 146-942 $ 20.30	-	-
S20U-PCLNR/L-4 S24V-PCLNR/L-4	145-905 145-907	255.30 321.90	145-906 145-908	255.30 321.90	1.470 1.760	1.250 1.500	1.171 1.382	14.0 16.0	0.765 0.890	-11° -10°	1.969 2.165	VHX0821 146-925 $ 11.40	HW30L 146-953 $ 3.40	LV4 146-924 $ 18.80	SC42B 146-943 $ 11.50	SP4 146-928 $ 5.30

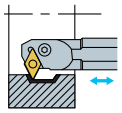
CN□□43□

☞ P. E9-13, E42, 43

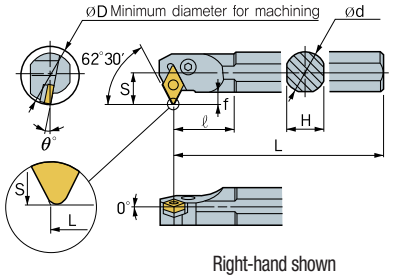
Boring Bars

PDSNR





Feed direction



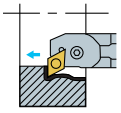
Right-hand shown

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	145-909	255.30			1.705	1.250	1.171	14.0	1.000	-11°	1.772	DN□□44□	VHX0821	HW30L	LV4	SD42	SP4
S24V-PDSNR-4	145-910	321.90			2.000	1.500	1.382	16.0	1.125	-11°	1.693		146-925 $ 11.40	146-953 $ 3.40	146-924 $ 18.80	146-927 $ 14.10	146-928 $ 5.30

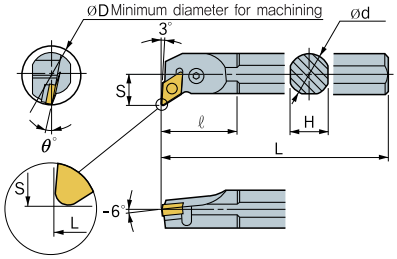
☞ P. E15-17, E42-44

PDUNR





Feed direction



Right-hand shown

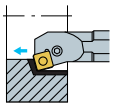
Ref	Holder Style				Application				Inserts	Parts				
Comment	U style, Approach Angle 93°				Copying, Through hole, Blind hole machining									
Designation	Code # Right	Price $	Code # Left	Price $	øD	ød	H	L	S	θ°	ℓ		Screw	Wrench	Lever	Shim	Shim Pin
S20U-PDUNR-4	145-911	255.30			1.705	1.250	1.171	14.0	1.000	-16°	1.969	DN□□43□	VHX0821	HW30L	LV4B	SD42	SP4
S24V-PDUNR-4	145-912	321.90			2.000	1.500	1.382	16.0	1.125	-11°	1.969		146-925 $ 11.40	146-953 $ 3.40	145-558 $ 20.30	146-927 $ 14.10	146-928 $ 5.30

☞ P. E15-17, E42-44

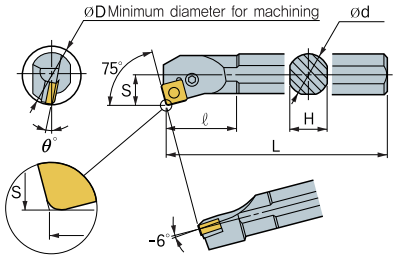
Boring Bars

PSKNR/L





Feed direction



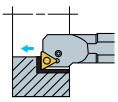
Right-hand shown

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	145-913	201.30	145-914	201.30	1.200	1.000	0.921	12.0	0.640	-12°	1.654	SN□□43□	VHX0613A 146-941 $ 15.10	HW25L 146-956 $ 2.90	LV4A 146-942 $ 20.30	-	-
S20U-PSKNR/L 4	145-915	255.30	145-916	255.30	1.470	1.250	1.171	14.0	0.765	-10°	1.969		VHX0821 146-925 $ 11.40	HW30L 146-953 $ 3.40	LV4 146-924 $ 18.80	SS42B 146-973 $ 11.50	SP4 146-928 $ 5.30
S24V-PSKNR/L 4	145-917	321.90	145-918	321.90	1.760	1.500	1.382	16.0	0.890	-10°	2.165						

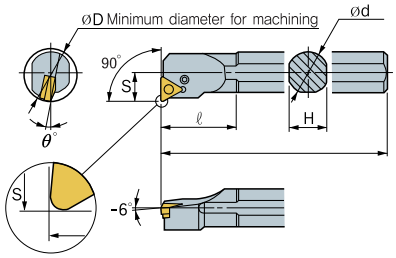
P. E21-23, E42-E44

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
S10R-PTFNR/L 2 S12S-PTFNR/L 2					0.77 0.93	0.625 0.750	0.586 0.671	8.0 10.0	0.406 0.500	-14° -12°	1.102 1.220	TN□□22□	VHX0509B	HW20L 146-954 $ 2.90	LV2	-	-
S16T-PTFNR/L 2					1.20	1.000	0.921	12.0	0.640	-10°	1.378						
S16T-PTFNR/L 3	145-919	201.30	145-920	201.30	1.200	1.000	0.921	12.0	0.640	-12°	1.575	TN□□33□	VHX0512B 146-976 $ 19.10	HW20L 146-954 $ 2.90	LV3 146-923 $ 17.60	-	-
S20U-PTFNR 3	145-921	255.30			1.470	1.250	1.171	14.0	0.765	-10°	1.969		VHX0617 146-926 $ 10.20	HW25L 146-956 $ 2.90	LV3 146-923 $ 17.60	ST317B 146-974 $ 11.50	SP3 146-929 $ 5.30
S24V-PTFNR 3	145-923	321.90			1.760	1.500	1.382	16.0	0.890	-10°	2.165		VHX0617 146-926 $ 10.20	HW20L 146-954 $ 2.90	LV3 146-923 $ 17.60	-	-

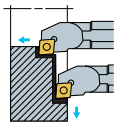
P. E26-30, E42, E45

Boring Bars

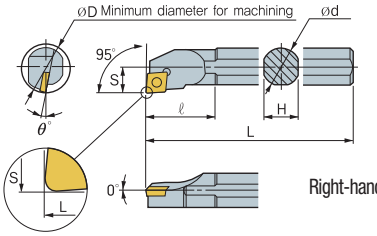
SCLCR/L



Kits Also Available
P. E184



Feed direction



Right-hand shown

Ref	Holder Style	Application	Inserts	Parts
Comment	L style, Approach Angle 95°	Copying, Through hole, Blind hole machining		

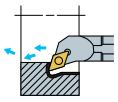
Designation	Code # Right	Price $	Code # Left	Price $	øD	ød	H	L	S	θ°	ℓ	Inserts	Screw	Wrench	Shim	Shim Pin
S06M-SCLCR 2	147-978	75.90			0.480	0.375	0.336	6.0	0.250	-13°		CC□T 21.5□	FTKA02565	TW07P	-	-
S08M-SCLCR 2	147-979	75.90			0.600	0.500	0.461	6.0	0.312	-10°			146-930	146-939		
													$ 12.30	$ 13.20		
S08M-SCLCR 3	147-203	67.70			0.600	0.500	0.461	6.0	0.312	-10°			FTGA03508	TW15P	-	-
S10R-SCLCR/L 3	145-925	82.70	145-928	82.70	0.770	0.625	0.586	8.0	0.406	-12°	1.280		146-931	146-940		
													$ 11.40	$ 15.20		
S12S-SCLCR/L 3	145-926	91.70	145-929	91.70	0.930	0.750	0.671	10.0	0.500	-8°	1.496	CC□T 32.5□	FTGA03510			
S16T-SCLCR/L 3	145-927	111.20	145-930	111.20	1.200	1.000	0.921	12.0	0.640	-6°	1.772		146-957			
													$ 10.50			
S16T-SCLCR/L 4	145-931	111.20	145-934	111.20	1.200	1.000	0.921	12.0	0.640	-6°	1.772		FTGA0411F	TW15P	SC42S	SHXN0610F
S20U-SCLCR/L 4	145-932	135.30	145-935	135.30	1.470	1.250	1.171	14.0	0.765	-10°	1.969		146-944	146-940	146-936	145-998
S24V-SCLCR/L 4	145-933	171.20	145-936	171.20	1.760	1.500	1.382	16.0	0.890	-8°	2.362	CC□T 43□	$ 10.40	$ 15.20	$ 11.50	$ 17.60
※ A05F-SCLCR 2	146-589	96.50			0.415	0.3125	0.293	3.0	0.219	-5°			FTKA02565	TW07P	-	-
※ A06H-SCLCR 2	146-590	104.30			0.480	0.375	0.355	4.0	0.250	-13°		CC□T 21.5□	146-930	146-939		
													$ 12.30	$ 13.20		
※ A08K-SCLCR 2	146-591	86.80			0.600	0.500	0.480	5.0	0.312	-10°			FTGA03508	TW15P	-	-
※ A10M-SCLCR 2	147-348	96.70			0.770	0.625	0.605	6.0	0.406	-10°		CC□T 21.5□	146-931	146-940		
													$ 11.40	$ 15.20		
Carbide Shank																
C06-SCLCR 2	147-297	486.10			0.480	0.375	0.355	4.0	0.250	13°		CC□T 21.5□	FTKA02565	TW07P	-	-
													146-930	146-939		
													$ 12.30	$ 13.20		
C08-SCLCR 2	147-298	809.80			0.600	0.500	0.480	5.0	0.312	10°			FTGA03508	TW15P	-	-
													146-931	146-940		
													$ 11.40	$ 15.20		
C10-SCLCR 3	147-299	1,139.30			0.770	0.625	0.605	6.0	0.406	12°	1.280	CC□T 32.5□	FTGA03508	TW15P	-	-
C12-SCLCR/L 3	147-300	1,406.10	147-347	1,590.40	0.930	0.750	0.711	7.0	0.500	-8°	1.496		146-931	146-940		
													$ 11.40	$ 15.20		

※ Coolant Hole Boring Bar

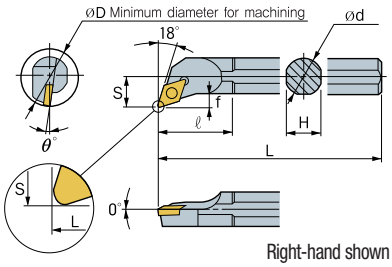
P. E8-9

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	Inserts	Screw	Wrench
S12S-SDQCR 3	145-937	91.70			0.980	0.750	0.671	10.0	0.562	-6°	1.260	0.177	DC□T 32.5□	FTGA03508	
														146-931	TW15P
														$ 11.40	146-940
S16T-SDQCR 3	145-938	111.20			1.300	1.000	0.921	12.0	0.750	-6°	1.260	0.276		FTGA03510	$ 15.20
														146-957	
														$ 10.50	

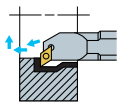
P. E15

Boring Bars

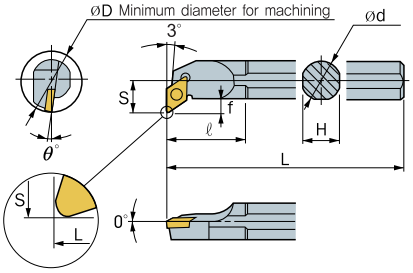
SDUCR



Kits Also Available
P. E185



Feed direction



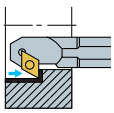
Right-hand shown

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	145-939	67.10			0.600	0.375	0.336	6.0	0.375	-8°		0.098	DC□T 21.5□	FTKA02565	TW07P
S08M-SDUCR 2	145-940	69.50			0.730	0.500	0.461	6.0	0.437	-8°	0.866	0.138		146-930	146-939
S10R-SDUCR 2	145-941	82.70			0.850	0.625	0.586	8.0	0.500	-6°	1.063	0.157		$ 12.30	$ 13.20
S12S-SDUCR 3	145-942	91.70			0.980	0.750	0.671	10.0	0.562	-6°	1.575	0.169	DC□T 32.5□	FTGA03508 146-931 $ 11.40	TW15P 146-940
S16T-SDUCR 3	145-943	111.20			1.300	1.000	0.921	12.0	0.750	-6°	1.811	0.268		FTGA03510 146-957 $ 10.50	$ 15.20
Carbide Shank C06-SDUCR-2	147-301	699.90			0.600	0.375	0.336	6.0	0.375	-8°		0.098	DC□T21.5□	FTKA02565 146-930 $ 12.30	TW07P 146-939 $ 13.20

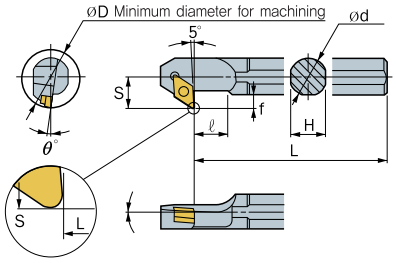
P. E15

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
S10R-SDZCR/L 2					0.776	0.625	0.586	8.000	0.406	-6°	0.787	0.157	DC□T 21.5□	FTKA02565	TW07P		
S12S-SDZCR/L 2					0.930	0.750	0.671	10.000	0.500	-6°	0.984	0.177		146-930 $ 12.30	146-939 $ 13.20		
S16T-SDZCR/L 3	145-944	111.20	145-945	111.20	1.200	1.000	0.921	12.0	0.640	-6°	1.181	0.272	DC□T 32.5□	FTGA03510 146-957 $ 10.50	TW15P 146-940 $ 15.20	-	-
S20U-SDZCR/L 3	145-946	233.10	145-947	233.10	1.470	1.250	1.171	14.0	0.765	-6°	1.535	0.331	DC□T 32.5□	FTGA03512 146-933 $ 11.40	TW15P 146-940 $ 15.20	SD32S 146-937 $ 11.50	SHXN0509F 146-935 $ 17.40
※ S24V-SDZCR/L 3					1.760	1.500	1.382	16.0	0.890	-4°	1.850	0.370					

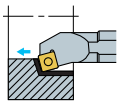
※ Coolant Hole Boring Bar

P. E15

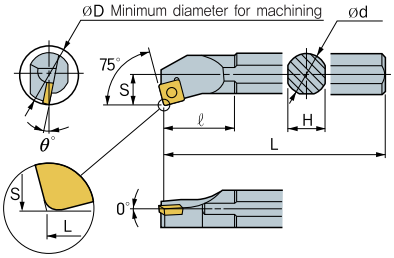
Boring Bars

SSKCR/L





Feed direction



Right-hand shown

Ref	Holder Style	Application	Inserts	Parts
Comment	K style, Approach Angle 75°	Through hole machining		

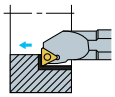
Designation	Code # Right	Price $	Code # Left	Price $	øD	ød	H	L	S	θ°	ℓ	Screw	Wrench	Shim	Shim Screw
S08M-SSKCR 3	145-948	69.50			0.600	0.500	0.461	6.0	0.312	-10°	1.024	FTGA03508	TW15P	-	-
S10R-SSKCR 3					0.770	0.625	0.586	8.0	0.406	-11°	1.280	146-931	146-940		
S12S-SSKCR 3	145-949	91.70			0.930	0.750	0.671	10.0	0.500	-8°	1.358	$ 11.40	$ 15.20		
S16T-SSKCR 4	145-950	111.20			1.200	1.000	0.921	12.0	0.640	-8°	1.429	FTGA0411F	TW15P	SS42S	SHXN0610F
S20U-SSKCR 4					1.470	1.250	1.171	14.0	0.765	-10°	1.723	146-944	146-940	145-997	145-998
												$ 10.40	$ 15.20	$ 11.50	$ 17.60

SC□T 32.5□ / SC□T 43□

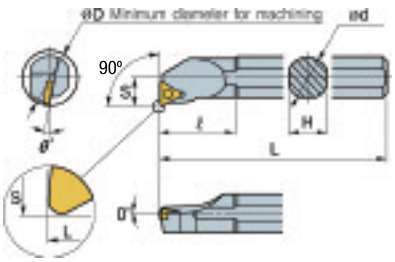
P. E20

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	146-001	67.10			0.480	0.375	0.336	6.0	0.250	-13°	0.906	FTKA02565	TW07P	-	-
S08M-STFCR 2	146-022	69.50			0.600	0.500	0.461	6.0	0.312	-10°	1.181	146-930	146-939		
S10R-STFCR/L 2	145-954	82.70	147-275	243.10	0.770	0.625	0.586	8.0	0.406	-6°	1.378	$ 12.30	$ 13.20		
S12S-STFCR/L 2	145-955	91.70			0.930	0.750	0.671	10.0	0.500	-3°	1.417				
S12S-STFCR/L 3					0.930	0.750	0.671	10.0	0.500	-10°	1.575	FTGA03510	TW15P	-	-
S16T-STFCR 3	146-042	111.20			1.200	1.000	0.921	12.0	0.640	-6°	1.929	146-957	146-940		
S20U-STFCR 3	146-818	233.10			1.470	1.250	1.171	14.0	0.765	-10°	1.969	$ 10.50	$ 15.20		
S24V-STFCR/L 3					1.760	1.500	1.382	16.0	0.890	-8°	2.362	FTGA03512	TW15P	ST32S	SHXN0509F
												146-933	146-940	145-999	146-935
												$ 11.40	$ 15.20	$ 14.90	$ 17.40
Carbide Shank												FTKA02565	TW07P	-	-
C06-STFCR 2	147-302	543.70			0.480	0.375	0.461	6.0	0.312	-10°	1.102	146-930	146-939		
C08-STFCR 2	147-303	809.80			0.600	0.500	0.461	6.0	0.312	-10°	1.181	$ 12.30	$ 13.20		
C10-STFCR 2	147-304	1,139.30			0.770	0.625	0.586	8.0	0.406	-6°	1.378				

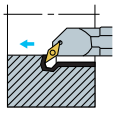
TC□T 21.5□ / TC□T 32.5□

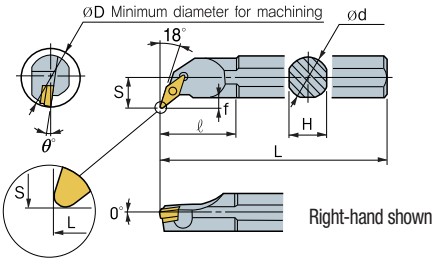
P. E25-26

Boring Bars

SVQBR







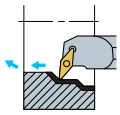
Ref	Holder Style	Application	Inserts	Parts
Comment	Q style, Approach Angle 108°	Copying, Relief machining		

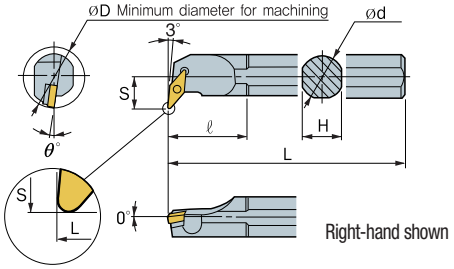
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	Inserts	Screw	Wrench	Shim	Shim Screw
S20U-SVQBR 3	145-977	233.10			1.705	1.250	1.171	14.0	1.000	- 8°	2.205	VB□T 33□	FTGA03512	TW15P	SV32S	SHXN0509F
S24V-SVQBR 3	145-978	297.40			2.000	1.500	1.382	16.0	1.125	- 8°	2.520		146-933 $ 11.40	146-940 $ 15.20	146-950 $ 14.40	146-935 $ 17.40

P. E31

SVUBR/L







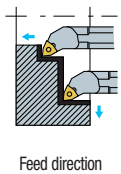
Ref	Holder Style	Application	Inserts	Parts
Comment	U style, Approach Angle 93°	Copying		

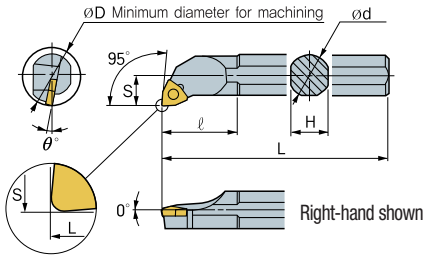
Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	Inserts	Screw	Wrench	Shim	Shim Screw
S20U-SVUBR 3	145-979	233.10			1.705	1.250	1.171	14.0	1.000	- 8°	1.929	VB□T 33□	FTGA03512	TW15P	SV32S	SHXN0509F
S24V-SVUBR/L 3	145-980	297.40	146-529	297.40	2.000	1.500	1.382	16.0	1.125	- 8°	1.224		146-933 $ 11.40	146-940 $ 15.20	146-950 $ 14.40	146-935 $ 17.40

P. E31

SWLCR/L





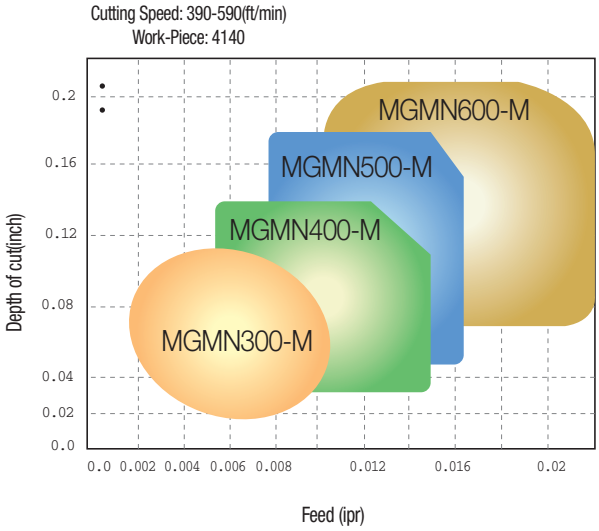


Ref	Holder Style	Application	Inserts	Parts
Comment	L style, Approach Angle 95°	Facing, Through hole, Blind hole machining		

Designation	Code # Right	Price $	Code # Left	Price $	ØD	Ød	H	L	S	θ°	ℓ	Inserts	Screw	Wrench
S16T-SWLCR/L 4	145-981	111.20	145-901	111.20	1.200	1.000	0.921	12.0	0.640	- 7°	1.835	WCMT 43□	FTGA0411F	TW15P
S20U-SWLCR/L 4	145-900	126.80	145-902	241.90	1.470	1.250	1.171	14.0	0.765	- 5°	2.031		146-944 $ 10.40	146-940 $ 15.20

P. E33

Application Range of M.T.G. Insert





Depth of Cut, Feed and Width of Cutting Edge

- If the depth of cut and feed are bigger than the width of cutting edge, it may bring into breaking due to increasing of cutting resistance of insert.
- If the depth of cut and feed are smaller than the width of cutting edge, it may lead to the 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

Work-Piece		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	PT22C		PT30C		
		PVD	PM30P					
		Cermet	PT10S		PM20S			
M	Stainless Steel	CVD	PT22C		PT30C			
		PVD	PM30P					
K	Cast Iron	CVD			KM20C			
		PVD		PC215K				
	Aluminum	Uncoated	KTM10U					

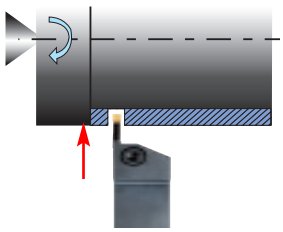
: Primary Recommendation

Application Range of M.T.G. Insert

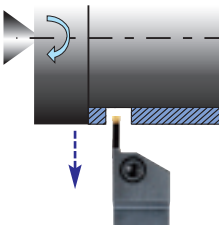
Insert	Steel					Stainless Steel		Cast Iron		Aluminum
	CVD		PVD	Cermet		CVD	PVD	CVD	Carbide	Carbide
	PT20C	PT30C	PM30P	PM20S	PT10S	PT30C	PM30P	KM20C	G10	KTM10U
MGMN200-G	●	△	△	-	-	△	△	△	△	-
MGMN300-G	△	△	△	-	-	△	△	△	△	-
MGMN400-G	△	△	△	-	-	△	△	△	△	-
MGMN500-G	△	△	△	-	-	△	△	△	△	-
MGMN300-M	●	●	●	-	-	●	●	●	△	-
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



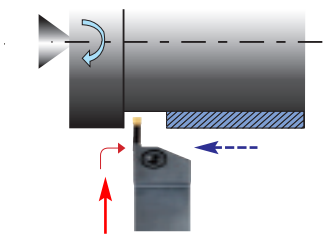
Grooving

Application Range of M.T.G. Insert

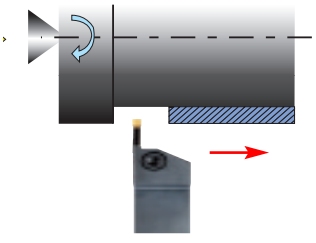
Feed by Cat.No.		Recommended cutting speed by Work-piece v(sfm)											
Cat.No	Feed (ipr)	Carbon Steel			High Hardened Alloy Steel			Hardened Steel			STS	Cast Iron	Al
		PT20C	PT30C	PM20S PT10S	PT20C	PT30C PM30P	PM20S CT10	PT20C	PT30C	PM20S PT10S	PM30P	PC215K	KTM10U
MGMN200-G	0.002	490											
	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 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,work piece,etc.

M.T.G. Applications



Cornering



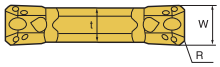
Turning

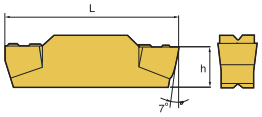
Turning Inserts

MGMN-G(M) For Grooving & Turning



Note:
G - Grooving only
M - Grooving & Turning

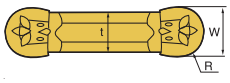




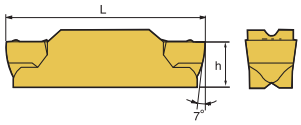
Designation	Coated Carbide PT20C	PT22C	PT30C	PM30P	PTM50P	MT20C	MT30C	MT30P	KT15P	Cermet PT10S	PT20S	Uncoated Carbide KTM10U	(inch) W	R	L	t	h	Applicable Holders Holder	Page No.
MGMN 200-G		149-044 $ 18.40	147-365 $ 18.40										.079	.008	.629	.063	.138	MGEHR/L	E84
																		MGEVR/L	E85
																		MGIVR/L	E86
MGMN 300-G									148-314 $ 19.10				.118	1/64	.827	.093	.189		
MGMN 300-M		149-042 $ 19.10	147-363 $ 19.10		148-837 $ 15.90	148-429 $ 19.10	148-782 $ 19.10						.118	1/64	.827	.093	.189		
MGMN 400-G	148-311 $ 20.90								148-315 $ 20.90				.157	1/64	.827	.130	.189		
MGMN 400-M		149-049 $ 20.90	147-364 $ 20.90	146-211 $ 20.90	148-843 $ 17.10								.157	1/64	.827	.130	.189		
MGMN 500-G	148-312 $ 26.50												.197	1/32	1.024	.161	.228		
MGMN 500-M	146-836 $ 26.50												.197	1/32	1.024	.161	.228		
MGMN 600-M		146-640 $ 26.90											.236	1/32	1.024	.197	.228		
MGMN 800-M	147-293 $ 53.80												.315	1/32	1.220	.236	.256		

MRMN-M For Relief, Copying





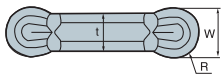
W =± 0.05

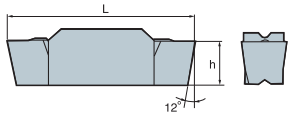


Designation	Coated Carbide PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	Cermet PT10S	PT20S	Uncoated Carbide KTM10U	(inch) W	R	L	t	h	Applicable Holders Holder	Page No.
MRMN 200-M			147-368 $ 18.40										.079	.039	.630	.063	.138	MGEHR/L	E84
																		MGEUR/L	E85
MRMN 300-M					146-838 $ 19.10								.118	.059	.827	.093	.189	MGEVR/L	E85
																		MGIUR/L	E86
MRMN 400-M					146-839 $ 20.90								.157	.078	.827	.130	.189	MGIVR/L	E86
MRMN 500-M				147-245 $ 26.50	147-037 $ 26.50								.197	.098	1.024	.161	.228		
MRMN 600-M					147-039 $ 29.30								.236	.118	1.024	.197	.228		
MRMN 800-M					147-041 $ 46.20								.315	.157	1.220	.236	.256		

MRGN-A For Aluminum Machining







• -AH : Relief Angle 17°

W =± 0.03

Designation	Coated Carbide PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	Cermet PT10S	PT20S	Uncoated Carbide KT10U	(inch) W	R	L	t	h	Applicable Holders Holder	Page No.
MRGN 300-A												148-428 $ 33.00	.118	.059	.827	.093	.189	MGEUR/L	E85
																		MGIUR/L	E86
MRGN 400-A												148-153 $ 34.90	.157	.078	.827	.130	.189		
MRGN 500-A												148-154 $ 37.20	.197	.098	1.024	.161	.228		
MRGN 600-A												148-155 $ 40.10	.236	.118	1.024	.197	.228		

Quick Choice Grade Selection

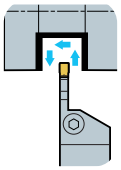
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

M.T.G. External Holders

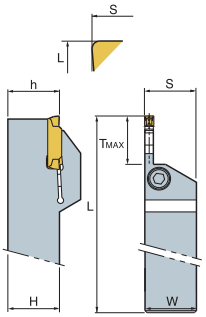
MGEHR/L



Kits Also Available
P. E186



Feed direction



Right-hand shown

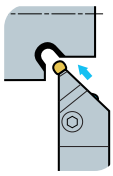
Ref	Holder Style				Application					Inserts	Parts	
Comment					External Grooving , Turning							
									(inch)			
MGEHR/L	Code # Right	Price $	Code # Left	Price $	H(h)	W	L	S	TMAX		Screw	Wrench
12-2	148-244	229.60			0.750	0.750	4.921	0.760	0.47	MGMN200-G/M	MHA 0512	HW 40L
16-2	148-245	246.70	148-587	246.70	1.000	1.000	5.906	1.010	0.47		147-984	148-290
											$ 11.60	$ 3.40
12-3	148-062	229.60	148-064	229.60	0.750	0.750	4.921	0.764	0.70			
12-3-T03	148-063	229.60	148-065	229.60	0.750	0.750	4.921	0.764	0.39			
16-3	148-066	246.70	148-067	246.70	1.000	1.000	5.906	1.014	0.70	MGMN300-M		
16-3-T03	148-068	246.70	148-069	246.70	1.000	1.000	5.906	1.014	0.39	MRMN300-M		
20-3	148-070	266.80	148-071	266.80	1.250	1.250	6.693	1.264	0.70			
20-3-T03	148-072	266.80	148-073	266.80	1.250	1.250	6.693	1.264	0.39			
12-4					0.750	0.750	4.921	0.766	0.70			
12-4-T03					0.750	0.750	4.921	0.766	0.39			
16-4	148-074	246.70	148-075	246.70	1.000	1.000	5.906	1.016	0.70	MGMN400-M		
16-4-T03	148-076	246.70	148-077	246.70	1.000	1.000	5.906	1.016	0.39	MRMN400-M		
20-4	148-078	266.80	148-079	266.80	1.250	1.250	6.693	1.264	0.70			
20-4-T03	148-082	266.80	148-083	266.80	1.250	1.250	6.693	1.264	0.39			
12-5					0.750	0.750	4.921	0.770	0.90		BHA0616	HW 50L
12-5-T05					0.750	0.750	4.921	0.770	0.59		146-958	148-186
16-5	148-080	246.70	148-081	246.70	1.000	1.000	5.906	1.020	0.90	MGMN500-M	$ 9.40	$ 3.40
16-5-T05					1.000	1.000	5.906	1.020	0.59			
20-5	148-084	266.80	148-085	266.80	1.250	1.250	6.693	1.270	0.90	MRMN500-M		
20-5-T05					1.250	1.250	6.693	1.270	0.59			
12-6					0.750	0.750	4.921	0.774	0.90			
12-6-T05					0.750	0.750	4.921	0.774	0.59			
16-6	148-086	246.70	148-087	246.70	1.000	1.000	5.906	1.024	0.90	MGMN600-M		
16-6-T05					1.000	1.000	5.906	1.024	0.59	MRMN600-M		
20-6	148-088	266.80	148-089	266.80	1.250	1.250	6.693	1.274	0.90			
20-6-T05					1.250	1.250	6.693	1.274	0.59			
16-8	148-090	246.70	148-091	246.70	1.000	1.000	5.906	1.043	1.10	MGMN800-M		
16-8-T05					1.000	1.000	5.906	1.043	0.59			
20-8	148-092	266.80			1.250	1.250	6.693	1.293	1.10	MRMN800-M		
20-8-T05					1.250	1.250	6.693	1.293	0.59			

P. E83

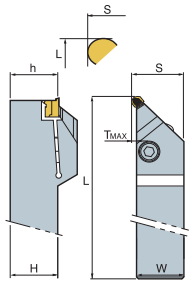
M.T.G. External Holders

MGEUR/L





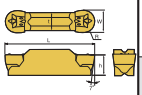
Feed direction



Right-hand shown

Ref	Holder Style	Application	Inserts	Parts	
Comment		External Relief Grooving			

(inch)





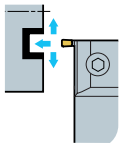


MGEUR/L	Code # Right	Price $	Code # Left	Price $	H(h)	W	L	S	TMAX	Inserts	Screw	Wrench
12-3	148-105	215.20	148-106	215.20	0.750	0.750	4.921	0.967	0.21	MRMN300-M		
16-3	148-107	233.40	148-108	233.40	1.000	1.000	5.906	1.217	0.21			
20-3	148-109	251.30	148-110	251.30	1.250	1.250	6.693	1.467	0.21			
12-4					0.750	0.750	4.921	0.967	0.21	MRMN400-M		
16-4	148-111	233.40	148-112	233.40	1.000	1.000	5.906	1.217	0.21			
20-4	148-113	251.30	148-114	251.30	1.250	1.250	6.693	1.467	0.21			
12-5					0.750	0.750	4.921	1.026	0.27	MRMN500-M		
16-5	148-115	233.40	148-116	233.40	1.000	1.000	5.906	1.276	0.27			
20-5	148-117	251.30	148-118	251.30	1.250	1.250	6.693	1.526	0.27		BHA0616 **146-958** **$ 9.40**	HW 50L **148-186** **$ 3.40**
12-6					0.750	0.750	4.921	1.222	0.27	MRMN600-M		
16-6	148-119	233.40	148-120	233.40	1.000	1.000	5.906	1.276	0.27			
20-6	148-121	251.30	148-122	251.30	1.250	1.250	6.693	1.526	0.27			
16-8	148-123	233.40	148-124	233.40	1.000	1.000	5.906	1.354	0.35	MRMN800-M		
20-8	148-125	251.30	148-126	251.30	1.250	1.250	6.693	1.604	0.35			
16-6A	148-127	233.40	148-128	233.40	1.000	1.000	5.906	1.276	0.27	MRGN600-A		
20-6A					1.250	1.250	6.693	1.526	0.27			
16-8A	148-129	233.40	148-130	233.40	1.000	1.000	5.906	1.354	0.35	MRGN800-A		
20-8A					1.250	1.250	6.693	1.604	0.35			

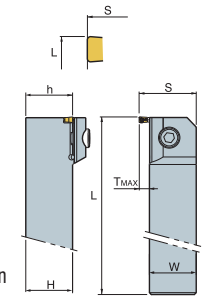
P. E83

MGEVR/L





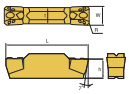
Feed direction



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	Inserts	Screw	Wrench
12-2	148-266	215.20	148-267	215.20	0.750	0.750	4.921	0.868	0.11	MGMN200-G		
16-2	148-268	233.40	148-269	233.40	1.000	1.000	5.906	1.118	0.11			
12-3	148-270	215.20	148-271	215.20	0.750	0.750	4.921	0.967	0.21	MGMN300-M	BHA0616 **146-958** **$ 9.40**	HW 50L **148-186** **$ 3.40**
16-3	148-272	233.40	148-273	233.40	1.000	1.000	5.906	1.217	0.21			
20-3	148-274	251.30	148-275	251.30	1.250	1.250	6.693	1.467	0.21	MRMN300-M		

P. E83

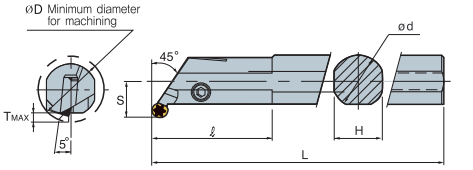
M.T.G. Internal Holders

MGIUR/L





Feed direction





Right-hand shown

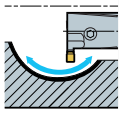
Ref	Holder Style				Application							Inserts	Parts	
Comment					Internal Relief Grooving									
												(inch)		
MGIUR/L	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	ℓ	TMAX	H	S		Screw	Wrench
2312-3 •	148-131	214.50	148-132	214.50	1.437	0.750	5.906	1.772	0.13	0.670	0.512	MRMN300-M	MHA0512 **147-984** **$ 11.60**	HW 40L **148-290** **$ 3.40**
2616-3 •	148-133	242.00	148-134	242.00	1.625	1.000	7.874	1.772	0.13	0.920	0.610			
3220-3 •	148-135	287.20	148-136	287.20	2.000	1.250	9.843	2.559	0.13	1.170	0.748			
2312-4 •					1.437	0.750	5.906	1.772	0.13	0.670	0.512	MRMN400-M		
2616-4 •	148-137	242.00	148-138	242.00	1.625	1.000	7.874	1.772	0.13	0.920	0.610			
3220-4 •	148-139	287.20	148-140	287.20	2.000	1.250	9.843	2.559	0.13	1.170	0.748			
2616-5 •	148-141	241.60	148-142	241.60	1.625	1.000	7.874	1.772	0.13	0.920	0.610	MRMN500-M	BHA0620 **146-958** **$ 9.40**	HW 50L **148-186** **$ 3.40**
3220-5 •	148-143	291.60	148-144	291.60	2.000	1.250	7.874	1.772	0.13	1.170	0.748			
2616-6 •					1.625	1.000	9.843	2.559	0.13	0.920	0.748	MRMN600-M		
3220-6 •	148-145	291.60	148-146	291.60	2.000	1.250	9.843	2.559	0.13	1.170	0.748		BHA0620 **146-958** **$ 9.40**	

• **Available only while quantities last**

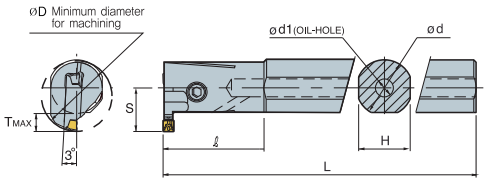
P. E83

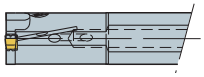
MGIVR/L





Feed direction





Right-hand shown

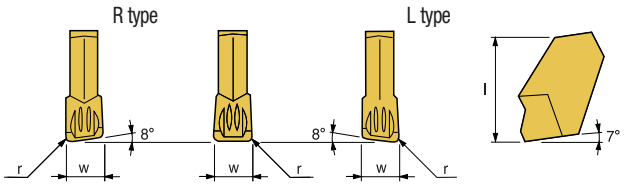
Ref	Holder Style				Application								Inserts	Parts	
Comment					Internal Grooving, Turning										
												(inch)			
MGIVR/L	Code # Right	Price $	Code # Left	Price $	ØD	Ød	L	l	TMAX	Ød1	H	S		Screw	Wrench
1210-2	148-233	234.40			0.750	0.625	4.921	1.378	0.15	0.236	0.630	0.476	MGMN200-G	MHB0310 **148-671** **$ 9.40**	HW25L **146-956** **$ 2.90**
1612-2	148-234	275.70			1.000	0.750	5.906	1.772	0.15	0.315	0.630	0.585			
1612-3	148-235	275.70	146-876	265.40	1.000	0.750	5.906	1.772	0.23	0.236	0.670	0.614	MGMN300-M		
2016-3	148-236	321.20	148-237	321.20	1.250	1.000	7.874	1.772	0.23	0.315	0.920	0.744		MHA0512 **147-984** **$ 11.60**	HW 40L **148-290** **$ 3.40**
2420-3	148-238	377.50			1.500	1.250	9.843	2.559	0.23	0.315	1.170	0.846			
1612-4	148-239	275.70			1.000	0.750	5.906	1.772	0.23	0.315	0.670	0.614	MGMN400-M		
2016-4	148-240	321.20	148-241	321.20	1.250	1.000	7.874	1.772	0.23	0.315	0.920	0.744			
2420-4	148-242	377.50			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)





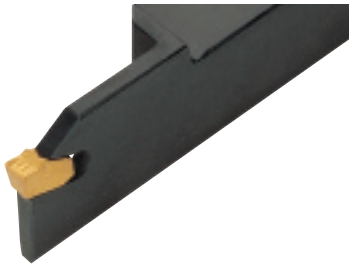
Designation	Coated Carbide									Cermet		Uncoated Carbide	(inch)			Applicable Holders	
	PT10C	PT20C	PT22C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PM30S	PTM30U	w	l	r	Holder	Page No.
SP 200		148-780 $ 17.30		146-450 $ 17.30									.087	.366	.008	PP-B PP-INT	E88 E87
SP 200R			149-057 $ 17.30	146-533 $ 17.30			146-233 $ 170.70						.087	.366	.008		
SP 300		145-616 $ 13.60		146-452 $ 17.40		147-765 $ 17.40	145-617 $ 17.40					146-451 $ 14.00	.122	.445	.008		
SP 300R				146-446 $ 17.40									.122	.445	.008		
SP 300L				146-447 $ 17.40									.122	.445	.008		
SP 400		146-781 $ 18.00		146-454 $ 18.00		147-766 $ 18.00						146-453 $ 14.40	.161	.445	.009		
SP 400R		145-618 $ 14.40		146-455 $ 18.00									.161	.445	.009		
SP 400L				146-057 $ 18.00									.161	.445	.009		
SP 500				146-456 $ 18.80									.201	.449	.011		
SP 500R				147-373 $ 18.80									.201	.449	.011		
SP 500L				146-058 $ 18.80									.201	.449	.011		
SP 600				146-458 $ 20.10									.252	.449	.014		

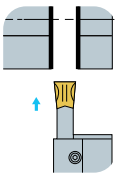
Quick Choice Grade Selection

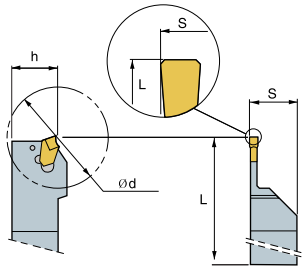
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Pro Part-Off Integral Shank Holder

PP-INT







Ref	Holder Style	Application	Inserts	Parts
Comment		Parting off		

(inch)

PP-INT	Code #	Price $	h	w	L	ød	S		Wrench
075-3	147-433	203.00	0.750	0.750	4.724	1.575	0.750	SP300, 300R/L	SW 50L 146-960 $ 3.30
100-3	148-231	203.00	1.000	1.000	5.906	2.362	1.000	SP300, 300R/L	
100-4	148-232	203.00	1.000	1.000	5.906	2.756	1.000	SP400, 400R/L	

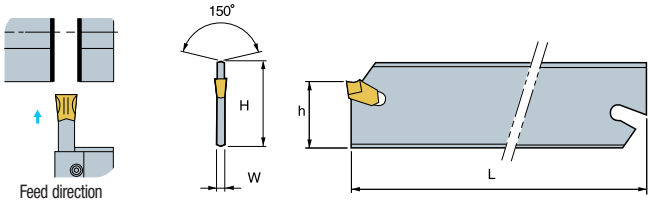
P. E87

Pro Part-Off Blades

PP-B Pro Part-Off Blades



Kits Also Available
P. E186



Ref	Holder Style	Application	Inserts	Parts
Comment		Parting off		 *Purchase separately

(inch)

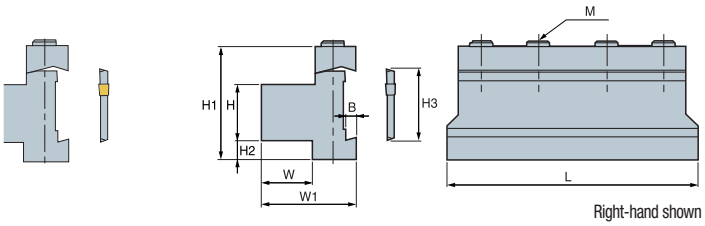
PP-B	Code #	Price $	H	W	L	h		Wrench
226S	146-532	208.20	1.023	0.063	4.331	0.827	SP200, 200R/L	SW 15S 146-771 $ 31.90
326S	146-232	208.20	1.023	0.094	4.331	0.827	SP300, 300R/L	
232S	146-717	208.20	1.259	0.063	5.906	0.984	SP200, 200R/L	
332S	146-898	208.20	1.259	0.094	5.906	0.984	SP300, 300R/L	
432S	146-899	208.20	1.259	0.126	5.906	0.984	SP400, 400R/L	
532S	146-962	208.20	1.259	0.157	5.906	0.984	SP500, 500R/L	
632S	148-538	208.20	1.259	0.205	5.906	0.984	SP600, 600R/L	

P. E87

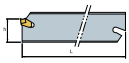
Pro Part-Off Blocks

P.O.B. Block For Pro Part-Off Blades





Right-hand shown

Ref	Holder Style	Application	Blades	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	146-510	239.30	0.750	0.750	1.023	3.50	2.10	0.354	1.375	0.209	3-M6	PPB 226 & 326	SW 50L 146-960 $ 3.30
25;4-6	145-895	250.20	1.000	0.875	1.259	4.50	2.125	0.157	1.500	0.209	4-M6	PPB 232 - 532	

P. E88

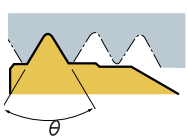
Threading Insert

Ref	for External	Pitch	for Internal	Pitch
Metric Thread 60°	**3000type** ECTR3100~3300 ECTR3150F ECTR3300F **4000type** ECTR4350~4500 ECTR4500F	 1.0~3.0mm 0.5~1.5mm 1.5~3.0mm 3.5~5.0mm 3.5~5.0mm	**2000type** ICTR2050~2200 ICTR2150F **3000type** ICTR3100~3300 ICTR3150F ICTR3300F **4000type** ICTR4350~4500 ICTR4500F	 0.5~2.0mm 0.5~1.5mm 1.0~3.0mm 0.5~1.5mm 1.5~3.0mm 3.5~5.0mm 3.5~5.0mm
Unified Thread 60°	**3000type** ECTR3028UN~3008UN ECTR3028UNF ECTR3014UNF **4000type** ECTR4007UN~4005UN ECTR4007UNF	 28~08 pitch/Inch 28~14 pitch/Inch 14~08 pitch/Inch 07~05 pitch/Inch 07~05 pitch/Inch	**2000type** ICTR2032UN~2014UN ICTR2048UNF **3000type** ICTR3028UN~3008UN ICTR3028UNF ICTR3014UNF **4000type** ICTR4007UN~4005UN ICTR4007UN	 24~14 pitch/Inch 48~16 pitch/Inch 28~08 pitch/Inch 28~14 pitch/Inch 14~08 pitch/Inch 07~05 pitch/Inch 07~05 pitch/Inch
Whitworth Thread 55°	**3000type** ECTR3028W~3008W ECTR3028WF ECTR3014WF **4000type** ECTR4007W~4005W ECTR4007WF	 28~08 pitch/Inch 28~14 pitch/Inch 14~08 pitch/Inch 07~05 pitch/Inch 07~05 pitch/Inch	**2000type** ICTR2020W~2014W ICTR2048UNF **3000type** ICTR3028W~3008W ICTR3028WF ICTR3014WF **4000type** ICTR4007W~4005W CTR4007WF	 20~14 pitch/Inch 48~16 pitch/Inch 28~08 pitch/Inch 28~14 pitch/Inch 14~08 pitch/Inch 07~05 pitch/Inch 07~05 pitch/Inch

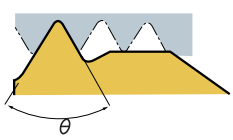
Work-piece	Recommended Grade & Cutting Speed(sfm)			
	Coated Grade	Uncoated		Cermet
	PM30P	ST10	PTM30U	PM20S
Carbon Steel	400(250-500)	325(300-400)	300(250-325)	450(400-550)
Alloy Steel	325(250-425)	300(250-375)	250(225-325)	375(325-425)
Hardened Steel	100(25-175)	75(25-100)		
Heat Resisting Alloys	125(75-200)	100(25-125)		
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

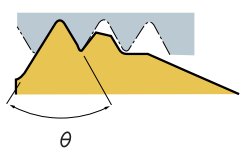
A type



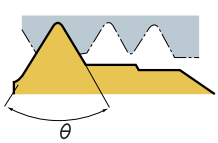
B type



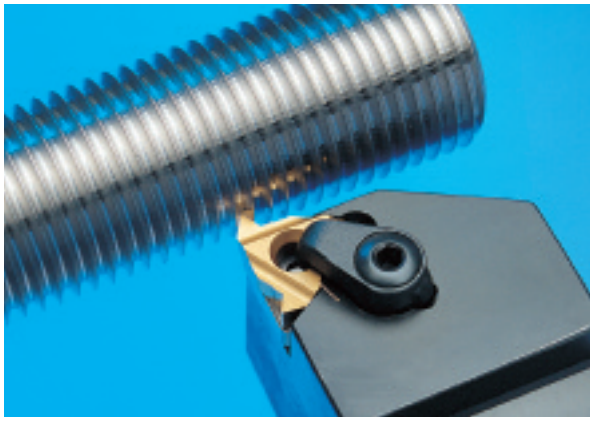
C type



D type



Effective Inclination and Relief Angle of Threading



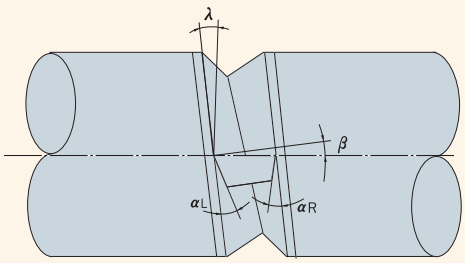
Inclination angle of the Thread (β) in the figure is decided by effective diameter (d) and lead (ℓ) of thread

The angle of inclination of the Thread (β) is calculated by using the formula.

$$\tan\beta = \frac{\ell}{\pi d}$$

ℓ : lead

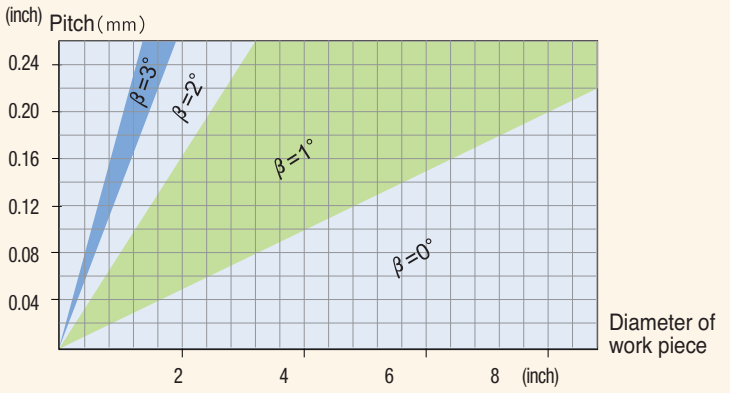
n:No.of Pitch, p:Pitch, d:Effective Diameter of Thread



α- Side Relief Angle (L =α R) α

λ- Helix Angle

β- Angle of Inclination

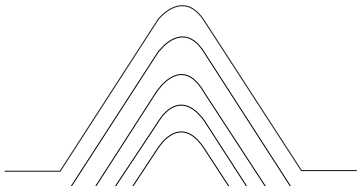
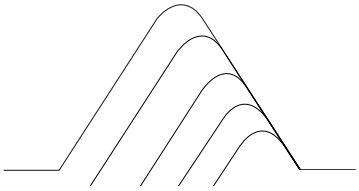
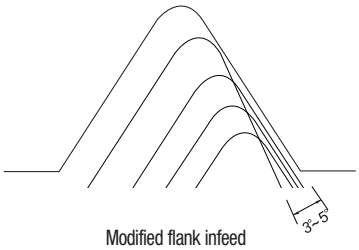
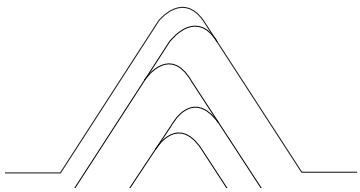


Effective Angle of Inclination of Each Cutting Condition

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 to 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 is 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

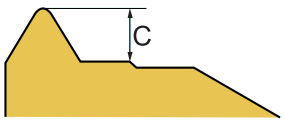
Pitch		6.0	5.5	5.0	4.5	4.0	3.5	3.0	2.5	2.0	1.75	1.5	1.25	1.0	0.75	0.5
Infeed Value(mm)		3.83	3.52	3.19	2.87	2.53	2.23	1.92	1.60	1.25	1.13	0.93	0.81	0.65	0.48	0.33
Pass	1	0.46	0.43	0.41	0.37	0.34	0.34	0.28	0.27	0.24	0.22	0.22	0.21	0.18	0.16	0.11
	2	0.43	0.40	0.39	0.34	0.32	0.31	0.26	0.24	0.22	0.20	0.20	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 work-piece.
5) Using coolant helps improve insert tool life and surface finish.



Cutting Depth and Passes - Unified

Unified 60° External

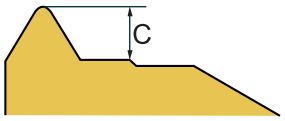
Pitch		5	6	7	8	9	10	11	12	14	16	18	19	20	24	28	32
Infeed Value(in.)		0.130	0.107	0.092	0.082	0.072	0.065	0.060	0.055	0.051	0.047	0.041	0.037	0.033	0.028	0.024	0.021
Pass	1	0.017	0.014	0.014	0.012	0.011	0.011	0.011	0.011	0.010	0.00	0.009	0.009	0.008	0.007	0.007	0.007
	2	0.016	0.013	0.013	0.011	0.010	0.010	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	13	14	16	18	20	24	28	32
Infeed Value(in.)		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														

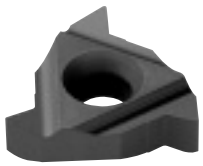
Note

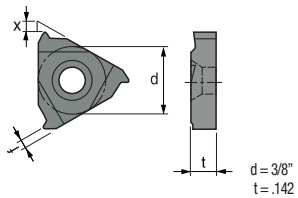
1) Above conditions are calculated upon using PM30P and PM20S grade.
2) Total D.O.C is based on C+ 0.05 ~ +0.08mm and no more excess is necessary
3) D.O.C, 0.05 ~ 0.1mm is recommended for pass
4) To avoid breakage of the insert at the first pass, make chamfer of 0.3~0.5 on the corner of work-piece.
5) Using coolant helps improve insert tool life and surface finish.



External Threading Inserts

ECTR



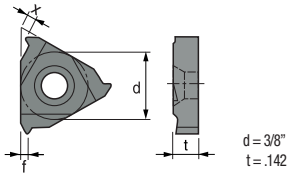


Designation		Coated Carbide									Uncoated Carbide			(inch)					Applicable Holders	
		PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PTM30U	KTM10U	Pitch	f	θ	x	Cutting Edge	Holder	Page No.
ECTR 28UN						146-512 $ 51.10						147-767 $ 32.20		28	.039	60°	.051	B	ETH3---	E95
ECTR 24UN						146-511 $ 51.10								24	.039	60°	.051	B		
ECTR 20UN						146-524 $ 51.10								20	.039	60°	.051	A		
ECTR 18UN						146-521 $ 51.10								18	.039	60°	.051	A		
ECTR 16UN						146-489 $ 51.10								16	.039	60°	.051	A		
ECTR 14UN						146-488 $ 51.10								14	.047	60°	.051	A		
ECTR 12UN						146-250 $ 51.10								12	.047	60°	.051	A		
ECTR 10UN						146-249 $ 51.10								10	.059	60°	.059	A		
ECTR 08UN						146-248 $ 51.10								08	.059	60°	.059	A		
ECTR 300 8-28						146-597 $ 51.10								28~8	.039	60°	.051	D		

Internal Threading Inserts

ICTR





Designation		Coated Carbide									Uncoated Carbide			(inch)					Applicable Holders	
		PT10C	PT15C	PT20C	PT30C	PM30P	MT20C	MT30P	KT05C	KT15P	PT10S	PTM30U	KTM10U	Pitch	f	θ	x	Cutting Edge	Holder	Page No.
ICTR 28UN						146-518 $ 51.10								28	.039	60°	.051	B	ITH3---	E95
ICTR 24UN						146-517 $ 51.10								24	.039	60°	.051	B		
ICTR 20UN						146-516 $ 51.10								20	.039	60°	.051	A		
ICTR 18UN						146-515 $ 51.10								18	.039	60°	.051	A		
ICTR 16UN						146-514 $ 51.10								16	.039	60°	.051	A		
ICTR 14UN						146-513 $ 51.10								14	.047	60°	.051	A		
ICTR 12UN						146-253 $ 51.10								12	.047	60°	.051	A		
ICTR 10UN						146-252 $ 51.10								10	.059	60°	.059	A		
ICTR 08UN						146-251 $ 51.10								08	.059	60°	.059	A		
ICTR 300 8-28						146-610 $ 51.10								28~8	.039	60°	.051	D		

Cutting edge type



Quick Choice Grade Selection

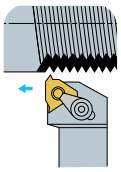
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

External Threading Holders

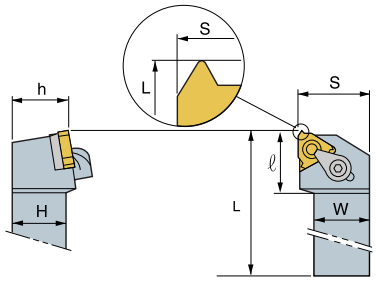
ETH3



Kits Also Available
P. E185



Feed direction



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	146-708	183.40	0.750	0.750	6.000	1.205	1.100	ECTR	CH5R3 146-474 $ 33.20	CHX0513 146-475 $ 18.70	ST32C1 146-476 $ 14.90	SHX0310 146-155 $ 9.10	CR04 146-477 $ 3.30	HW20L 146-954 $ 2.90
1”	146-290	194.30	1.000	1.000	6.000	1.205	1.100							

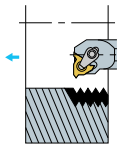
P. E94

Internal Threading Holders

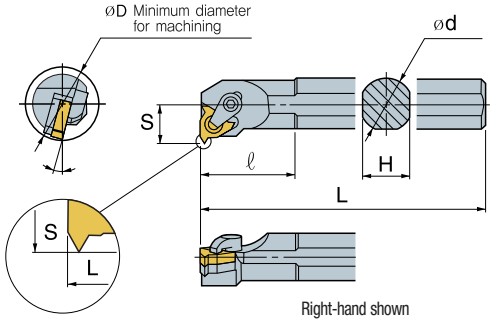
ITH3



Kits Also Available
P. E185



Feed direction



Right-hand shown

Ref	Holder Style				Application				Inserts	Parts						
Comment					Internal Threading											
								(inch)								
ITH3	Code #	Price $	øD	ød	H	L	ℓ	S		Clamp	Clamp Screw	Shim	Shim Screw	Insert Screw	C ring	Wrench
3/4	146-255	227.60	0.950	0.750	0.625	7.00	2.00	0.520	ICTR	CH5R3 146-474 $ 33.20	CHX0513 146-475 $ 18.70	ST32C1 146-476 $ 14.90	SHX0310 146-155 $ 9.10	FTKA03510 146-478 $ 11.30	CR04 146-477 $ 3.30	HW20L 146-954 $ 2.90
1”	146-254	244.30	1.150	1.000	0.750	8.00	2.50	0.650								
1.25”	146-256	288.70	1.460	1.250	1.250	10.00	2.50	0.780								

P. E94

Milling Insert Code System

1 Insert Shape

			
C	D	H	L
			
O	R	S	T
			
V	W		

2 Clearance Angle

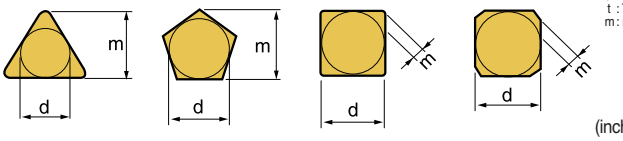
		
A	B	C
		
D	E	F
		
G	N	P

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	±006	±0.011
1	±0.005	±0.01	±0.07	±0.015

■ Tolerance on D class (exceptional)

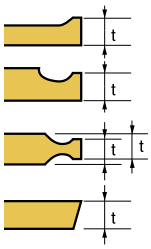
d	Tolerance on d	Tolerance on m
1/4	±0.002	±0.0043
3/8	±0.002	±0.0043
1/2	±0.003	±0.006
5/8	±0.004	±0.007
3/4	±0.004	±0.007

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

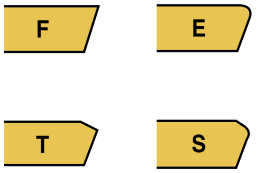
6 Height of Cutting Edge



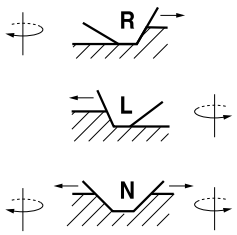
Symbol		Height of Cutting Edge (t)	
Metric	Inch	mm	Inch
-	0.5(1)	0.79	1/32
T0	0.6	1.00	0.040
01	1(2)	1.59	1/16
T1	1.2	1.98	5.64
02	1.5(3)	2.38	3/32
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

*( ) Symbol for small size insert

8 Edge Preparation

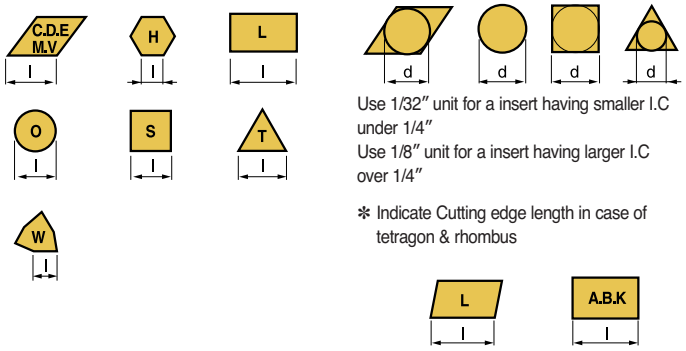


9 Hand of Tool



3	ED	2	S	R	F3
6	7		8	9	10

5 Cutting Edge Length, Diameter of Inscribed circle



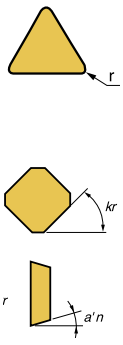
Use 1/32″ unit for a insert having smaller I.C under 1/4″
Use 1/8″ unit for a insert having larger I.C over 1/4″

✻ 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

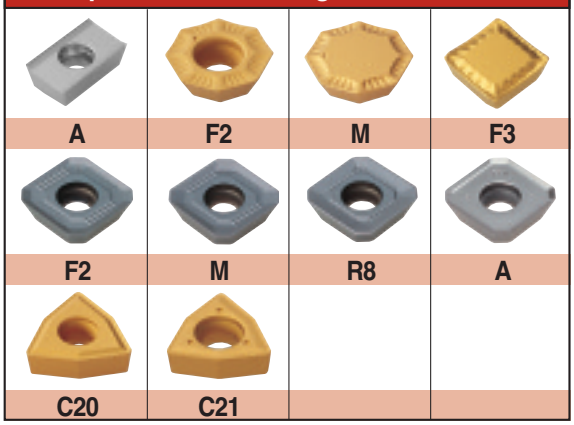
7 Nose Corner Radius (Nose R)



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

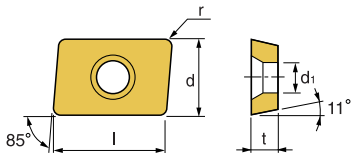


Milling Inserts

APKT

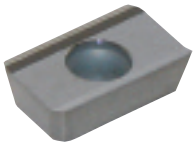


- Features
  Strong edge geometry

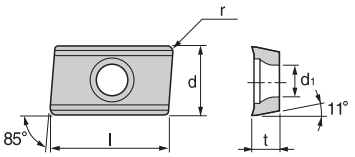


Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30C	PM25P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APKT 1604 PDSR		146-010 $ 23.10		148-317 $ 23.10	148-318 $ 23.10								.646	3/8	3/16	1/32	.173	AP16--- APFM16	E132,133, E136 E140-142
APKT 1604 PDR			146-087 $ 25.00										.646	3/8	3/16	1/32	.173		

APKT-A (For Aluminum & Plastic)

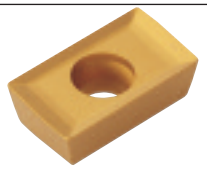


- Features
  Excellent cutting geometry for Aluminum & Plastics

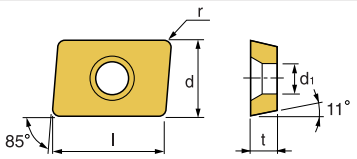


Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APKT 160416R PDR-A												146-548 $ 18.70	.646	3/8	3/16	1/16	.173	AP16---	E132-133, E136
APKT 160432R PDR-A												146-547 $ 18.70	.646	3/8	3/16	1/8	.173	APFM16	E140-142
APKT 1604 PDR-A												146-006 $ 18.30	.646	3/8	3/16	.008	.173		
APKT 1604 PDFR-AH (Helical)												148-496 $ 18.30	.646	3/8	3/16	.008	.173		

APKT-X24



- Features
  Free cutting geometry



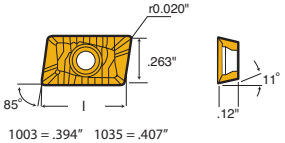
Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APKT 1604 PDR-X24		147-181 $ 22.30										146-007 $ 18.30	.646	3/8	3/16	3/64	.173	AP16--- APFM16	E132-133, E136 E140-142

APKT 1003/1035 - ADKT 1505



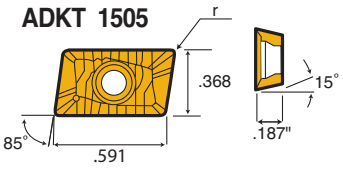
- Features
  Excellent general purpose geometry for a variety of applications

APKT 1003/1035



1003 = .394" 1035 = .407"

ADKT 1505



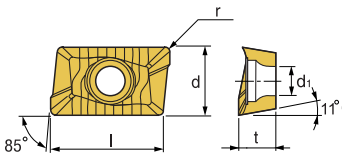
Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APKT 1003 PDSR		148-174 $ 18.40		147-793 $ 18.40							147-877 $ 14.70		.394	.263	.120	.020	.173	AP 10	E135,141
APKT 1035 PDFR-A													.407	.263	.120	.020	.173		
ADKT 1505 PDFR-A												147-980 $ 18.70	.591	.368	.187	.020	.177	AD 15	E135, 141
ADKT 1505 PDSR	147-880 $ 23.10	148-358 $ 23.10		147-794 $ 23.10	148-487 $ 23.10						147-879 $ 18.50		.591	.368	.187	.020	.177		
ADKT 1505 PDTR 1/16 Radius													.591	.368	.187	1/16	.177		

Milling Inserts

APKT 1604



- Features
  Excellent free cutting geometries
  for a variety of applications

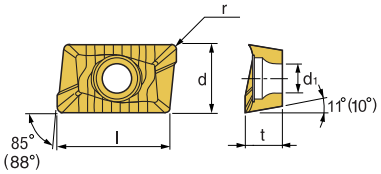


	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM10P	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APKT 1604 PDSR-F2	146-472 $ 23.10			148-489 $ 23.10		146-651 $ 23.10							.650	.376	.227	1/32	.175	AP 16	E136-140 E141
APKT 1604 PDSR-M	148-180 $ 23.10	146-530 $ 23.10		147-333 $ 23.10		146-652 $ 23.10	145-637 $ 23.10	147-339 $ 23.10			146-755 $ 18.30		.650	.376	.227	1/32	.175		
APKT 160432R PDSR-M								147-416 $ 23.10					.650	.376	.227	1/8	.175		
APKT 160416R-M				148-396 $ 23.10				148-397 $ 23.10					.650	.376	.227	1/16	.175		
APKT 160424R-M				148-398 $ 23.10									.650	.376	.227	3/32	.175		
APKT 160432R-M		146-149 $ 23.10		148-400 $ 23.10				148-401 $ 23.10					.650	.376	.227	1/8	.175		
APKT 160464R-M				148-402 $ 23.10				148-403 $ 23.10			146-168 $ 18.30		.650	.376	.227	1/4	.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												148-528 $ 12.50	0.236	0.167	0.102	0.016	0.079	APFM06M AP06M	E132 E138
APMT0602PDSR-M				149-021 $ 17.90		147-103 $ 16.60		147-104 $ 16.60					0.236	0.167	0.102	0.016	0.079		
APMT1135PDER													0.441	0.255	0.142	0.197	0.112		
APMT11T3PDER-F2		148-556 $ 14.40		148-565 $ 14.40									0.441	0.255	0.142	0.020	0.112		
APMT11T3PDER-M		148-547 $ 14.40		148-548 $ 14.40		148-544 $ 15.90		148-555 $ 14.40					0.441	0.255	0.142	0.020	0.112	APFM11M AP11M	E134 E139
APMT11T3PDFR-A												148-543 $ 12.70	0.441	0.255	0.142	0.047	0.112		
APMT11T312PDSR-M				148-583 $ 14.40									0.441	0.255	0.142	0.047	0.112		
APMT1604PDFR-A												148-584 $ 15.70	0.646	0.370	0.227	0.031	0.177		
APMT1604PDFR-M						148-588 $ 19.60							0.646	0.370	0.227	0.031	0.177		
APMT1604PDSR-F2		148-597 $ 17.70		148-599 $ 17.70		148-602 $ 17.70							0.646	0.370	0.227	0.031	0.177	APFM16M AP16M	E136 E139
APMT1604PDSR-M		148-589 $ 17.70		146-878 $ 17.70		149-009 $ 17.70	148-595 $ 17.70						0.646	0.370	0.227	0.031	0.177		
APMT160416PDSR-M		148-603 $ 17.70		148-604 $ 17.70									0.646	0.370	0.227	0.063	0.177		
APMT160432PDSR-M		148-605 $ 17.70		148-609 $ 17.70									0.646	0.370	0.227	0.126	0.177		
APMT1806PDER-M						148-610 $ 26.10							0.685	0.432	0.250	0.047	0.177	APFM18M AP18M	E136 E142
APMT1806PDSR-M		147-105 $ 28.20		145-625 $ 33.30		145-641 $ 23.70		147-106 $ 28.20					0.685	0.432	0.250	0.047	0.177		

Quick Choice Grade Selection

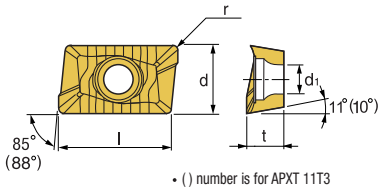
P Steel | M Stainless Steel | K Cast Iron-Alum | S Heat Resistant Alloy

Milling Inserts

APXT 11T3 & 1604



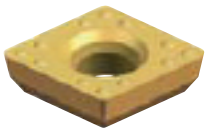
- Features
  Excellent free cutting geometries
  for a variety of applications



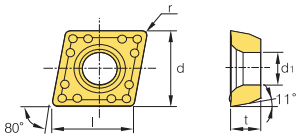
• ( ) number is for APXT 11T3

	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
APXT 11T3 PDSR-F2		146-796 $ 18.40				146-797 $ 18.40		148-485 $ 18.40					.445	.260	.142	.020	.112	AP 11	E132-137
																		APFM 11	E139-142
APXT 11T3 PDSR-M		146-356 $ 18.40		147-335 $ 18.40		146-354 $ 18.40		147-340 $ 18.40			146-357 $ 14.70		.445	.260	.142	.020	.112		
APXT 11T312R-M		146-359 $ 18.40											.445	.260	.142	3/64	.112		
APXT 11T316R-M						147-379 $ 18.40							.445	.260	.142	1/16	.112		
APXT 11T3 PDR-A												146-358 $ 14.70	.445	.260	.142	.020	.112		
APXT 1604 PDSR-F2							147-408 $ 23.10			148-502 $ 23.10			.650	.376	.227	1/32	.175	AP 16	E132-137
																		APFM 16	E139-142
APXT 1604 PDSR-M		148-178 $ 23.10	148-521 $ 23.10	148-179 $ 23.10				147-338 $ 23.10					.650	.376	.227	1/32	.175		
APXT 160416R													.650	.376	.227	1/16	.175		
APXT 160416R-M			147-156 $ 23.10	147-969 $ 23.10							146-167 $ 18.40		.650	.376	.227	1/16	.175		
APXT 160416R PDSR-M		146-553 $ 23.10					147-468 $ 23.10						.650	.376	.227	1/16	.175		
APXT 160432R-M		147-720 $ 23.10											.650	.376	.227	1/8	.175		

CPMH-M

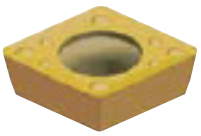


- Features
  Stronger geometry for roughing applications
  in a variety of steels

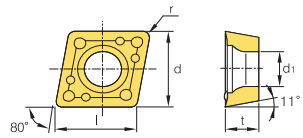


	Coated Carbide									Uncoated Carbide		(inch)					Applicable Cutter	
Designation	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
CPMH432-M				147-101 $ 15.60									0.508	1/2	0.187	1/32	0.217	TSC	E155

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.
CPMT060204-M				147-717 $ 10.30									0.254	1/4	0.094	1/64	0.108	TSC	E155
CPMT080308-M				147-110 $ 10.50									0.317	5/16	0.134	1/32	0.125		
CPMT09T308-M				147-111 $ 10.60									0.381	3/8	0.156	1/32	0.173		

Quick Choice Grade Selection

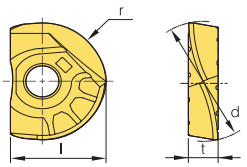
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Milling Inserts

JMBH



- Features
  Suitable for high-speed machining &
  Hardened materials

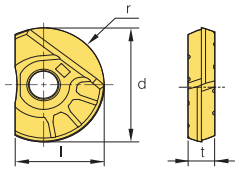


Designation	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
	PTM50P	PM10P	PM25C	PM30P	PM35P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	Cutter	Page No.
JMBH0375		147-891 $ 74.10											21/64	3/8	7/64	3/16	*Jet Mill*	
JMBH0500		147-086 $ 82.50											13/32	1/2	1/8	1/4	JMBE	E148
JMBH0625		147-966 $ 95.40											15/32	5/8	5/32	5/16		
JMBH0750		147-967 $ 129.10											37/64	3/4	13/64	3/8		
JMBH1000		147-088 $ 190.00											47/64	1	15/64	1/2		
JMBH1250		146-776 $ 200.30											59/64	1-1/4	9/32	5/8		

JMBS



- Features
  Suitable for high-speed machining &
  Hardened materials

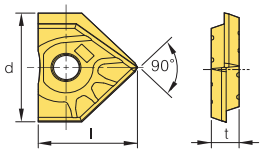


Designation	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
	PTM50P	PM10P	PM25C	PM30P	PM35P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	Cutter	Page No.
JMBS0312		147-084 $ 65.40											9/32	5/16	3/32	5/32	*Jet Mill*	
JMBS0375		146-858 $ 74.10											21/64	3/8	7/64	3/16	JMBE	E148
JMBS0625		147-781 $ 158.90											15/32	5/8	5/32	5/16		
JMBS0750		147-782 $ 129.10											37/64	3/4	13/64	3/8		
JMBS1250		147-784 $ 200.30											59/64	1-1/4	9/32	5/8		

JMCF



- Features
  Suitable for high-speed machining &
  Hardened materials



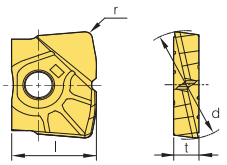
Designation	Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
	PTM50P	PM10P	PM25C	PM30P	PM35P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	Cutter	Page No.
JMCF0625		147-785 $ 109.90											35/64	5/8	5/32	-	*Jet Mill*	
JMCF0750		147-786 $ 146.10											43/64	3/4	13/64	-	JMBE	E148
JMCF1000		147-942 $ 174.10											27/32	1	15/64	-		

Milling Inserts

JMFH



- Features
  Suitable for high-speed machining &
  Hardened materials



Designation		Coated Carbide										Uncoated Carbide			(inch)				Applicable Cutter	
		PTM50P	PM10P	PM25C	PM30P	PM35P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U		l	d	t	r	Cutter	Page No.
JMFH0375			147-943 $ 88.00												21/64	3/8	7/64	3/64	*Jet Mill*	
JMFH0500			147-944 $ 87.00												13/32	1/2	1/8	3/64	JMBE	E148
JMFH0625			147-945 $ 109.90												15/32	5/8	5/32	1/16		
JMFH0750			147-946 $ 146.10												37/64	3/4	13/64	1/16		
JMFH1000			147-991 $ 174.10												47/64	1	15/64	5/64		
JMFH1250			147-992 $ 234.10												59/64	1-1/4	9/32	5/64		

LNEX-F2/M



- Features
  Stronger geometry for roughing applications
  in a variety of steels



Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
LNEX100605PNR-F2				148-593 $ 16.00			148-594 $ 16.00						0.391	0.258	0.258	3/128	0.318	*End Mill*	
LNEX100605PNR-M				148-611 $ 16.00			148-612 $ 16.00						0.391	0.258	0.258	3/128	0.318	DS4	E138
LNEX151008PNR-F2				148-613 $ 19.70			148-619 $ 19.70						0.594	0.391	0.391	1/32	0.177	*Face Mill*	
																		DS4	E145

LNMX-F2/M



- Features
  Stronger geometry for roughing applications
  in a variety of steels

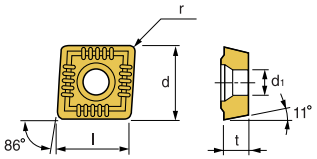


Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PC9530	SM20P	PM20U	KTM10U	ℓ	d	t	r	d1	Cutter	Page No.
LNMX100605PNR-F2				145-636 $ 27.10			146-277 $ 27.10			146-278 $ 27.10			0.391	0.258	0.258	3/128	0.318	*End Mill*	
LNMX100605PNR-M				145-605 $ 27.10			146-281 $ 27.10	146-284 $ 27.10					0.391	0.258	0.258	3/128	0.318	DS4	E138
LNMX151008PNR-F2			145-604 $ 33.50	145-676 $ 33.40			148-903 $ 33.40	146-289 $ 33.50		145-602 $ 33.50			0.594	0.391	0.391	1/32	0.177	*Face Mill*	
LNMX151008PNR-M			145-603 $ 33.50	145-678 $ 39.10		145-601 $ 33.50							0.594	0.391	0.391	1/32	0.177	DS4	E145

Milling Inserts

MPMT



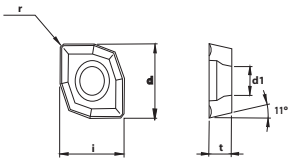


		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PTM30U	KTM10U	l	d	t	r	d1	Cutter	Page No.
MPMT 322	090308									147-761 $ 17.10		146-075 $ 13.70		.374	3/8	1/8	1/32	.173		
MPMT 432	120408									147-762 $ 20.00		147-763 $ 16.00		.500	1/2	3/16	1/32	.216		

NPET-AD Drilling Insert



- Features
  Excellent geometry for non-ferrous materials

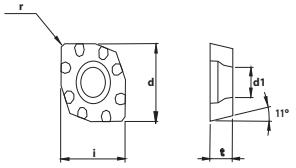


		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation		PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
NPET222408-AD													147-937 $ 21.90	0.327	0.323	0.098	0.031	0.110	PRO-NP Drill	E160
NPET252808-AD													147-938 $ 23.20	0.366	0.362	0.130	0.031	0.134		
NPET293208-AD													147-939 $ 23.20	0.413	0.409	0.130	0.031	0.134		
NPET334008-AD													147-940 $ 24.60	0.512	0.508	0.156	0.031	0.157		
NPET415508-AD													147-941 $ 28.40	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.
NPET222408-RD					148-334 $ 22.10									0.366	0.362	0.130	0.031	0.134	PRO-NP Drill	E160
NPET252808-RD					148-335 $ 23.50									0.413	0.409	0.130	0.031	0.134		
NPET293208-RD					148-336 $ 23.50									0.512	0.508	0.156	0.031	0.157		
NPMT33400-RD					148-337 $ 24.80									0.602	0.598	0.187	0.031	0.177		

Quick Choice Grade Selection

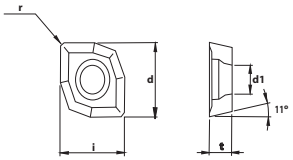
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Milling Inserts

NPMT-MD Drilling Insert

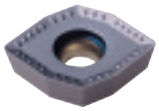


- Features
  Excellent geometry for a variety of steels and Cast Iron

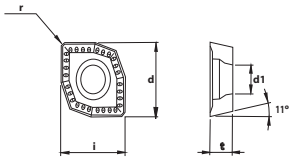


		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation		PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
NPMT222408-MD				147-927 $ 16.40	148-329 $ 16.40									0.327	0.323	0.098	0.031	0.110	PRO-NP Drill	E160
NPMT252808-MD				147-928 $ 17.60	148-330 $ 17.60									0.366	0.362	0.130	0.031	0.134		
NPMT293208-MD				147-929 $ 17.60	148-331 $ 17.60									0.413	0.409	0.130	0.031	0.134		
NPMT334008-MD					148-332 $ 18.50									0.512	0.508	0.156	0.031	0.157		
NPMT415508-MD					148-333 $ 21.50									0.602	0.598	0.187	0.031	0.177		

NPMT-SD Drilling Insert



- Features
  Excellent geometry for Stainless Steel.

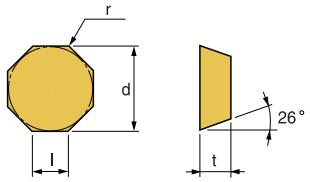


		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation		PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
NPMT252808-SD									147-933 $ 17.60					0.366	0.362	0.130	0.031	0.134	PRO-NP Drill	E160
NPMT293208-SD									147-934 $ 17.60					0.413	0.409	0.130	0.031	0.134		
NPMT334008-SD									147-935 $ 18.50					0.512	0.508	0.156	0.031	0.157		
NPMT415508-SD									147-936 $ 21.50					0.602	0.598	0.187	0.031	0.177		

OFCN

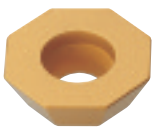


- Features
  Flat top geometry for more difficult applications.

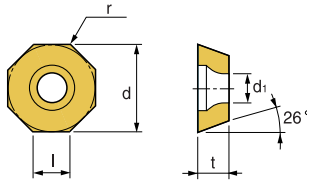


		Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r		Cutter	Page No.
OFCN 0704SN														.291	.709	3/16	.020			
OFCN 070408N											146-425 $ 29.50			.291	.709	3/16	.031			

OFCW



- Features
  Flat top geometry for more difficult applications.



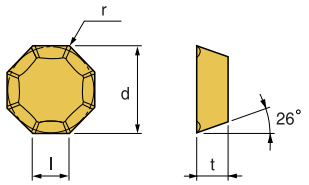
		Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r	d1	Cutter	Page No.
OFCW 05T3SN			146-841 $ 28.80								146-842 $ 23.20			.205	1/2	5/32	.020	.173	OKT MAX	E144

Milling Inserts

OFKR-F2, M, A



- Features
  Excellent geometries for a variety of materials

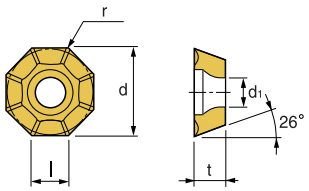


		Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r		Cutter	Page No.
OFKR 0704SN-F2								147-974 $ 37.10						.291	.709	3/16	.020			
OFKR 070408SN-F2														.291	.709	3/16	.031			
OFKR 070408SN-M			146-417 $ 37.10				146-642 $ 37.10		147-759 $ 37.10					.291	.709	3/16	.031			
OFKR 0704N-A													146-303 $ 29.90	.291	.709	3/16	.020			

OFKT-F2, M, A

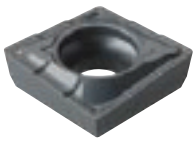


- Features
  Excellent geometries for a variety of materials

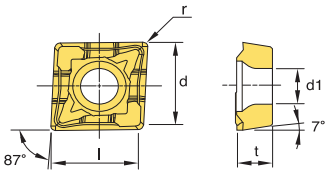


		Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
OFKT 05T3SN-F2								147-760 $ 28.80						.205	1/2	5/32	.020	.173	OKT MAX	E144
OFKT 05T3SN-M			146-843 $ 28.80				146-844 $ 28.80					146-676 $ 23.20		.205	1/2	5/32	.020	.173		
OFKT 05T3FN-A													146-559 $ 23.40	.205	1/2	5/32	.020	.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				147-995 $ 18.70			147-241 $ 18.70						147-242 $ 18.70	0.197	0.213	0.038	0.016	0.091	CTD	E161
QCMT-060204-CM				147-435 $ 18.70			147-436 $ 18.70						147-437 $ 18.70	0.236	0.252	0.094	0.016	0.098		
QCMT-070304-CM				147-700 $ 18.70			146-364 $ 18.70						147-007 $ 18.70	0.276	0.291	0.125	0.016	0.110		
QCMT-080304-CM				147-043 $ 19.00			147-044 $ 19.00						147-060 $ 19.00	0.315	0.331	0.125	0.016	0.134		
QCMT-10T304-CM				147-465 $ 22.60			147-472 $ 22.60						147-540 $ 22.60	0.394	0.409	0.156	0.016	0.157		

Quick Choice Grade Selection

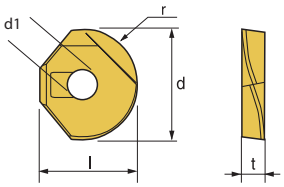
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Milling Inserts

RC



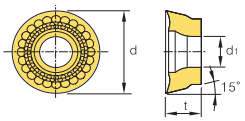
- Features
  Excellent for contour milling in a variety of materials.



		Coated Carbide									Cermet	Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM10P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
RC 5/8							147-858 $ 89.40							.622	.625	.138	.315	.228	Mold Mill	E150
RC 3/4							147-859 $ 104.00							.701	.750	.157	.394	.228		
RC 1							147-860 $ 128.80							.866	1.000	.197	.492	.268		
RC 1-1/8							147-861 $ 168.80							1.055	1.125	.236	.591	.346		
RC 1-1/4							147-862 $ 168.80							1.094	1.250	.236	.630	.346		

RDKT-A



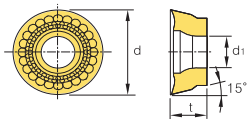


		Coated Carbide										Uncoated Carbide		(inch)			Applicable Cutter	
Designation		PTM50P	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	d	t	d1	Cutter	Page No.
RDKT1204MO-A													148-343 $ 20.80	15/32	0.187	0.177	*Endmill*	
																	BMSS	E143
																	Facemill	
																	BMSC	E143

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					148-340 $ 20.10		146-894 $ 16.60		146-896 $ 16.60		146-895 $ 16.60			25/64	0.156	0.152	*Endmill*	
																	BMSS	E143
RDKT1204MO-F2					148-342 $ 22.80		146-979 $ 21.20		146-998 $ 21.20					15/32	0.187	0.177	*Facemill*	
																	BMSC	E143
RDKT10T3MO-M				147-130 $ 16.60		148-325 $ 17.90	146-945 $ 16.60		146-961 $ 16.60		146-946 $ 16.60		148-341 $ 16.00	25/64	0.156	0.152		
RDKT1204MO-M		146-552 $ 18.90	145-614 $ 25.00		146-551 $ 18.90				147-072 $ 21.20		147-070 $ 21.20			15/32	0.187	0.177		

Quick Choice Grade Selection

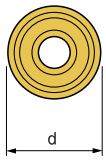
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

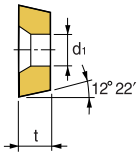
Milling Inserts

RPMM



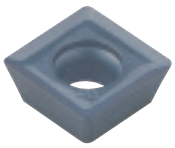
- Features
  Excellent geometries for a variety of applications



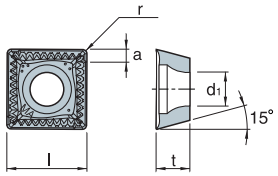


		Coated Carbide										Uncoated Carbide						(inch)			Applicable Cutter	
Designation		PT20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U			d	t	d1	Cutter	Page No.
RPMM 1204 ENN			147-779 $ 19.90	146-127 $ 19.90												1/2	3/16	.216	Mold Max	E152
RPMM 1204 X165			146-147 $ 19.90									147-778 $ 15.90				1/2	3/16	.216		

SDXT-A



- Features
  Aluminum geometry

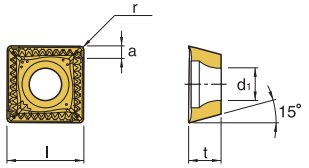


		Coated Carbide										Uncoated Carbide							(inch)			Applicable Cutter	
Designation		PT20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	r	a	d1	Cutter	Page No.
SDXT 09M405R-A													146-803 $ 13.20	.375	.157	.011	.047	.157	MM90°FM	E145
SDXT 130508R-A														.531	.219	.031	.087	.219		

SDXT-F2, M

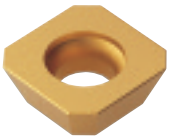


- Features
  General purpose geometries for a variety of materials



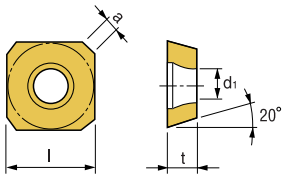
		Coated Carbide										Uncoated Carbide							(inch)			Applicable Cutter	
Designation		PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	r	a	d1	Cutter	Page No.
SDXT 09M405R-F2			147-085 $ 15.50					147-410 $ 15.50						.375	.157	.011	.047	.157	MM90°FM	E145
SDXT 130508R-F2			146-810 $ 18.50			148-491 $ 18.50								.531	.219	.031	.087	.219		
SDXT 09M405R-M			147-089 $ 15.50	146-802 $ 15.50				147-718 $ 15.50	147-719 $ 15.50					.375	.157	.011	.047	.157		
SDXT 130508R-M			146-812 $ 18.50	146-813 $ 18.50				148-319 $ 18.50	147-721 $ 18.50			146-815 $ 16.00		.531	.219	.031	.087	.219		

SECA/SEHT



- SECA

- Features
  Flat top geometry for more difficult applications



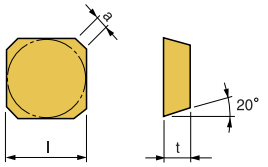
		Coated Carbide									Cermet	Uncoated Carbide							(inch)		Applicable Cutter	
Designation	ISO	PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U		l	t	a	d1	Cutter	Page No.
SECA 43 AFTN	1204		146-749 $ 21.90				146-748 $ 21.90		147-780 $ 21.90		146-750 $ 17.50	146-751 $ 17.50			1/2	3/16	.105	.219		
SECA 43 AFFN	1204												146-036 $ 17.50		1/2	3/16	.105	.219		
SEHT 43 AFN-A	1204												146-747 $ 19.90		1/2	3/16	.105	.219		
SEHT 43 AFTN X45	1204		146-130 $ 24.00												1/2	3/16	.105	.219		

Milling Inserts

SECN



- Features
  Flat top geometry for a variety of applications

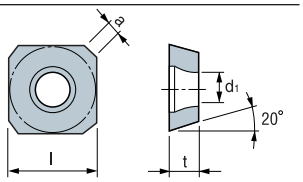


		Coated Carbide										Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	t	a	Cutter	Page No.
SECN 42 AFFN	1203												146-666 $ 16.30	1/2	1/8	.091		
SECN 53 AFTN	1504		146-661 $ 28.20											5/8	3/16	.094		

SEET-A

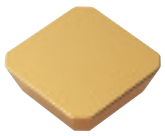


- Features
  Excellent geometry for softer materials such as Aluminum

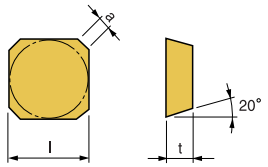


		Coated Carbide									Cermet	Uncoated Carbide		(inch)				Applicable Cutter	
Designation		PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	KTM10U	l	t	a	d1	Cutter	Page No.
SEET 0903AGFN-A													147-727 $ 15.30	3/8	1/8	.083	.134	MM45°FM	E147
SEET 14M4AGFN-A													147-732 $ 18.40	.551	.157	.104	.173		

SEK(T)

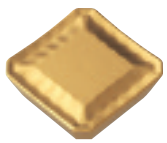


- Features
  Excellent general purpose geometry

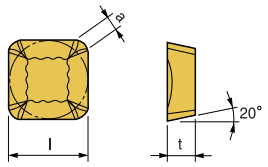


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PM20S	PM30S	S300	PM20U	PTM30U	l	t	a	Cutter	Page No.
SEK 42 AFTN	1203		146-340 $ 20.10	146-318 $ 20.10	146-486 $ 20.10			147-733 $ 20.10	146-319 $ 16.30	146-322 $ 16.30	149-556 $ 34.60	146-317 $ 16.30	146-320 $ 16.30	1/2	1/8	.091		
SEK 42 AFEN	1203						147-734 $ 20.10							1/2	1/8	.091		
SEK 43 AFTN	1204		146-380 $ 22.50										146-360 $ 17.90	1/2	3/16	.094		
SEK 53 AFTN	1504		146-385 $ 28.20		146-387 $ 28.20			147-735 $ 28.20		146-426 $ 22.60		146-386 $ 22.60		5/8	3/16	.094		
SEKT 13T3AGSN-M			148-586 $ 24.40											.531	.156	.060		
SEKT 13T3AGSN-R8			148-585 $ 24.40											.531	.156	.060		

SEKR-F3



- Features
  Excellent geometry for a variety of steels including Stainless



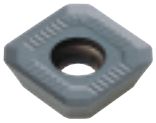
		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)			Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	Cutter	Page No.
SEKR 42 AFSN-F3	1203		146-347 $ 20.20	145-674 $ 20.20				147-770 $ 20.20				146-348 $ 16.30		1/2	1/8	.091		
SEKR 42 AFTN-F3	1203		146-346 $ 20.20		146-487 $ 20.20									1/2	1/8	.091		
SEKR 43 AFSN-F3	1204	146-383 $ 21.50	146-351 $ 21.50					147-989 $ 21.50				146-382 $ 16.30		1/2	3/16	.094		

Quick Choice Grade Selection

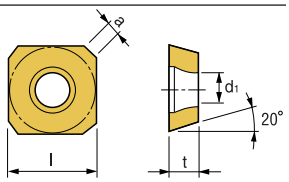
P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Milling Inserts

SEXT-F2

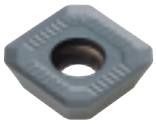


- Features
  Excellent general purpose geometry

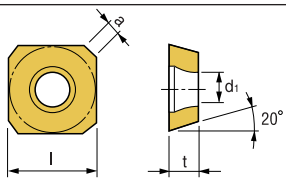


Designation		Coated Carbide									Cermet	Uncoated Carbide			(inch)				Applicable Cutter	
		PM20C	PM25C	PM30C	PM30P	PM35P	PT30P	KM20C	MM30P	SM20P	PT30S	PM20U	KTM10U		l	t	a	d1	Cutter	Page No.
SEXT 0903AGSN-F2				148-183 $ 16.20				147-724 $ 16.20							3/8	1/8	.083	.134	MM45°FM	E147
SEXT 14M4AGSN-F2			147-728 $ 19.50	148-184 $ 19.50			145-677 $ 19.50		148-506 $ 19.50	148-500 $ 19.50					.551	.157	.104	.173		

SEXT-M

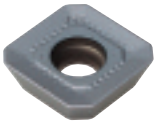


- Features
  Excellent general purpose geometry

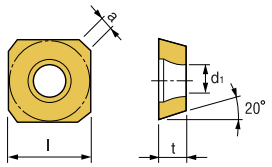


Designation		Coated Carbide									Cermet	Uncoated Carbide			(inch)				Applicable Cutter	
		PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	SM20P	PT30S	PM20U	KTM10U		l	t	a	d1	Cutter	Page No.
SEXT 0903AGSN-M			147-725 $ 16.20												3/8	1/8	.083	.134	MM45°FM	E147
SEXT 14M4AGSN-M			147-730 $ 19.50		148-182 $ 19.50			148-307 $ 19.50	148-507 $ 19.50	148-501 $ 19.50					.551	.157	.104	.173		

SEXT-R8



- Features
  Geometry designed for medium to roughing applications

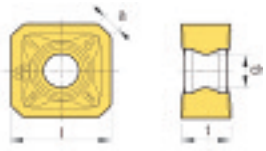


Designation		Coated Carbide							Cermet		Ceramic	Uncoated Carbide			(inch)				Applicable Cutter	
		PM10C	PM25C	PM30C	PM30P	PM35P	KM10P	KM20C	PT20S	PT30S	S300	PM20U	PTM30U		l	t	a	d1	Cutter	Page No.
SEXT 14M4AGSN-R8			147-731 $ 19.50			148-494 $ 19.50	148-926 $ 19.50	148-308 $ 19.50							.551	.157	.104	.173	MM45°FM	E147

SNEX-A



- Features
  Aluminum geometry



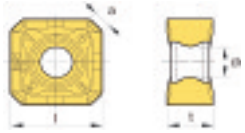
Designation		Coated Carbide										Uncoated Carbide			(inch)				Applicable Cutter	
		PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U		d	t	a	d1	Cutter	Page No.
SNEX1206ANN-A													148-969 $ 27.90		1/2	1/4	0.093	0.177	*Face Mill*	
																			DS8	E146

Milling Inserts

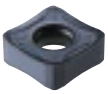
SNEX-F2/M



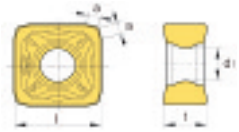
SNEX-F2



- Features
  Excellent geometries for a variety of materials



SNEX-M

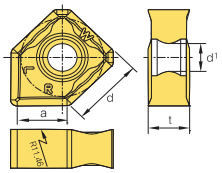


Designation		Coated Carbide										Uncoated Carbide			(inch)				Applicable Cutter	
		PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U		d	t	a	d1	Cutter	Page No.
SNEX1206ANN-F2					146-292 $ 27.10				148-835 $ 33.90						1/2	1/4	0.093	0.177	*Face Mill*	
																			DS8	E146
SNEX1206ANN-M					148-981 $ 33.90										1/2	1/4	0.093	0.177		

SNEX-W (Wiper Insert)



- Features
  Superior surface finish

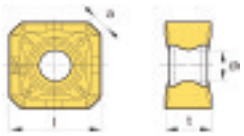


Designation		Coated Carbide										Uncoated Carbide			(inch)				Applicable Cutter	
		PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U		d	t	a	d1	Cutter	Page No.
SNEX1206ANN-W													146-293 $ 32.40		1/2	1/4	.350	0.177	*Face Mill*	
																			DS8	E146

SNMX-M



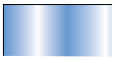
- Features
  General purpose geometries for a variety of materials

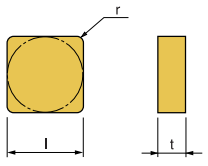


Designation		Coated Carbide										Uncoated Carbide			(inch)				Applicable Cutter	
		PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PC9530	SM20P	PM20U	KTM10U		l	t	a	d1	Cutter	Page No.
SNMX1206ANN-M		145-673 $ 29.40		148-796 $ 29.40	145-679 $ 29.40	148-797 $ 29.40		148-791 $ 29.40	148-904 $ 29.40						1/2	1/4	0.093	0.177	*Face Mill*	
																			DS8	E146

SNU







Designation	ISO	Coated Carbide									Cermet	Uncoated Carbide			(inch)			
		PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	PTM30U	KTM10U			l	t	r
SNU 432	220408													146-689 $ 13.50			1/2	3/16	1/32
SNU 433	220412											146-457 $ 13.50	146-449 $ 13.50				1/2	3/16	3/64

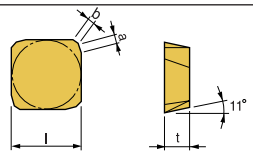
Quick Choice Grade Selection

P Steel	M Stainless Steel	K Cast Iron-Alum	S Heat Resistant Alloy

Milling Inserts

SPC

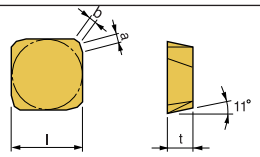




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U		l	t	a	b
SPC 42 EDTR	1203		147-772 $ 19.50												1/2	1/8	.055	.039

SPK

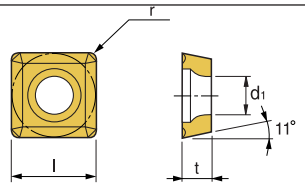




		Coated Carbide										Uncoated Carbide		(inch)						
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	PTM30U		l	t	a	b	Cutter	Page No.
SPK 42 EDR	1203		146-480 $ 19.50										146-460 $ 15.60		1/2	1/8	.055	.039		
SPK 42 EDTR	1203														1/2	1/8	.055	.039		
SPK 43 EDR	1204												146-485 $ 16.90		1/2	3/16	.055	.039		
SPK 43 EDTR	1204														1/2	3/16	.055	.039		
SPK 53 EDR	1504														5/8	3/16	.055	.039		
SPK 53 EDTR	1504														5/8	3/16	.055	.039		

SPMT



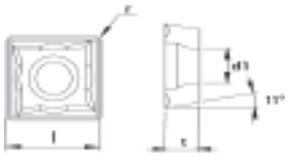


		Coated Carbide									Cermet	Uncoated Carbide			(inch)				
Designation	ISO	PM20C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PM20U	PTM30U	KTM10U	l	t	r	d1	
SPMT 432	120408		146-145 $ 18.90									146-143 $ 15.40			1/2	3/16	1/32	.220	

SPMT-MD Drilling Insert



- Features
  Suitable geometry for a variety of steels.

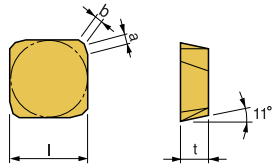


		Coated Carbide										Uncoated Carbide		(inch)				Applicable Cutter	
Designation		PTM50P	PM10P	PM25C	PM30P	PM40P	PC210F	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U		l	t	r	d1	Cutter	Page No.
SPMT050203-MD					148-326 $ 16.40								148-393 $ 13.30		0.21	0.090	0.010	0.090	PRO-SP Drill	E160
SPMT060204-MD					148-327 $ 16.40								148-394 $ 13.30		0.24	0.100	0.020	0.100		
SPMT070204-MD					148-328 $ 16.40								148-395 $ 13.30		0.28	0.100	0.020	0.110		

Milling Inserts

SPU

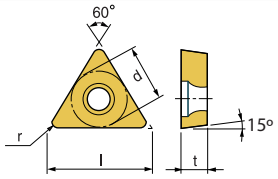




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	t	a	b	
SPU 422	120308												**146-493 $ 11.40**	1/2	1/8	.055	.039	
SPU 633	190412												**146-495 $ 18.90**	3/4	3/16	.079	.039	

TDGW

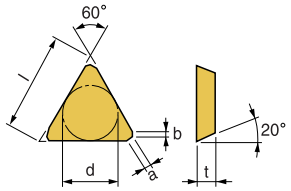




		Coated Carbide									Cermet	Uncoated Carbide		(inch)					
Designation	ISO	PM20C	PM25C	PM35C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	PT30S	PTM30U	KTM10U	l	d	t	r	Cutter	Page No.
TDGW 21.51	110204		**147-177 $ 23.10**											.433	1/4	3/32	1/64		
TDGW 21.51E	110204													.433	1/4	3/32	1/64		
TDGW 321	160304		**147-178 $ 26.10**											.650	3/8	1/8	1/64		
TDGW 432	220408		**147-179 $ 42.60**											.866	1/2	3/16	1/32		

TEC(E)(K)N

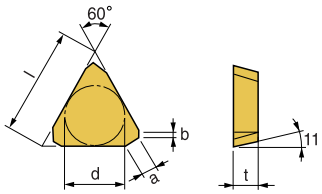




		Coated Carbide							Cermet	Uncoated Carbide			(inch)						
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT30S	ST30A	PM20U	PTM30U	l	d	t	a	b	r	sharp
TECN 32TR												**146-071 $ 15.70**	.649	3/8	1/8	.039	-	1/32	R
TEEN 43TR										**146-561 $ 21.30**			.866	1/2	.187	.059	-	1/32	
TEKN 43TR												**146-564 $ 15.70**	.866	1/2	.187	.020	.075	1/32	R

TPK



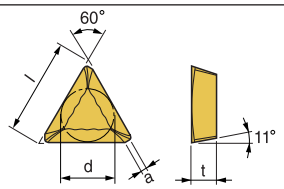


		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)				
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	d	t	a	b
TPK 32 PPR	1603												**146-724 $ 13.30**	.650	3/8	1/8	.047	.039~ .047
TPK 32 PDR	1603		**146-680 $ 16.40**											.650	3/8	1/8	.047	.039~ .047
TPK 43 PDR	2204		**146-720 $ 23.40**									**146-695 $ 18.70**	**146-700 $ 18.70**	.866	1/2	3/16	.05~ .055	.028~ .05

Milling Inserts

TPKR-F3

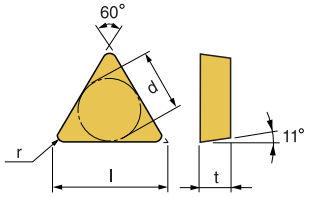




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	l	d	t	r	a	
TPKR 43 PDSR-F3	2204											146-129 $ 18.70		.866	1/2	3/16	.039	.055	
TPKR 43 PDR-F3	2204	146-305 $ 23.40	146-128 $ 23.40											.866	1/2	3/16	.039	.055	

TPU

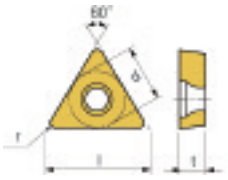




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U		l	d	t	r	Cutter Page No.
TPU 212	110208												146-631 $ 7.30		.433	1/4	3/32	1/32	STM Cutters E158
TPU 221	110304												146-740 $ 8.40		.433	1/4	1/8	1/64	
TPU 222	110308		147-267 $ 10.50										146-741 $ 8.40		.433	1/4	1/8	1/32	
TPU 321	160304												146-760 $ 9.20		.650	3/8	1/8	1/64	
TPU 322	160308		146-709 $ 11.60										146-780 $ 9.20		.650	3/8	1/8	1/32	
TPU 323	160312		145-545 $ 11.60									146-421 $ 9.20			.650	3/8	1/8	3/64	
TPU 431	220404												146-800 $ 12.90		.866	1/2	3/16	1/64	
TPU 432	220408		146-711 $ 16.20										146-820 $ 12.90		.866	1/2	3/16	1/32	
TPU 433	220412		146-712 $ 16.20										146-840 $ 12.90		.866	1/2	3/16	3/64	
TPU 434	220416												146-845 $ 12.90		.866	1/2	3/16	1/16	

TWX-KC





		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation		PT20C	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
TWX16R-KC		147-961 $ 25.30			147-960 $ 25.30									0.650	3/8	5/32	1/32	0.175	CTP45	E153
TWX22R-KC					147-962 $ 37.00									0.866	1/2	3/16	1/32	0.175		

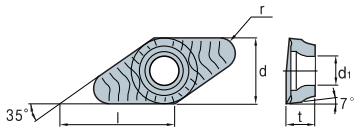
Quick Choice Grade Selection

P Steel | M Stainless Steel | K Cast Iron-Alum | S Heat Resistant Alloy

Milling Inserts

VCKT-A

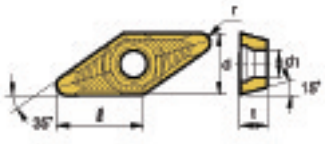




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Holder	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	KT10U	l	d	t	r	d1	Cutter	Page No.
VCKT 43.57.5N-A	220530												147-425 $ 39.40	.790	1/2	7/32	.118	.220	Alumi Mill AME AMFM	 E155 E156

VDKT-MA

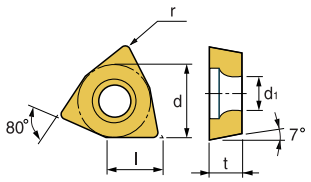




		Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Holder	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	KT10U	l	d	t	r	d1	Cutter	Page No.
VDKT11T210N-MA													148-936 $ 29.20	0.346	1/4	0.113	0.039	.110	Alumi Mill AME	 E155

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 1.81.51-C21	030204		146-241 $ 16.40											.149	7/32	3/32	1/64	.110	MAX DRILL GP-DRILL	E170-174 E159
WCMT 1.81.52-C20	030208		146-242 $ 16.40										146-537 $ 15.50	.149	7/32	3/32	1/32	.110		
WCMT 21.52-C20	040208		146-237 $ 16.40											.169	1/4	3/32	1/32	.118		
WCMT 2.522-C20	050308		146-236 $ 17.60											.212	5/16	5/16	1/32	.134		
WCMT 32.52-C20	06T308		146-235 $ 17.60			148-432 $ 17.60							146-539 $ 39.70	.256	3/8	5/32	1/32	.157		
WCMT 432-C20	080408		146-855 $ 21.50											.342	1/2	3/16	1/32	.169		
WCMT 433-C20	080412		146-000 $ 21.50										146-563 $ 20.40	.342	1/2	3/16	3/64	.169		

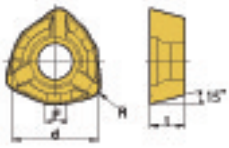
Quick Choice Grade Selection

P Steel | M Stainless Steel | K Cast Iron-Alum | S Heat Resistant Alloy

Milling Inserts

WDKT



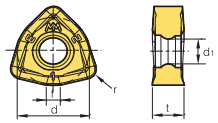


Designation	Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30P	PM35P	PM40P	KM10P	MM30P	PT20S	PT30S	S300	PM20U	PTM30U		d	t	F	r	Cutter	Page No.
WDKT 080316 ZDSR-MH	148-651 $ 16.80			148-563 $ 16.80	146-244 $ 18.50	146-261 $ 18.50	146-267 $ 18.50							.315	1/8	3/64	1/16	HFPA HFPC	E128 E128
WDKT 10T320 ZDSR-MH	148-652 $ 21.50		147-107 $ 19.80	148-650 $ 21.50		146-271 $ 23.50	146-274 $ 23.50							.394	3/32	.059	.079		
WDKT 130520 ZDSR-MH	148-653 $ 29.90		146-331 $ 25.10	148-564 $ 29.90		146-275 $ 32.80	148-623 $ 29.90							.531	7/32	.083	.079		

WNMX



- Features
  Excellent geometries for a variety of materials



Designation		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
		PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	r	d1	f	Cutter	Page No.
WNMX09T316ZNN-M		145-640 $ 25.10			146-890 $ 21.30				146-891 $ 21.30					0.375	0.156	0.063	0.142	0.067	HFNA	E130
WNMX130520ZNN-M		145-675 $ 27.30									147-080 $ 33.30			0.500	0.219	0.079	0.185	0.098	HFNC	E131

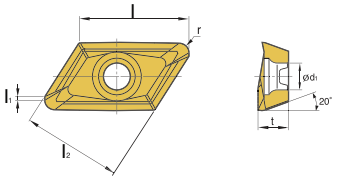
XEKT-MA



top



Bottom



Designation		Coated Carbide									Uncoated Carbide		(inch)						Applicable Holders	
		PT10C	PT20C	PT22C	PT30C	PM10P	MT20C	MT30P	KT05C	KT10C	PT20U	KTM10U	l	l2	l1	t	r	d1	Holder	Page No.
XEKT 19M504FR-MA	A											145-610 $ 42.00	0.709	0.646	0.055	0.197	1/64	0.173	*Endmill*	
XEKT 19M508FR-MA	A											145-611 $ 42.00	0.709	0.646	0.039	0.197	1/32	0.173	AME-X	E157
XEKT 19M512FR-MA	A											146-367 $ 42.00	0.709	0.646	0.024	0.197	3/64	0.173	*Facemill*	
XEKT 19M516FR-MA	A											145-612 $ 42.00	0.689	0.646	0.020	0.197	1/16	0.173	AMFM-X	E157
XEKT 19M520FR-MA	A											146-368 $ 42.00	0.689	0.646	0.020	0.197	0.079	0.173		
XEKT 19M530FR-MA	A											146-369 $ 42.00	0.689	0.646	0.028	0.197	0.118	0.173		
XEKT 19M532FR-MA	A											145-613 $ 42.00	0.689	0.646	0.020	0.197	1/8	0.173		
XEKT 19M540FR-MA	B											146-370 $ 42.00	0.650	0.646	0.020	0.197	0.157	0.173		
XEKT 19M550FR-MA	B											146-375 $ 42.00	0.630	0.646	0.016	0.197	0.197	0.173		

Cutter Index

Shape	Features	Cutter Diameter	Available Insert
High Feed Mills			
HFPA & HFPC High Feed Mills  ☞ P. E128	• Powerful & 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. E115
HFNA & HFNC High Feed Mills  ☞ P. E130, 131	• Powerful & 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 resistant 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. E115
AP / AD Mills			
AP06 90° End Mills  ☞ P. E132	• 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 resisitance	0.5 ~ 1.25	APMT 0602PDSR-M ☞ P. E99
AP11 & AP16 90° End Mills  ☞ P. E132, 133	• 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. E100
AP11M & AP16M 90° End Mills  ☞ P. E134	• 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. E99

Cutter Index

Shape	Features	Cutter Diameter	Available Insert
AP10 & AD15 90° End Mills  P. E135	• 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. E98
AP11-15° End Mills  P. E135	• 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. E100
AP16 Chamfer Mills 30° to 60°  P. E136	• Indexable Chamfering • Outstanding chip control and prominent machining in Medium and Roughing by coated insert combined Toughness with Wear Resistance.	0.5 ~ 1.5	**APKT 1604** P. E98, 99
AP18 90° End Mills  P. E136	• 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 resisitance	1.25 ~ 2.5	**APMT 1806PDSR-M** P. E99
APCC - Center Cut  P. E137	• 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. E99, 100
DS4 End Mills  P. E138	• 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. E102
APFM 06 90°  P. E118	• 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 resisitance	1.5 ~ 2.5	**APMT 0602PDSR-M** P. E115

Cutter Index

Shape	Features	Cutter Diameter	Available Insert
APFM 11M / APFM 16M 90º Face Mills  P. E139	• 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. E99
APFM 11 / APFM 16 90º  P. E140, 141	• 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. E99, 100
APFM 10 / ADFM 15-90º  P. E141	• 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. E98
APFM 11 / APFM 16 -15º  P. E142	• 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. E99, 100
APFM 18 90º  P. E142	• 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. E99
Button Mills  P. E143	• 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. E115
OKT-MAX  P. E144	• High rake angle • 8 corner, economical insert • 45º 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

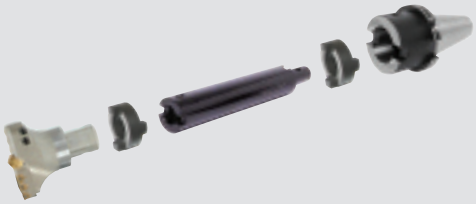
Cutter Index

Shape	Features	Cutter Diameter	Available Insert
Max Mill Face Mills-90°  P. E145	• 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. E107
DS4 Face Mills  P. E145	• 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. E102
DS8 Face Mills - 45°  P. E146	• 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. E109, 110
Max Mill Face Mills - 45°  P. E147	• 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. E98-100
Jet Mill  P. E148	• 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** P. E101, 102
Mold Mill  P. E150	• 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. E106
Mold Max **MMEM**  P. E1151	• 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. E107

Cutter Index

Shape	Features	Cutter Diameter	Available Insert
Mold Max **MMFM**  P. E152	• 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. E107
Multi-functional 45º Chamfer Tool  P. E153	• For centering, grooving, and chamfering • Up to 1.14” chamfering is available	Ø0 ~ Ø1.14	**TWX 16R-KC** **22R-KC** P. E103
Chamfer-Mill 45º  P. E153	• Triangular positive insert provides smooth machining • General milling is available as well.	0.125 ~ 1.125	**TC_T 21.5** **32.5** P. E24-26
Alumi Mills **Alumi-Mills**  P. E155, 156	• Buffing treatment on top face of insert provides smooth chip flow and prevention of build-up-edge. • Fine surface finish of work piece 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. E114
Alumi-X Mills  P. E157	• 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-vibrsations at during high speed machining	1.25 ~ 4.0	**XEKT 19M5-FR-A** **19M5-FR-MA** P. E115
T-Slot Cutter **TSC**  P. E155	• Indexable T-Slot cutter	0.83 ~ 1.97	**CPMT 060204-M** **080308-M** **09T308-M** **CPMH 432-M** P. E100
GP Indexable Drill  P. E159	• 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. E114

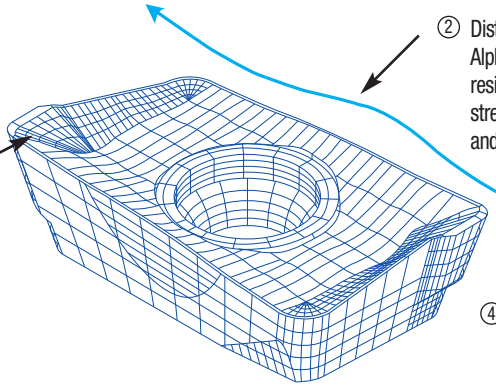
Cutter Index

Shape	Features	Cutter Diameter	Available Insert
Pro SP/NP Drill  P. E160	• 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. E103, 104, 111
Combo Turning & Drilling Tool  P. E161	• 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. E105
Max Drill Deep Hole Drilling  P. E170-174		1.77~ 7.09	**WCMT** 030208-C20 040208-C20 050308-C20 06T308-C20 080408-C20 080412-C20 P. E114
Nine9®			
NC Spot Drills - 90º, 82º, 60º  P. E162-166	• Spotting produces better hole position and geometrically uniform holes • Long tool life • Up to 4 cutting edges per insert • Suitable for spotting, chamfering, grooving, and engraving	6mm ~ 14mm	**N9MT0802** **N9MT11T3CT** **V0820802** **V08212T3** **V9MT08** **V9MT12** P. E163-166
Engraving - 45º, 60º  P. E167-169	• High positive rake angle suitable for all types of materials, such as plastic, non-ferrous metals, aluminum, copper, carbon steel, stainless steel • Multi-side grinding - performs excellently without producing burrs • High speed, high feed rate - designed to run at speeds up to 40,000 rpm. Feed rate 0.08mm (0.003")/rev apply to aluminum; 0.05mm (0.002")/rev apply to stainless steel	0 ~ 2.1mm	**V04506T1W06** **V06006T1W06** P. E168-169

AP/AD Multifunctional Insert

① Long tool life at high speed, high feed and deeper cutting by low cutting resistance and strong cutting edge.

② Distinguished features of Alpha-Curve make cutting resistance reduce and the strength of cutting edge and wear resistance improve.

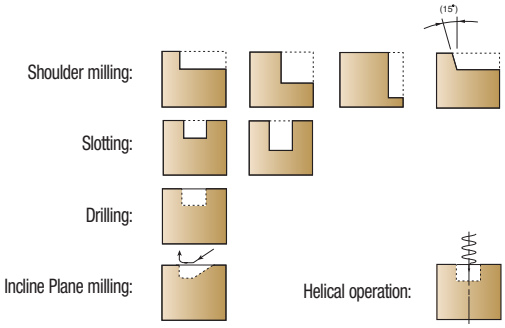


③ Low cutting resistance is realized by unique design i.e alpha curve cutting edge and optimal convex and concave design.

④ High efficient machining is available by the ideal application of the grade to material.

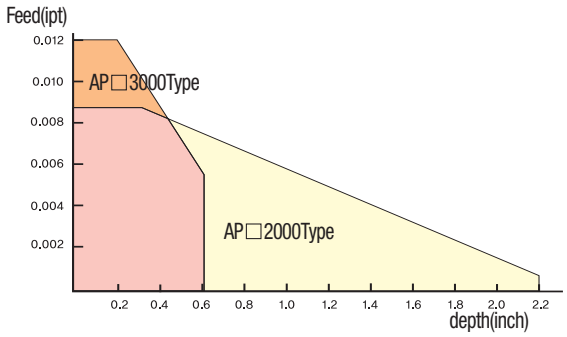
Inserts Feature & Application

- 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 and etc.)
- Improved inserts life time with optimized per each application
- 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

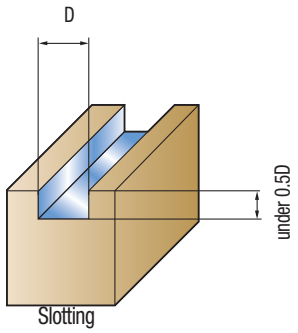


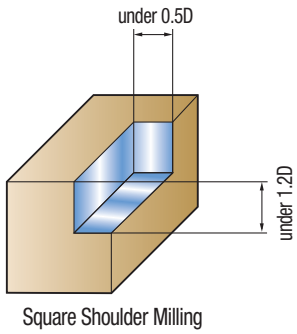
Tips

1. The cutting speed and feed can be adjusted in accordance with the machine's power and conditions of work-piece.
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 the compressed air during the slotting and pocket milling applications for better chip removal.
4. When find some chattering during the operation, decrease the cutting speed.

AP/AD Recommended Depth of Cuts

(D : Cutting Diameter)





Recommended cutting conditions (for Single-Edge Type)

(Standard for side cutting, reduce condition 20~30% for slotting)

Work-piece 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



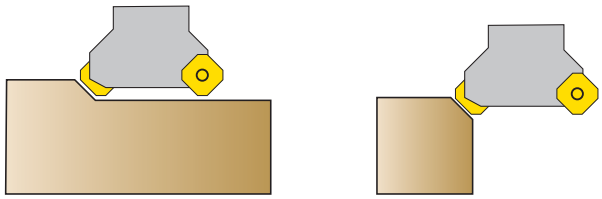
Max Mill Technical Information

Comprehensive Milling Cutter with High Productivity

1. Adjustable pitch of cutter by change the number of insert for specific cutter diameter, and several chip breakers of insert offer wide available application range.
2. Light cutter body allows high speed machining without chattering, thus it is possible to use at the machine having low horse power.
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 provide stable and consistent cutting performance even at severe intermittent cutting.
For Aluminum	A		Superior cutting quality for aluminum cutting resulted form applying of proper cutting-edge treatment and buffing of surface.

Recommended cutting condition

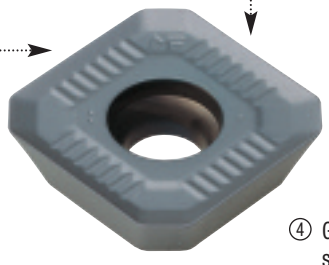
ISO	C/B / Grade	F2		M		R8		A	
		V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)	V(sfm)	fz(ipt)
P	PM25C	650~1000	0.002~0.008	500~1000	0.004~0.012	500~800	0.004~0.012	-	-
	PM30P	650~1000	0.002~0.008	500~1000	0.004~0.012	330~800	0.004~0.012	-	-
M	MM30P	330~600	0.002~0.006	390~600	0.004~0.012	-	-	-	-
	PM30C	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

Max Mill Technical Information

Features of Max Mill Insert

① Extremely excellent tool life ensured in high feed and high depth operations with low cutting resistance and stronger toughness

② Innovative curve cutting edge makes lower cutting resistance and stronger cutting edge



④ Grades for most materials are available such as steels, stainless steel, cast irons and Aluminum

③ Peculiar chip-breaker design ensures free chip flow

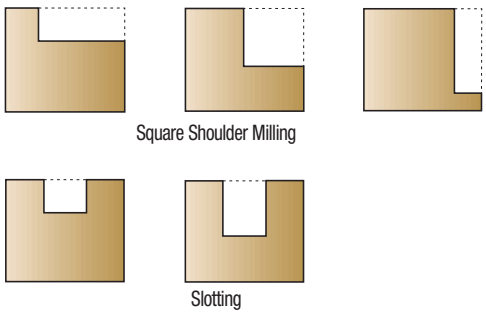
Inserts Feature & Application

- 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 and etc.)
- Improved inserts life time with optimized per each application
- 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

Advice

1. The cutting speed and feed can be adjusted in accordance with the machine's power and conditions of work-piece.
2. We recommend you operate them with small Radial depth(RD) and large depth(AD) on square shoulder milling applications.
3. We recommend you use the compressed air during the slotting and pocket milling applications for the better chip removal.
4. For chattering during the operation, decrease the cutting speed.



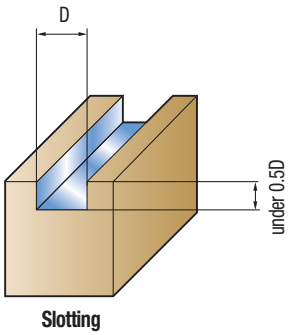
Max Mill Technical Information

Insert Choice(Chip Breaker/Grade)

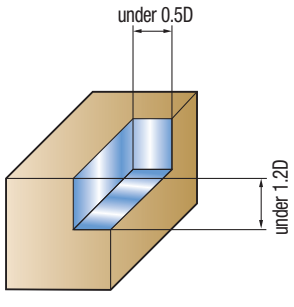
ISO(Work-piece)	Low Cutting Resistance Type	General Type	Stronger Cutting Edge Type
P	F2 / PM25C	M / PM25C	M / PM30P
M	F2 / PM30C	F2 / PM30C	M / PM30C
K	F2 / KM20C	F2 / KM20C	F2 / KM20C
Al	KTM10U	KTM10U	KTM10U

Recommended Cutting Conditions

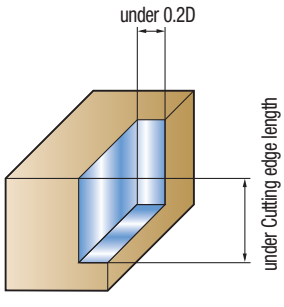
Work-piece	Cutter Diameter (ø) / Insert Grade	ø1.25 ~ 2.50		ø3.150 ~ 4.921	
		V(sfm)	fz(ipt)	V(sfm)	fz(ipt)
P	PM25C	325 ~ 825	0.002 ~ 0.012	400 ~ 825	0.003 ~ 0.012
	PM30C	325 ~ 725	0.002 ~ 0.01	400 ~ 725	0.003 ~ 0.01
	PM30P	325 ~ 725	0.002 ~ 0.01	325 ~ 725	0.004 ~ 0.01
M	PM30C	250 ~ 600	0.002 ~ 0.008	250 ~ 600	0.004 ~ 0.01
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

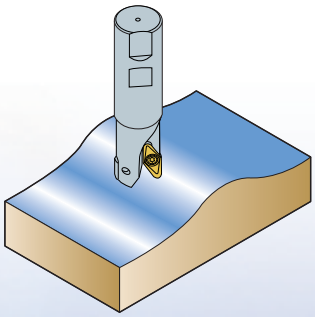
Alumi Mill Technical Information

Special Features of Alumi Mill

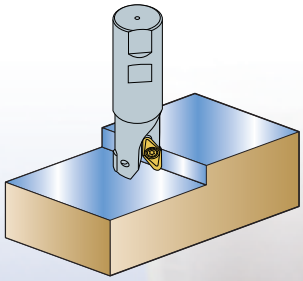
1. Mirror face of insert top provide smooth chip flow and prevent build-up-edge.
2. High rake angle of cutting edge provide high quality surface finish through reduce cutting force.
3. Square shouldering and contouring is available.
4. Rigid cutter allow high speed machining.
5. Suitable for high speed machining which provide high productivity.
6. Precise ground insert and high rake angle reduce cutting force significantly.



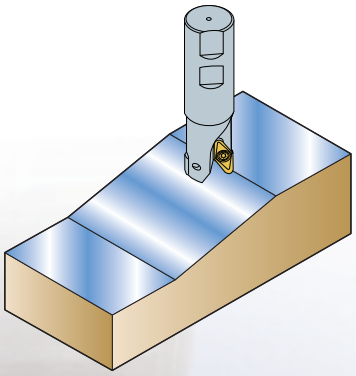
Machining Examples of Alumi Mill



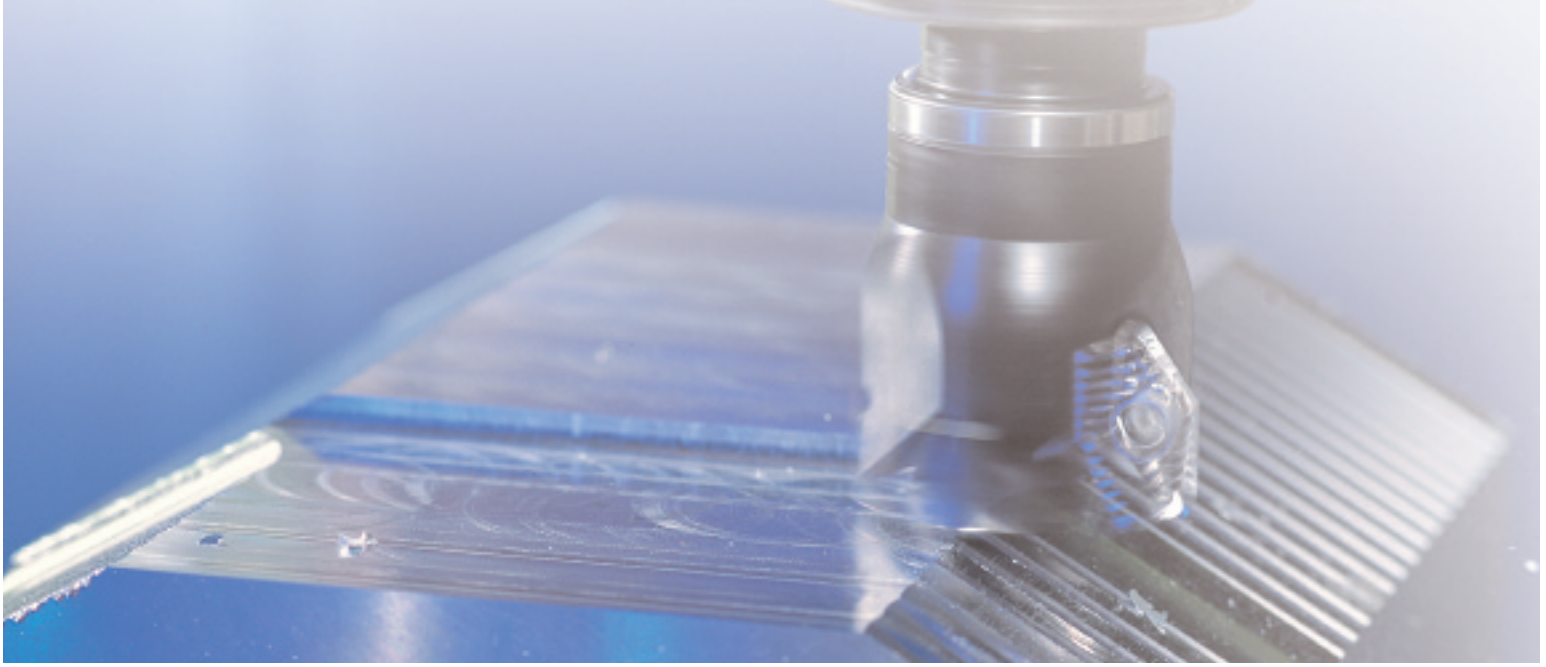
Contouring



Square shouldering



Ramping



Milling Cutters

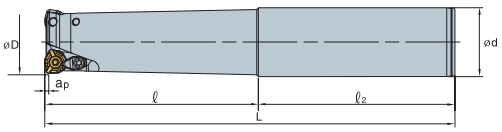
HFPA High Feed End Mills



Coolant through

Kits Also Available
P. E176



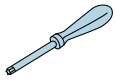


(inch)

Designation		Code No.	Price $	ØD	Ød	l	l2	L	No. of Inserts	Insert
HFPA	3/4	148-642	502.80	0.750	0.750	1.969	3.150	5.119	2	WDKT 080316 ZDSR-MH
	3/4	148-643	515.50	0.750	0.750	3.937	3.150	7.087	2	WDKT 080316 ZDSR-MH
	1	148-644	536.80	1.000	1.000	2.363	3.150	5.512	2	WDKT 10T320 ZDSR-MH
	1	148-645	554.50	1.000	1.000	4.725	3.150	7.874	2	WDKT 10T320 ZDSR-MH
	1-1/4	148-646	578.70	1.250	1.250	2.756	3.150	5.906	2	WDKT 130520 ZDSR-MH
	1-1/4	148-647	596.00	1.250	1.250	4.725	3.150	7.874	2	WDKT 130520 ZDSR-MH
	1-1/2	148-648	845.80	1.500	1.500	2.363	3.544	5.906	3	WDKT 130520 ZDSR-MH
	1-1/2	148-649	973.00	1.500	1.500	5.119	4.725	9.843	3	WDKT 130520 ZDSR-MH

Parts

P. E115

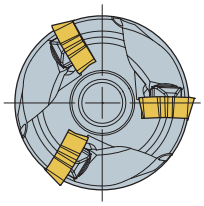
Cutter	Screw	Clamp	Clamp Screw	C-Ring	Wrench	Wrench
						
3/4	FTNA 0306 145-548 - $ 7.80	-	-	-	TW09P 146-951 - $ 17.30	-
1.000	FTKA 0408 146-968 - $ 10.00	CHH3.5R1 145-552 - $ 29.30	CTX03510 145-554 - $ 11.70	CR03 145-556 - $ 3.30	-	TW15S 146-801 - $ 37.70
1-1/4	FTGA 0510-P 145-549 - $ 10.50	CCH4.5R1 145-553 - $ 29.30	CTX04513H 145-555 - $ 11.70	CR03 145-556 - $ 3.30	-	TW20 148-291 - $ 18.40
1-1/2	FTGA 0512-P 145-551 - $ 11.40	CCH4.5R1 145-553 - $ 29.30	CTX04513H 145-555 - $ 11.70	CR03 145-556 - $ 3.30	-	TW20 148-291 - $ 18.40

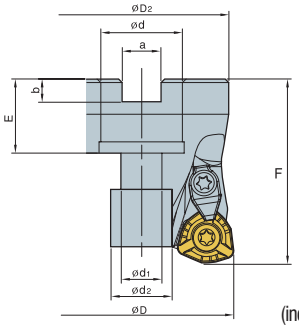
HFPC High Feed Face Mills



Coolant through

Kits Also Available
P. E176



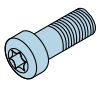
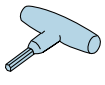


(inch)

Designation		Code No.	Price $	ØD	Ød	ØD2	Ød2	a	b	E	F	No. of Inserts	Insert
HFPC	13200R-3	148-636	758.30	2.000	0.750	1.772	0.630	0.321	0.221	0.778	1.969	3	WDKT 130520 ZDSR-MH
	13200R-4	148-637	950.60	2.000	0.750	1.772	0.630	0.321	0.221	0.778	1.969	4	WDKT 130520 ZDSR-MH
	13250R-3	148-638	709.10	2.500	0.750	1.772	0.630	0.321	0.221	0.778	1.969	3	WDKT 130520 ZDSR-MH
	13250R-4	148-639	975.70	2.500	0.750	1.772	0.630	0.321	0.221	0.778	1.969	4	WDKT 130520 ZDSR-MH
	13300R-4	148-640	949.20	3.000	1.000	2.205	0.827	0.384	0.248	0.985	2.756	4	WDKT 130520 ZDSR-MH
	13300R-5	148-641	1,241.30	3.000	1.000	2.205	0.827	0.384	0.248	0.985	2.756	5	WDKT 130520 ZDSR-MH

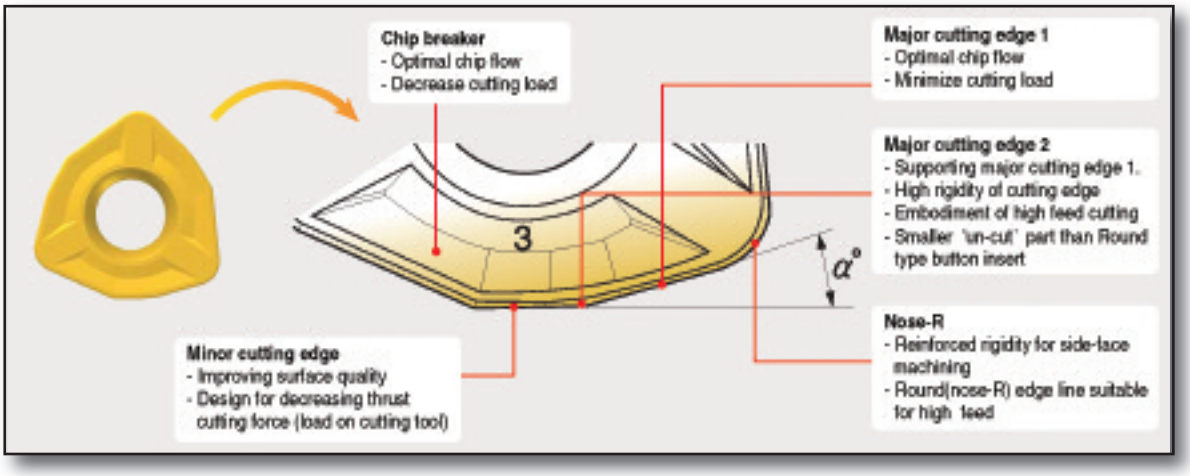
Parts

P. E115

Cutter	Screw	Clamp	Clamp Screw	C-Ring	Wrench	
						
2, 2-1/2, 3	FTGA0513-P 148-194 - $ 11.10	CCH4.5R1 145-553 - $ 29.30	CTX04513H 145-555 - $ 11.70	CR03 145-556 - $ 3.30	TW20-100 145-557 - $ 35.80	

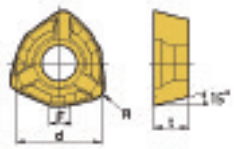
Milling Cutters

HIGH FEED MILLING INSERTS



WDKT





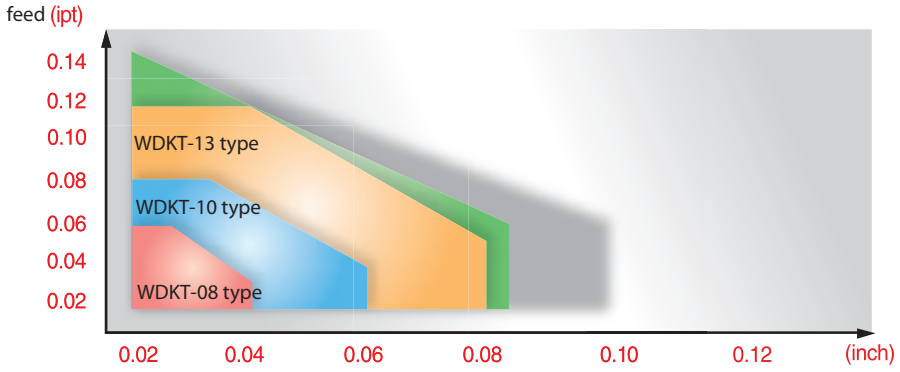
Designation	Coated Carbide							Cermet		Ceramic	Uncoated Carbide		(inch)					Applicable Cutter	
	PM10C	PM25C	PM30C	PM30P	PM35P	KM20C	MM30P	PT20S	PT30S	S300	PM20U	PTM30U	d	t	F	r	a°	Cutter	Page No.
WDKT 080316 ZDSR-MH	148-651 $ 16.80				148-563 $ 16.80								.315	1/8	3/64	1/16	15	HFPA	E128
																		HFPC	E128
WDKT 10T320 ZDSR-MH	148-652 $ 21.50				148-650 $ 21.50								.394	3/32	.059	.079	15		
WDKT 130520 ZDSR-MH	148-653 $ 29.90				148-564 $ 29.90		148-623 $ 29.90						.531	7/32	.083	.079	15		

Application

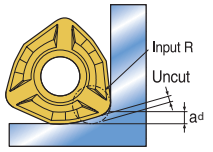
S.F.M.

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



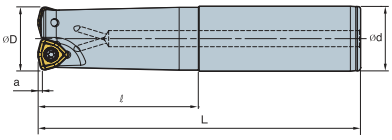
- Information for uncut part by using Input.R for CAM program.
- Uncut can be changed by poor machine condition or weak clamp of workpiece, etc.

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	

Milling Cutters

HFNA High Feed End Mills

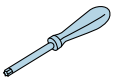




(inch)

Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
HFNA 09100HR-2S100	148-930	479.20	1.0000	1.00	0.06	2.362	5.512	2	
09100HR-2M100	148-946	495.10	1.0000	1.00	0.06	4.724	7.874	2	WNMX09T316ZNN-M
09118HR-3S125	148-982	549.00	1.1875	1.25	0.06	2.756	5.906	3	
09118HR-3M125	149-035	566.40	1.1875	1.25	0.06	4.724	7.874	3	
09125HR-3S125	148-983	549.00	1.2500	1.25	0.06	2.756	5.906	3	
09125HR-3M125	148-984	697.20	1.2500	1.25	0.06	4.724	4.724	3	
09137HR-4S125	148-985	737.30	1.3750	1.25	0.06	1.969	5.906	4	
09150HR-4S125	148-990	737.30	1.5000	1.25	0.06	1.969	5.906	4	
09150HR-4M125	148-991	718.60	1.5000	1.25	0.06	1.969	9.843	4	
13125HR-2S125	149-028	516.60	1.250	1.250	0.08	2.756	5.906	2	
13125HR-2M125	149-029	532.10	1.250	1.250	0.08	4.724	7.874	2	WMNX130520-ZNN-M
13131HR-2L125	145-599	568.40	1.313	1.250	0.08	2.756	11.811	2	
13131HR-2M125	145-598	497.50	1.313	1.250	0.08	2.874	7.874	2	
13131HR-2S125	145-597	462.10	1.313	1.250	0.08	2.756	5.906	2	
13137HR-2L125	146-798	586.80	1.375	1.250	0.08	1.969	11.811	2	
13137HR-2M125	146-759	512.80	1.375	1.250	0.08	1.969	7.874	2	
13137HR-2S125	146-630	475.80	1.375	1.250	0.08	1.969	5.906	2	
13150HR-3M150	149-033	868.80	1.500	1.500	0.08	5.118	9.843	3	
13150HR-3S150	149-032	722.10	1.500	1.500	0.08	2.362	5.906	3	
13150HR-3L150	146-400	1,020.10	1.500	1.500	0.08	7.087	11.811	3	
13162HR-3L125	146-868	712.10	1.625	1.250	0.08	1.969	11.811	3	
13162HR-3L150	146-871	712.10	1.625	1.500	0.08	1.969	11.811	3	
13162HR-3M125	146-859	692.60	1.625	1.250	0.08	1.969	9.843	3	
13162HR-3M150	146-870	776.80	1.625	1.500	0.08	1.969	9.843	3	
13162HR-3S125	146-856	645.70	1.625	1.250	0.08	1.969	5.906	3	
13162HR-3S150	146-869	675.30	1.625	1.500	0.08	1.969	5.906	3	

Parts

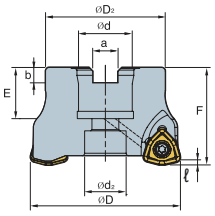
Designation	Insert	Screw	Wrench
			
HFNA 09xxxHR	WNMX09T316ZNN-M	FTKA0307 **148-210 - $ 12.30**	TW09S **146-951 - $ 17.30**
HFNA 13xxxHR	WMNX130520ZNN-M	FTKA0412B **146-969 - $ 10.00**	TW15S **146-801 - $ 37.70**

Milling Cutters

HFNC High Feed Face Mills



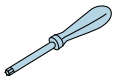
Coolant through



Designation	Code No.	Price $	ØD	Ød	ØD2	Ød2	a	b	E	F	ℓ	No. of Inserts	Insert
HFNC 09250HR-6	148-798	1,256.40	2.5	0.750	2.205	0.630	0.315	0.220	0.787	1.750	0.06	6	WNMX09T316ZNN-M
09300HR-7	148-813	1,435.00	3.0	1.000	2.205	0.827	0.374	0.236	0.866	2.000	0.06	7	
09400HR-8	148-815	1,613.70	4.0	1.250	2.874	1.024	0.500	0.315	0.866	2.000	0.06	8	
13200HR-3	146-872	756.80	2.0	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	3	WMNX130520-ZNN-M
13200HR-4	146-873	948.90	2.0	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	4	
13250HR-4	146-881	974.00	2.5	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	4	
13250HR-5	146-882	1,217.40	2.5	0.75	1.772	0.630	0.315	0.220	0.787	1.75	0.08	5	
13300HR-5	146-883	1,239.20	3.0	1.00	2.205	0.827	0.374	0.236	0.866	2.0	0.08	5	
13300HR-6	146-884	1,341.50	3.0	1.00	2.205	0.827	0.374	0.236	0.866	2.0	0.08	6	
13400HR-6	146-885	1,341.50	4.0	1.25	2.874	1.024	0.500	0.315	0.866	2.0	0.08	6	
13400HR-7	146-886	1,542.70	4.0	1.25	2.874	1.024	0.500	0.315	0.866	2.0	0.08	7	

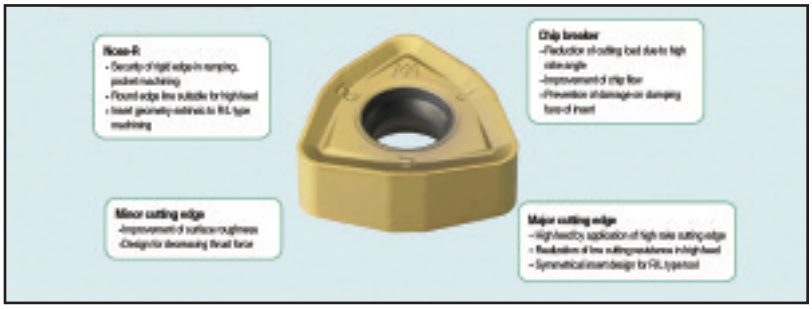
AA:76º, AR:-7º, RR:-12º~ -4º

Parts

Designation	Insert	Screw	Wrench
			
HFNC 09250 - 09400HR HFNC 13200 - 13400HR	WNMX09T316ZNN-M WMNX130520-ZNN-M	FTKA0307 **148-210 - $ 12.30** FTKA0412B **146-969 - $ 10.00**	TW09S **146-951 - $ 17.30** TW15S **146-801 - $ 37.70**

DOUBLE SIDED HIGH FEED MILLING INSERTS

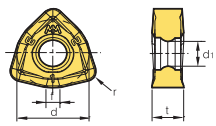
- High rake angle cutting edge reduces cutting load making this insert excellent for high feed and multi-functional machining
- Double sided design makes this a very economical insert
- Negative geometry has been designed for rigidity of cutting edge and double sided function
- Symmetrical cutting edge is applicable for both R and L type tools



WNMX



- Features
  Excellent geometries for a variety of materials



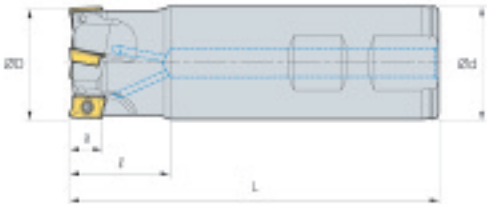
Designation	Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
	PTM50P	PT30P	PM25C	PM30P	PM35P	PM40P	KM20C	MM30P	PC9530	SM20P	PM20U	KTM10U	d	t	r	d1	f	Cutter	Page No.
WNMX09T316ZNN-M	145-640 $ 25.10			146-890 $ 21.30				146-891 $ 21.30					0.375	0.156	0.063	0.142	0.067	HFNA	E130
WNMX130520ZNN-M	145-675 $ 27.30									147-080 $ 33.30			0.500	0.219	0.079	0.185	0.098	HFNC	E131

Milling Cutters

AP 06 - 90º End Mills



Features:
- Lower cutting resistance
- Better chip control
- Longer tool life

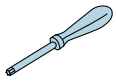


AR: 7.5º ~ 13º

(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AP 06-90	1050HS-2	145-567	172.60	0.500	0.500	0.220	0.984	3.150	2	APMT 0602 PDSR-M
AP 06-90	1050HS-3	145-568	174.30	0.500	0.500	0.220	0.984	3.150	3	
AP 06-90	1063HS-3	145-569	212.90	0.625	0.625	0.220	0.984	3.543	3	
AP 06-90	1063HS-4	145-571	172.60	0.625	0.625	0.220	0.984	3.543	4	
AP 06-90	1075HS-4	145-572	232.30	0.750	0.750	0.220	1.181	4.331	4	
AP 06-90	1075HS-5	145-573	236.80	0.750	0.750	0.220	1.181	4.331	5	
AP 06-90	1100HS	145-574	281.40	1.000	1.000	0.220	1.181	4.724	7	
AP 06-90	1125HS	145-576	375.00	1.250	1.250	0.220	1.378	4.724	8	

Parts

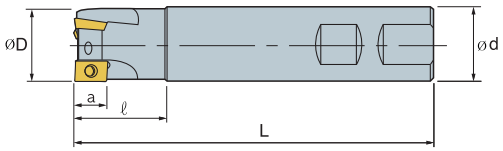
Designation	Insert	Screw	Wrench
			
AP 06-90	APMT 0602 PDSR-M ☞ P. E99	FTKA 01842 **148-717 - $ 9.20**	TW 06S-A **147-186 - $ 36.00**

AP 11/ 16 - 90º End Mill H13 Hardened Bodies 48HRC



H13 HARDENED CUTTER BODIES 48RC

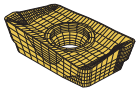
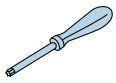
Features:
- Longer insert life
- Longer body life
- Higher rigidity
- Better feed rates



(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 11- 90	2075S	148-822	90.20	0.750	0.750	0.433	1.181	3.937	2	9°	APXT 11T3
	3100S	148-812	135.10	1.000	1.000	0.630	1.378	4.528	2	9°	
AP 16 - 90	3125S	148-814	169.80	1.250	1.000	0.630	1.574	4.921	3	9º	
	3125S 1 1/4 SHK	148-816	169.80	1.250	1.250	0.630	1.575	4.921	3	9°	AP_T 1604
	3150S	148-818	169.80	1.500	1.250	0.630	1.575	5.125	3	9°	

Parts

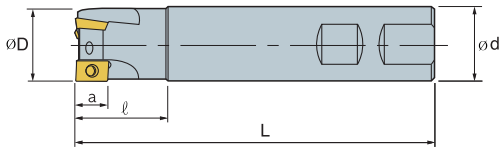
Designation	Insert	Screw	Wrench
			
AP 11 90º AP 16 90º	APXT 11T3~ AP_T 1604~ ☞ P. E99, 100	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

Milling Cutters

AP 11/ 16 - 90º End Mills



Kits Also Available
P. E166, 167

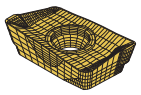
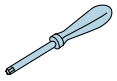


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 11- 90	2050S	146-371	106.40	0.500	0.625	0.433	0.984	3.346	1	5°	
Short length	2062S	146-372	106.40	0.625	0.625	0.433	0.984	3.543	2	7°	
	2075S	146-373	106.40	0.750	0.750	0.433	1.181	3.937	2	9°	APXT 11T3
	2075S 3 Flute	147-376	126.90	0.750	0.750	0.433	1.181	3.937	3	9°	
	2100S 3/4 Shank	146-374	122.80	1.000	0.750	0.433	1.378	3.500	3	9°	
	2100S 1" Shank	148-414	122.80	1.000	1.000	0.433	1.378	4.528	3	9°	
Medium length	2125M	147-131	143.30	1.250	1.250	0.433	1.575	4.921	4	9°	APXT 11T3
	2150M	147-132	163.70	1.500	1.250	0.433	1.654	5.118	5	9°	
	2200M	147-133	228.80	2.000	1.250	0.433	1.772	5.315	6	9°	
Long length	2062L	147-284	106.40	0.625	0.625	0.433	0.984	6.500	2	7º	APXT 11T3
	2075L	147-285	106.40	0.750	0.750	0.433	1.181	6.500	2	9º	
	2100L	147-286	122.80	1.000	1.000	0.433	1.378	6.500	3	9º	
AP 16 - 90											
Short length	3100S	145-705	122.80	1.000	1.000	0.630	1.378	4.528	2	9°	AP_T 1604
	3125S	145-706	143.30	1.250	1.000	0.630	1.574	4.921	3	9º	
	3125S 1 1/4 SHK	146-866	153.10	1.250	1.250	0.630	1.575	4.921	3	9°	
	3150S	145-707	163.70	1.500	1.250	0.630	1.575	5.125	3	9°	
	3200S	145-708	194.30	2.000	1.250	0.630	1.772	5.315	5	9º	
Medium length	3100M	147-282	143.30	1.000	1.000	0.630	1.378	6.500	2	9º	AP_T 1604
	3125M	147-283	143.30	1.250	1.250	0.630	1.574	6.500	3	9º	
Long length	3100L	147-136	183.90	1.000	1.000	0.630	1.378	8.000	2	9º	AP_T 1604
	3125L	147-137	245.20	1.250	1.250	0.630	1.574	8.500	3	9º	

*AA:0°

Parts

Designation	Insert	Screw	Wrench
			
AP 11 90º AP 16 90º	APXT 11T3~ AP_T 1604~ P. E99, 100	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

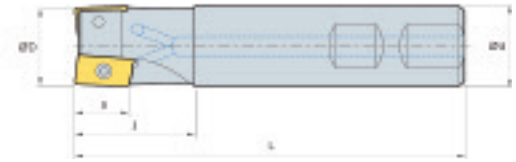
Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	320~980	.003~.010	Coated (PM10,20,30C) Uncoated (PM20U)
M	160~600	.002~.008	Coated (MM30P)
K	Cast Iron 490~820 Alum 500~1000	.003~.012	Coated (KM20C) Uncoated (KTM10U)

Milling Cutters

AP11M/16M-90 End Mills





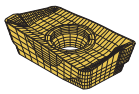
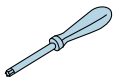
(inch)

Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP11M-90										
2050S	**146-889**	**196.10**	0.500	0.625	0.433	1.181	3.346	1	3º-14º	
2062S	**147-001**	**240.20**	0.625	0.625	0.433	0.984	3.543	2	3º-14º	
2062L	**147-003**	**275.30**	0.625	0.625	0.433	1.181	7.087	2	3º-14º	
2075S	**147-005**	**261.30**	0.750	0.750	0.433	1.181	3.937	2	3º-14º	
2075M	**147-010**	**290.60**	0.750	0.750	0.433	1.181	8.268	2	3º-14º	APMT 11T3
2100S	**147-012**	**305.00**	1.000	1.000	0.433	1.378	4.528	3	3º-14º	
2100L	**147-014**	**338.60**	1.000	1.000	0.433	1.575	7.087	3	3º-14º	
2125S	**147-016**	**406.50**	1.250	1.250	0.433	1.575	4.921	4	3º-14º	
2150S	**147-020**	**479.10**	1.500	1.250	0.433	1.654	5.118	5	3º-14º	
2200S	**147-022**	**672.30**	2.000	1.250	0.433	1.250	5.315	6	3º-14º	
AP16M-90										
3100S	**147-024**	**332.90**	1.000	1.000	0.630	1.378	4.528	2	3º-14º	
3100M	**147-046**	**369.60**	1.000	1.000	0.630	1.378	7.087	2	3º-14º	
3100L	**147-050**	**356.20**	1.000	1.000	0.630	2.362	8.661	2	3º-14º	
3125S	**147-074**	**450.80**	1.250	1.250	0.630	1.575	4.921	3	3º-14º	APMT 1604
3125M	**148-387**	**401.50**	1.250	1.250	0.630	1.575	7.874	2	3º-14º	
3125L	**148-388**	**564.80**	1.250	1.250	0.630	2.559	10.236	2	3º-14º	
3150S	**148-411**	**539.50**	1.500	1.250	0.630	1.654	5.118	4	3º-14º	
3200S	**148-415**	**624.50**	2.000	1.250	0.630	1.772	5.315	5	3º-14º	

AP11M: AA:0º, AR:3º~14º, RR:-25º~-18º

AP16M: AA:0º, AR:3º~14º, RR:-18º~-10º

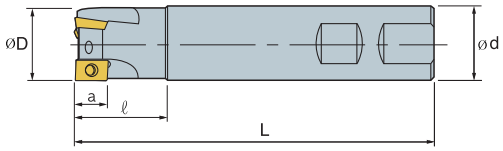
Parts

Designation	Insert	Screw	Wrench
			
AP11M-90 2050S **AP11M-90 2062S~2200S**	APMT 11T3~	FTKA 02555S **148-624 - $ 12.00** FTKA 02565S **146-595 - $ 12.30**	TW 80S **146-728 - $ 37.70**
AP16M-90 3100 **AP16M-90 3125~3200**	APMT 1604	FTKA 0408 **146-968 - $ 10.00** FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

Milling Cutters

AP 10/ AD 15 - 90º End Mills



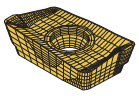
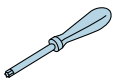


*AA:0°

(inch)

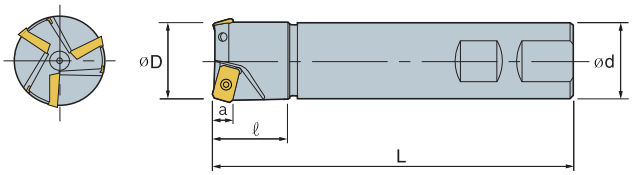
Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR	Insert
AP 10 90º	3/8	147-835	106.40	0.375	0.375	0.394	0.984	3.375	1		AP_T 1003
	1/2	147-836	106.40	0.500	0.625	0.394	0.984	3.346	1	5°	AP_T 1003
	5/8	147-837	106.40	0.625	0.625	0.394	0.984	3.543	2	7°	AP_T 1003
	3/4	147-838	106.40	0.750	0.750	0.394	1.181	3.937	2	9°	AP_T 1003
	1”	147-839	122.80	1.000	1.000	0.394	1.378	4.528	3	9°	AP_T 1003
	1 1/4	147-840	163.70	1.250	1.250	0.394	1.575	4.921	4	9°	AP_T 1003
	1 1/2	147-841	163.70	1.500	1.250	0.394	1.654	5.118	5	9°	AP_T 1003
AD 15 90º	3/4	147-845	106.40	0.750	0.750	0.591	1.181	3.940	1	9º	ADKT 1505
	1”	147-846	122.80	1.000	1.000	0.591	1.378	4.528	2	9°	ADKT 1505
	1 1/4	147-847	153.40	1.250	1.250	0.591	1.575	4.921	3	14°	ADKT 1505
	1 1/2	147-848	153.40	1.500	1.250	0.591	1.575	4.921	4	14°	ADKT 1505

Parts

Designation	Insert	Screw	Wrench
			
AP 10 90º AD 15 90º	APKT / APXT 1003~ ADKT 1505~ ☞ P. E98	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

AP 11 15º End Mills



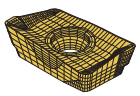
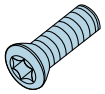
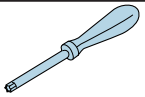


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	AR
AP11 15º	2100SE	147-134	131.00	1.000	1.000	0.157	1.181	4.528	2	-1°
	2150SE	147-135	153.40	1.500	1.250	0.157	1.575	5.118	3	-1°

*AA:0°

Parts

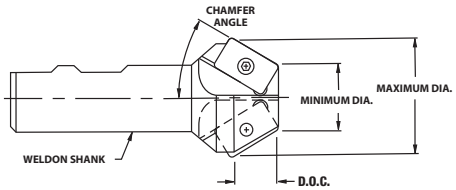
Designation	Insert	Screw	Wrench
			
AP11 15º 2000SE	APXT 11T3~	FTKA 02565S **146-595 - $ 12.30**	TW 08S **146-728 - $ 37.70**

☞ P. E100

Milling Cutters

AP 16 Chamfer Mills

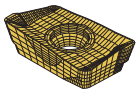
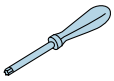




(inch)

Designation		Code No.	Price $	Min. Dia.	Max. Dia.	Weldon Shank	Chamfer Angle	No. of Inserts	Depth of cut
AP 16 CHM	750-30	147-187	260.60	.750	1.303	3/4"	30°	2	.479
	688-41	147-188	260.60	.688	1.414	3/4"	41°		.418
	688-45	147-189	260.60	.688	1.471	3/4"	45°		.391
	500-60	147-190	260.60	.500	1.458	3/4"	60°		.277
	1.000-30	147-191	405.10	1.000	1.553	1"	30°	3	.479
	938-41	147-192	260.60	.938	1.664	1"	41°		.418
	938-45	147-193	260.60	.938	1.721	1"	45°		.391
	750-60	147-194	260.60	.750	1.708	1"	60°		.277
	1.250-30	147-195	405.10	1.250	1.803	1 1/4"	30°	3	.479
	1.188-41	147-196	405.10	1.188	1.914	1 1/4"	41°		.418
	1.188-45	147-197	405.10	1.188	1.971	1 1/4"	45°		.391
	1.000-60	147-198	405.10	1.000	1.958	1 1/4"	60°		.277
	1.500-30	147-199	405.10	1.500	2.053	1 1/2"	30°		.479
	1.438-41	147-200	405.10	1.438	2.164	1 1/2"	41°		.418
	1.438-45	147-201	405.10	1.438	2.221	1 1/2"	45°		.391
	1.250-60	147-202	405.10	1.250	2.208	1 1/2"	60°		.277

Parts

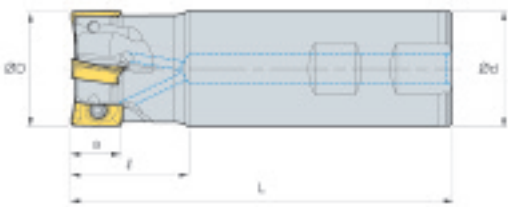
Designation	Insert	Screw	Wrench
			
AP 16CHM	APKT 1604	FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

P. E99

AP 18 - 90° End Mills



Features:
- Lower cutting resistance
- Better chip control
- Longer tool life

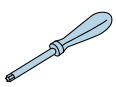


AR: 7° ~ 13°

(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AP 18-90	4125HS	145-577	381.70	1.250	1.250	0.669	1.575	4.921	3	APMT 1806 PDSR-M
AP 18-90	4150HS	145-578	456.80	1.500	1.250	0.669	1.575	5.118	4	
AP 18-90	4200HS	145-579	528.60	2.000	1.250	0.669	1.575	5.315	5	
AP 18-90	4250HS	145-581	670.90	2.500	1.250	0.669	1.575	5.315	9	

Parts

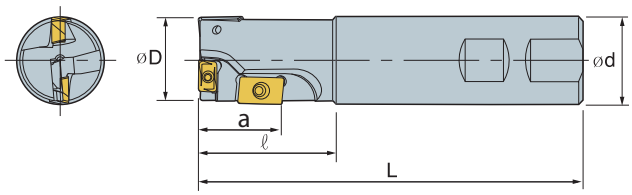
Designation	Insert	Screw	Wrench
			
AP 18-90	APMT 1806 PDSR-M	FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

P. E99

Milling Cutters

APCC Centre Cut End Mills



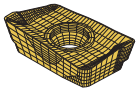
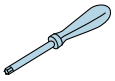


(inch)

Designation		Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	APXT11T3~	APXT1604~
APCC	2100MH	148-246	222.30	1.000	1.000	0.787	1.575	5.118	3	3	-
	2125MH	148-247	274.60	1.250	1.250	1.181	1.969	5.512	3	1	2
APCC	3150MH	148-248	326.90	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 2125MH APCC 3150MH	APXT 11T3~ APXT 1604~	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

☞ P. E100

Recommended cutting condition

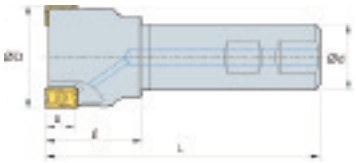
Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980	.003~.010	Coated (PM10,20,30C ,PM30P) Uncoated (PM20U)
M	320~480	.003~.008	Coated (MM30P)
K	Alum 500~1000	.003~.012	Coated (KM20C) Uncoated (KTM10U)

Milling Cutters

DS4 End Mills



Coolant through



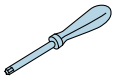
(inch)

Designation		Code No.	Price $	ØD	Ød	ℓ	L	a	No. of Inserts	Insert
DS4	3062HR	148-614 •	218.60	0.625	0.625	0.984	3.543	0.354	1	LNMX 100605
	3075HR	146-379 •	307.00	0.750	0.750	1.181	3.937	0.354	2	
	3075HR	146-381 •	378.40	0.750	0.750	1.181	3.937	0.354	3	
	3100HR	146-384 •	348.40	1.000	1.000	1.378	4.528	0.354	2	
	3100HR	146-389 •	426.30	1.000	1.000	1.378	4.528	0.354	3	
	3125HR	146-390 •	466.70	1.250	1.250	1.575	4.921	0.354	3	
	3125HR	146-391 •	550.10	1.250	1.250	1.575	4.921	0.354	4	
	3150HR	146-392 •	591.50	1.500	1.250	1.654	5.118	0.354	4	
	3150HR	146-393 •	678.70	1.500	1.500	1.654	5.118	0.354	5	
	3200HR	146-394 •	721.70	2.000	1.250	1.772	5.315	0.354	5	
	3200HR	146-395 •	900.20	2.000	1.250	1.772	5.315	0.354	7	

AR: -6º, RR -39º~ -16º

• Available only while quantities last.

Parts

Designation	Insert	Screw	Wrench
			
LNMX 100605PNR-M	LNMX P. E102	FTKA0307 **148-210 - $ 12.30**	TW09S **148-191- $ 37.70**

APFM 06 - 90º Face Mills



Coolant through

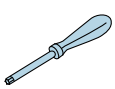
Features:
- Lower cutting resistance
- Better chip control
- Longer tool life



Designation		Code No.	Price $	ØD	Ød	$Ød_1$	$Ød_2$	a	b	E	F	ℓ	No. of Inserts
APFM 06-90	1150HS	145-582	567.90	1.50	0.500	0.287	0.433	0.252	0.169	0.630	1.500	0.220	10
	1200HS	145-583	670.30	2.00	0.750	0.433	0.630	0.321	0.220	0.787	1.750	0.220	12
	1250HS	145-584	857.30	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

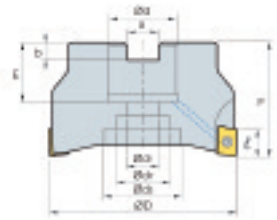
Designation	Insert	Screw	Wrench
			
APFM 06 90º	APMT 0602 PDSR-M P. E99	FTKA 01842 **148-717 - $ 9.20**	TW 06S-A **147-186 - $ 36.00**

Milling Cutters

APFM11M/16M-90º Face Mills



Coolant through



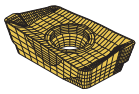
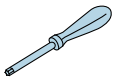
(inch)

Designation	Code No.	Price $	ØD	Ød	Ød1	Ød2	Ød3	a	b	E	F	ℓ	No. of Inserts	Insert
APFM11M-90 2150	148-416	615.60	1.500	0.500	0.287	0.433	-	0.252	0.169	0.630	1.500	0.433	5	
2200	148-434	726.50	2.000	0.750	0.433	0.630	-	0.321	0.220	0.787	1.750	0.433	6	
2250	148-445	929.30	2.500	1.000	0.433	0.630	-	0.321	0.220	0.787	1.750	0.433	8	APMT 11T3
2300	148-446	1,019.70	3.000	1.000	0.551	1.260	1.378	0.384	0.248	0.866	2.000	0.433	10	
2400	148-469	1,268.40	4.000	1.250	0.709	1.024	1.575	0.510	0.319	0.866	2.000	0.433	12	
APFM16M-90 3150	148-510	615.60	1.500	0.500	0.287	0.433	-	0.250	0.169	0.630	1.500	0.630	4	
3200	148-513	724.60	2.000	0.750	0.413	0.630	-	0.313	0.220	0.787	1.750	0.630	5	
3250	148-514	854.20	2.500	1.000	0.551	0.827	-	0.375	0.248	0.787	1.750	0.630	6	APMT 1604
3300	148-517	985.10	3.000	1.000	0.551	0.827	-	0.375	0.248	0.866	2.000	0.630	7	
3400	148-518	1,137.80	4.000	1.250	-	1.722	-	0.500	0.319	0.866	2.000	0.630	8	

APFM11M: AA:0º, AR:9º~13º, RR:-14º~5º

APFM16M: AA:0º, AR:14º, RR:-12º~8º

Parts

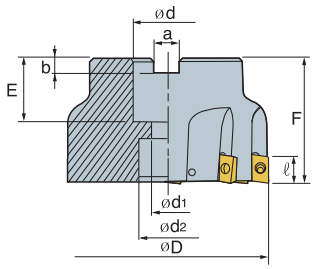
Designation	Insert	Screw	Wrench
			
APFM11M-90	APMT 11T3	FTKA 0410 **146-594 - $ 12.50**	TW 15S **146-728 - $ 37.70**
APFM16M-90	APMT 1604	FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

Milling Cutters

APFM 11/16 90° Face Mill



Kits Also Available
P. E177

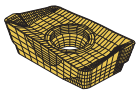
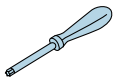


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 11-90	2.00	147-138	235.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.433	5
	2.50	148-249	274.60	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.433	8
	3.00	148-250	342.70	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.433	8
	4.00	148-251	441.20	4.000	1.250	-	1.772	0.510	0.319	0.866	2.000	0.433	10
APFM 16-90	2.00C	147-009	235.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	4
	2.00	147-117	274.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	5
	2.50C	147-011	306.40	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.630	5
	2.50	147-118	306.40	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.630	6
	3.00C	147-013	353.00	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	5
	3.00	147-119	353.00	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	7
	4.00C	147-000	428.90	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	4.00	147-120	428.90	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	8
	5.00C	147-015	991.20	5.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	5.00	147-121	1,193.80	5.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	9
	6.00C	147-017	1,611.70	6.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	7
	6.00	147-122	1,594.20	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

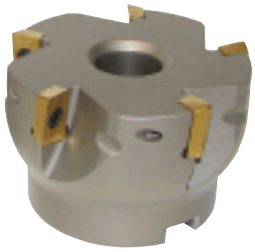
Designation	Insert	Screw	Wrench
			
APFM 11 90° **APFM 16 90°**	APXT 11T3~ APKT 1604~ P. E99, 100	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980	.003~.010	Coated (PM10,20,30C ,PM30P) Uncoated (PM20U)
M	320~480	.003~.008	Coated (MM30P)
K	Alum 500~1000	.003~.012	Coated (KM20C) Uncoated (KTM10U)

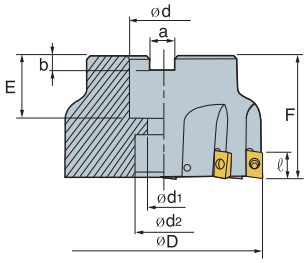
Milling Cutters

APFM 16 - 90º Face Mill H13 Hardened Bodies 48HRC



H13 HARDENED CUTTER BODIES 48RC

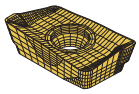
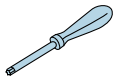
Features:
- Longer insert life
- Longer body life
- Higher Rigidity
- Better feed rates



Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 16-90	2.00C	148-809	234.90	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	4
	2.00	148-805	274.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.630	5
	3.00C	148-804	353.30	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	5
	3.00	148-806	353.30	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.630	7
	4.00C	148-808	441.20	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	6
	4.00	148-810	441.20	4.000	1.500	-	2.205	0.636	0.394	1.181	2.500	0.630	8

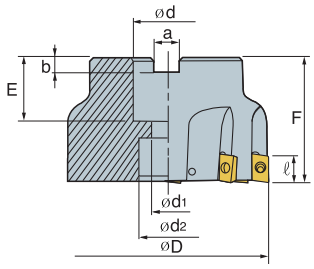
*AA:0°, AR:9°, RR:-10 ~ -5° **C = Coarse Pitch**

Parts

Designation	Insert	Screw	Wrench
			
APFM 16 90º	APKT 1604~ ☞ P. E99	FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

AP(D)FM 10/15 90º Face Mill



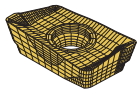
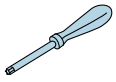


(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts	Insert
APFM 10-90	2.00	147-842	235.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.394	5	
	2.50	147-843	274.60	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.394	8	AP_T 1003
	3.00	147-844	353.00	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.394	8	
ADFM 15-90	2.00	147-849	235.60	2.000	0.750	0.413	0.630	0.321	0.220	0.787	1.750	0.591	5	
	2.50	147-850	274.60	2.500	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.591	6	ADKT 1505
	3.00	147-851	353.00	3.000	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.591	7	
	4.00	147-852	442.80	4.000	1.250	-	2.205	0.636	0.394	1.181	2.000	0.591	8	

*AA:0°, AR:9°, RR:-10 ~ -5°

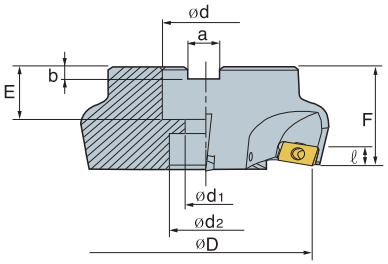
Parts

Designation	Insert	Screw	Wrench
			
APFM 10 90º 1003 **ADFM 15 90º1505**	APKT / APXT 1003 ADKT 1505 ☞ P. E998	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

Milling Cutters

APFM 11/16 15º Face Mill

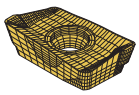
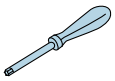




(inch)

Designation	Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 11-15º 2.50	147-123	251.00	2.50	1.000	0.551	0.827	0.384	0.248	0.787	1.750	0.157	6
APFM 16-15º 3.00	147-124	353.00	3.00	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.236	5
4.00	147-371	442.80	4.00	1.500	-	2.205	0.636	0.394	1.181	2.000	0.236	6
5.00	147-372	571.60	5.00	1.500	-	2.559	0.636	0.394	1.181	2.500	0.236	6

Parts

Designation	Insert	Screw	Wrench
			
APFM 11 15º APFM 16 15º	APXT 11T3~ APKT 1604~	FTKA 02565S **146-595 - $ 12.30** FTKA 0410 **146-969 - $ 10.00**	TW 08S **146-728 - $ 37.70** TW 15S **146-801 - $ 37.70**

☞ P. E99, 100

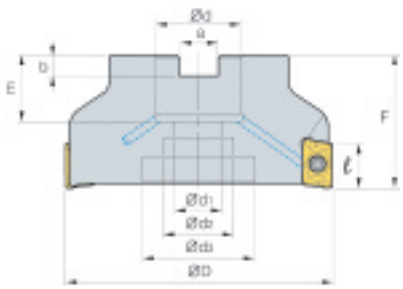
APFM 18 - 90º Face Mill





Coolant through

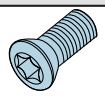
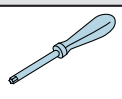
Features:
- Lower cutting resistance
- Better chip control
- Longer tool life



(inch)

Designation	Code No.	Price $	ØD	Ød	Ød1	Ød2	a	b	E	F	ℓ	No. of Inserts
APFM 18-90 4200HS	145-586	613.30	2.00	0.750	0.433	0.630	0.321	0.220	0.827	1.750	0.669	5
APFM 18-90 4250HS	145-587	722.90	2.50	0.750	0.433	0.630	0.321	0.220	0.827	1.750	0.669	6
APFM 18-90 4300HS	145-588	833.80	3.00	1.000	0.551	0.827	0.384	0.248	0.866	2.000	0.669	7
APFM 18-90 4400HS	145-589	958.80	4.00	1.250	0.709	1.024	0.510	0.319	0.866	2.000	0.669	8
APFM 18-90 4500HS	145-591	1,049.20	5.00	1.500	0.827	1.142	0.636	0.394	1.181	2.500	0.669	9

Parts

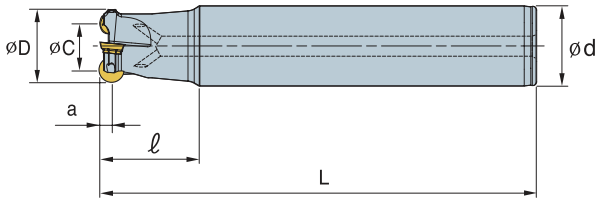
Designation	Insert	Screw	Wrench
			
AP 18-90	APMT 1806 PDSR-M	FTKA 0410 **146-969 - $ 10.00**	TW 15S **146-801 - $ 37.70**

☞ P. E99

Milling Cutters

Button End Mill



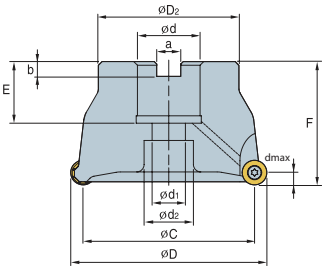


(inch)

Designation	Code No.	Price $	ØD	Ød	ØC	ℓ	L	a	No. of Inserts	Insert
BMSS 3075HRD-M	147-028	325.40	0.750	0.750	0.358	1.575	5.906	0.197	1	
BMSS 3100HRD-M	147-030	338.60	1.000	1.000	0.606	2.756	7.874	0.197	2	RDKT 10T3M0
BMSS 3125HRD-M	147-032	413.70	1.250	1.250	0.858	2.756	7.874	0.197	3	
BMSS 3150HRD-M	147-034	526.60	1.500	1.250	1.106	2.756	7.874	0.197	4	
BMSS 4125HRD-M	147-036	338.60	1.250	1.250	0.780	2.756	7.874	0.236	2	
BMSS 4150HRD-M	147-038	421.40	1.500	1.250	1.028	2.756	7.874	0.236	3	RDKT 1204M0
BMSS 4200HRD-M	147-040	526.60	2.000	1.500	1.528	1.969	9.843	0.236	4	

Button Face Mill

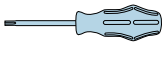




(inch)

Designation	Code No.	Price $	ØD	Ød	ØC	Ød1	Ød2	a	b	E	F	No. of Inserts	d max	Insert
BMSC 3200HRD	147-048	373.20	2.0	0.75	1.61	0.433	0.630	0.313	0.220	0.787	1.75	4	0.196	
BMSC 3200HRD-H	147-052	413.70	2.0	0.75	1.61	0.433	0.630	0.313	0.220	0.787	1.75	5	0.196	RDKT 10T3
BMSC 3250HRD-H	147-054	482.70	2.5	0.75	2.11	0.433	0.630	0.313	0.220	0.787	1.75	6	0.196	
BMSC 3300HRD-H	147-058	551.60	3.0	1.00	2.61	0.551	0.827	0.375	0.248	0.866	2.00	7	0.196	
BMSC 4200HRD	149-007	337.80	2.0	0.75	1.53	0.433	0.630	0.313	0.220	0.787	1.75	4	0.236	
BMSC 4300HRD-M	147-064	644.80	3.0	1.00	2.53	0.551	0.827	0.375	0.248	0.866	2.00	6	0.236	RDKT 1204
BMSC 4400HRD-M	147-066	758.50	4.0	1.25	3.53	0.709	1.024	0.500	0.319	0.827	2.00	7	0.236	
BMSC 4500HRD-M	147-068	896.40	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 **146-931 - $ 11.40**	TW15S **146-801 - $ 37.70**
BMSS/C 4000 series	RDKT 1204M0	FTKA 0410 **146-969 - $ 10.00**	

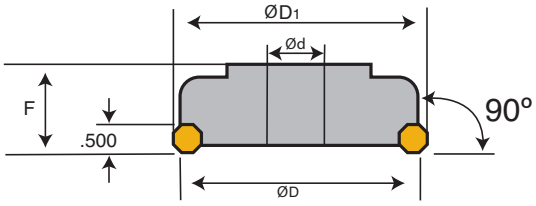
P. E106

Milling Cutters

OKT-MAX - 45° Face Mill



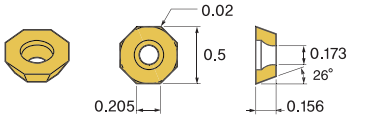
Kits Also Available
P. E180



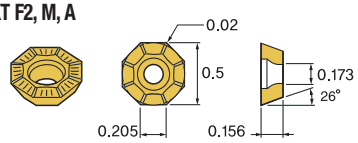
Designation		Code No. R	Price $	ØD	Ød	ØD1	F	No. Inserts
OKT-Max	2"R	147-019	512.00	2.0	0.750	2.319	1.57	4
	3"R	147-021	672.50	3.0	1.000	3.315	2.00	6
	4"R	147-023	776.90	4.0	1.500	4.315	2.00	7
	5"R	147-025	966.30	5.0	1.500	5.307	2.00	8
	6"R	147-027	1,236.10	6.0	1.500	6.307	2.00	9

Available Inserts

OFCW



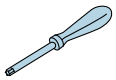
OFKT F2, M, A



Designation	
OFCW	05T3SN
	05T3FN
	05T308FN
OFKT	05T3SN-F2
	05T308SN-F2
	05T3SN-M
	05T308SN-M
	05T3FN-A
	05T3EN-A

P. E104, 105

Parts

	
FTKA0408 **146-968 - $ 10.00**	TW15S **146-801 - $ 37.70**

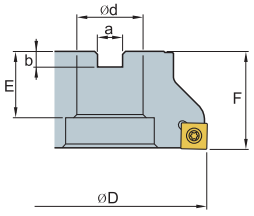
Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980	.003~.010	Coated (PM10,20,30C ,PM30P) Uncoated (PM20U)
M	320~480	.003~.008	Coated (MM30P)
K	Alum 500~1000	.003~.012	Coated (KM20C) Uncoated (KTM10U)

Milling Cutters

Max Mill 90º Face Mill





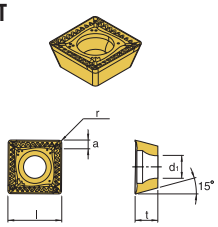
ø3.937 ~ø6.299

(inch)

Designation		Code No.	Price $	ØD	Ød	Ød1	a	b	E	F	No. of Inserts	Inserts
MM 90º	4250FM	146-805	545.00	2.500	1.000	0.551	0.370	0.248	0.787	1.575	4	
	4300FM	146-806	624.30	3.000	1.000	0.551	0.384	0.248	0.866	1.969	5	
	4400FM	146-807	695.80	4.000	1.250	-	0.510	0.319	0.866	1.969	6	SDXT1305
	4500FM	146-808	926.50	5.000	1.500	-	0.636	0.394	1.181	2.480	8	
	4600FM	146-809	1,231.40	6.000	2.000	-	0.758	0.433	1.181	2.480	8	

Available Insert

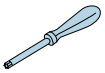
SDXT



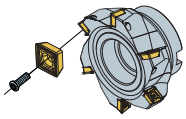
Designation	
SDXT130508R-	F2 M A

P. E107

Parts

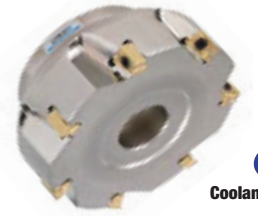
Screw	Wrench
	
FTNC 04511 **146-424 - $ 6.90**	TW20S **147-216 - $ 35.90**

Assembling

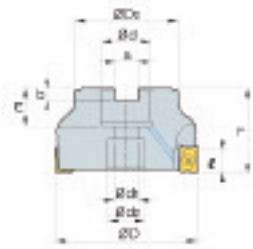


See pages E124 thru E126 for Cutting Conditions

DS4 Face Mill



Coolant through



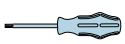
*AR:-6º, RR:-19º ~ 13°

(inch)

Designation		Code No.	Price $	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of Inserts	ℓ	Insert
DS4	3150HR	148-372 •	1,415.40	1.50	1.417	0.50	0.287	0.433	0.250	0.169	0.630	1.50	5	0.354	
	3200HR	148-373 •	1,778.60	2.00	1.772	0.75	0.413	0.630	0.313	0.220	0.787	1.75	7	0.354	LNMX100605PNR
	3250HR-M	148-374 •	989.70	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	9	0.354	
	3300HR	148-376 •	548.60	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	10	0.354	
	3400HR	148-391 •	1,778.60	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	12	0.354	
	4250HR	148-875 •	824.50	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	4	0.551	LNMX151008PNR
	4250HR-M	148-876 •	1,030.60	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	6	0.551	
	4300HR	148-877 •	1,086.30	3.00	2.205	1.00	0.551	0.827	0.375	0.248	0.866	2.00	5	0.551	
	4400HR-M	148-880 •	1,564.40	4.00	2.874	1.25	0.709	1.024	0.500	0.319	0.866	2.00	8	0.551	
	4500HR	148-881 •	1,745.40	5.00	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	7	0.551	
	4500HR-M	148-882 •	2,181.70	5.00	3.386	1.50	0.827	1.220	0.625	0.394	1.181	2.50	10	0.551	
	4600HR	148-883 •*	1,900.40	6.00	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	8	0.551	
	4600HR-M	148-884 •*	2,375.30	6.00	4.882	2.00	-	4.213	0.750	0.433	1.181	2.50	11	0.551	

*non coolant through • Available only while quantities last.

Inserts / Parts

Designation	Available Insert	Screw	Wrench
			
LNMX100605PNR-F2	LNMX	FTKA 0307 **148-210 - $ 12.30**	TW09S **148-191 - $ 37.70**
LNMX151008PNR-M		FTKA 0412B **146-969 - $ 10.00**	TW15S **146-801 - $ 37.70**

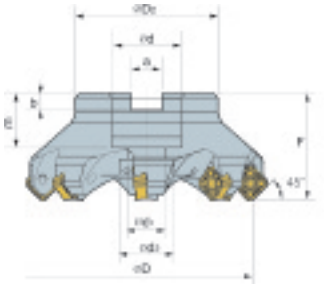
P. E102

Milling Cutters

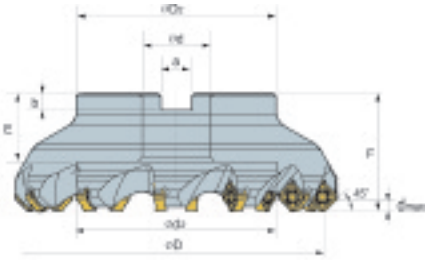
DS8 45º Face Mill



Coolant through



2" - 5" (coolant hole)



6" - 8" (no coolant hole)

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

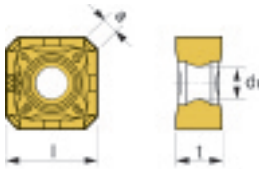
Kits Also Available
P. E178

(inch)

Designation		Code No.	Price $	ØD	ØD2	Ød	Ød1	Ød2	a	b	E	F	No. of Inserts	d max
DS8-45	4200HR-M	148-979	880.60	2.00	1.772	0.750	0.413	0.630	0.313	0.220	0.787	1.75	4	0.236
	4250HR-M	148-980	1,094.10	2.50	2.205	1.00	0.551	0.827	0.375	0.248	0.866	1.75	6	0.236
	4300HR	148-885	1,083.80	3.00									5	
	4300HR-M	148-887	1,624.00	3.00	2.205	1.00	0.551	0.827	0.384	0.248	0.866	2.00	7	0.236
	4300HR-H	148-886	1,394.40	3.00									10	
	4400HR	148-888	1,283.50	4.00									6	
	4400HR-M	148-890	1,923.00	4.00	2.874	1.25	0.709	1.024	0.510	0.319	0.866	2.00	8	0.236
	4400HR-H	148-889	1,394.40	4.00									12	
	4500HR	148-891	1,755.70	5.00									8	
	4500HR-M	148-893	2,559.80	5.00	3.386	1.50	0.827	1.220	0.636	0.394	1.181	2.50	10	0.236
	4500HR-H	148-892	1,896.20	5.00									16	
	4600HR	148-894	2,039.40	6.00									10	
	4600HR-M	148-896	3,221.00	6.00	4.882	2.00	-	4.213	0.758	0.433	1.181	2.50	12	0.236
	4600HR-H	148-895	3,131.60	6.00									20	
	4800HR-M	148-898	4,138.30	8.00	5.118	2.50	-	5.315	1.012	0.551	1.496	2.50	14	0.236
	4800HR-H	148-897	3,131.60	8.00									24	

Available Insert

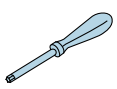
SNEX / SNMX



Designation
SNEX 1206ANN-A SNEX 1206ANN-F2 SNEX 1206ANN-M SNEX 1206ANN-W
SNMX 1206ANN-M

P. E109, 110

Parts

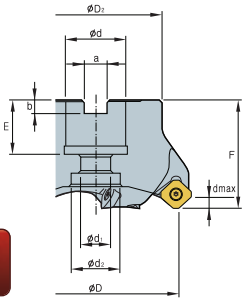
	
FTKA0410 **146-969 - $ 10.00**	TW15S **146-801 - $ 37.70**

Milling Cutters

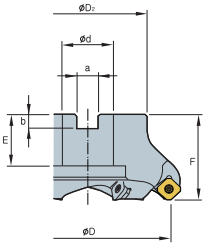
Max Mill 45º Face Mill



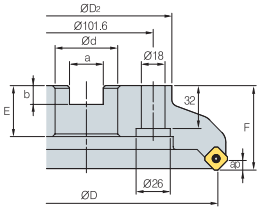
Kits Also Available
P. E180



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 45º	Coarse Pitch														
	4200FM	147-811	350.00	2.000	0.750	1.654	0.413	0.630	0.321	0.220	0.787	1.750	3		
	4250FM	147-812	449.00	2.500	0.750	1.654	0.413	0.630	0.321	0.220	0.787	1.750	4		
	4300FM	147-813	671.90	3.000	1.000	1.969	0.551	0.827	0.384	0.248	0.866	2.000	5		
	4400FM	147-814	827.40	4.000	1.250	2.362	-	1.772	0.510	0.319	0.866	2.000	5		
	4500FM	147-815	1,020.00	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	6		
	4600FM	147-816	1,172.20	6.000	2.000	3.937	-	2.953	0.758	0.433	1.181	2.500	7		
	4800FM	147-817	1,532.40	8.000	2.500	5.197	-	-	1.012	0.551	1.496	2.500	8		
	Medium Pitch														
	4300M	148-276	705.40	3.000	1.000	2.244	0.551	0.8271	0.384	0.248	0.866	2.000	6	0.256	SE__ 14M4
	4400M	148-277	868.90	4.000	1.250	2.638	-	1.772	0.510	0.315	0.866	2.000	7		
	4500M	148-278	1,122.00	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	8		
	4600M	148-279	1,289.50	6.000	2.000	4.213	-	2.953	0.758	0.433	1.181	2.500	10		
	4800M	148-280	1,685.60	8.000	2.500	5.118	-	-	1.012	0.551	1.496	2.500	12		
	Fine Pitch														
	4300H	148-281	820.40	3.000	1.000	2.244	0.551	0.827	0.384	0.248	0.866	2.000	8		
	4400H	148-282	912.30	4.000	1.250	2.638	-	1.772	0.510	0.315	0.866	2.000	10		
	4500H	148-283	1,178.20	5.000	1.500	3.425	-	2.205	0.636	0.394	1.181	2.500	12		
	4600H	148-284	1,611.70	6.000	2.000	4.213	-	2.953	0.758	0.433	1.181	2.500	16		
	4800H	148-285	2,107.10	8.000	2.500	5.118	-	-	1.012	0.551	1.496	2.500	18		

Available Insert

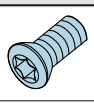
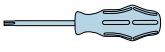
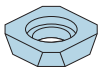
SEET / SEXT



Designation
SEET14M4AGFN-A
SEET14M4AGSN-F2
SEET14M4AGSN-M
SEXT14M4AGSN-F2
SEXT14M4AGSN-M
SEXT14M4AGSN-R8

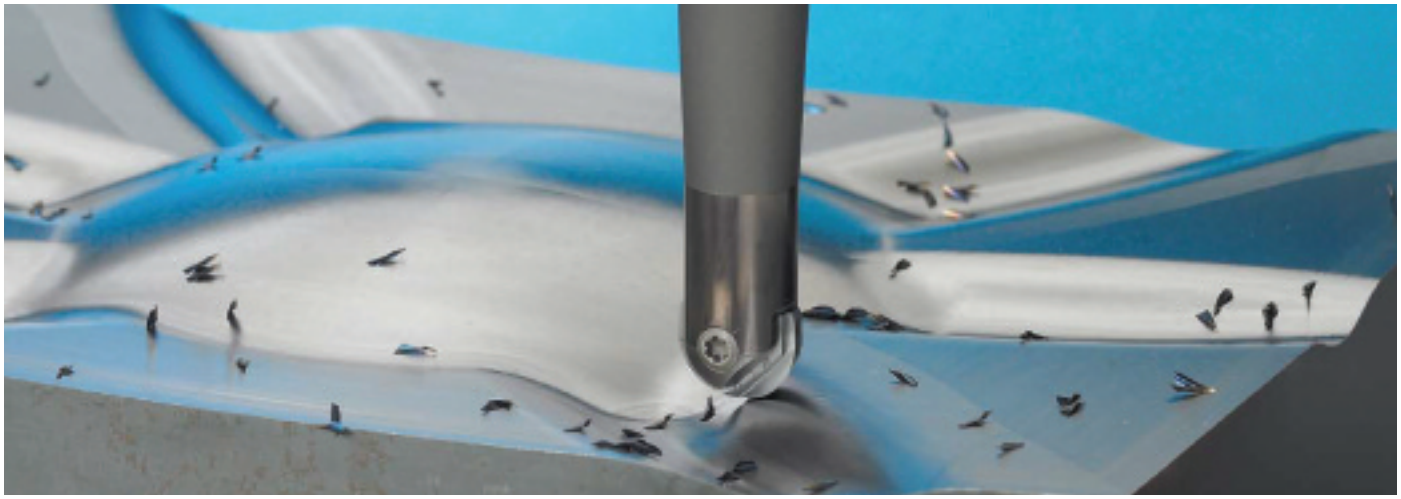
P. E108, 109

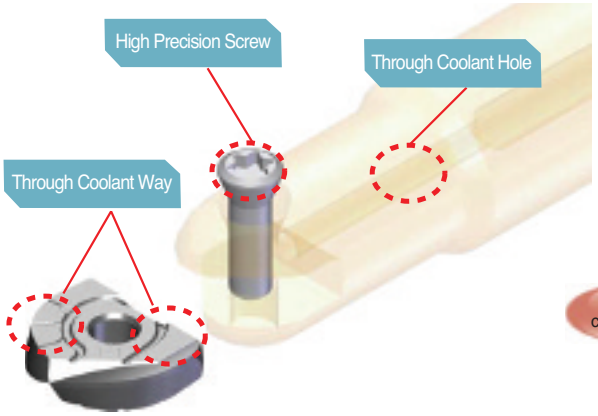
Parts

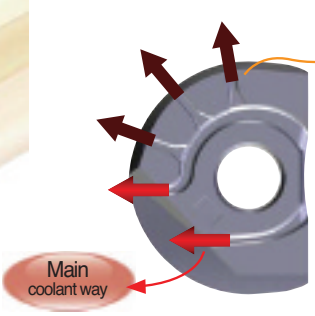
Screw	Wrench	Wrench for shim	Shim screw	Shim
				
FTGA03512	TW15S	HW35L	SHXN0509F	SS42SAF
146-933 - $ 11.40	**146-801 - $ 37.70**	**148-192 - $ 3.40**	**146-935 - $ 17.40**	**148-193 - $ 11.50**

See pages E124 thru E126 for Cutting Conditions

Jet Mill Technical Information







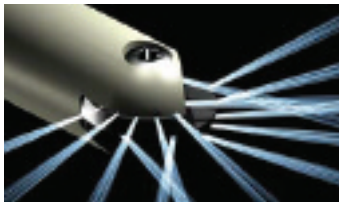
- **High tolerance insert**
  - Run-out of cutting edge : under 0.00079inch
  - Radius form accuracy : under 0.00039inch
- **Through coolant system**



- 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**

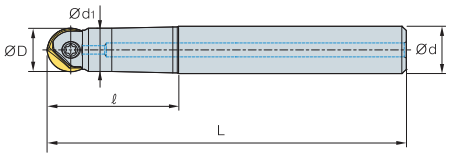
JMBE Jet Mill Cutting Conditions

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



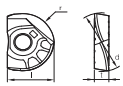
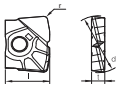
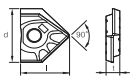
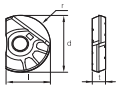
Features
- High accuracy indexable end mill for mold finishing
- Optimum machining of mold has been achieved due to the MQL system
- Easy clamping with simple screw on system



(inch)

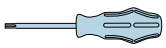
Designation	Code No.	Price $	ØD	Ød	ℓ	L	d1	Clamp Screw	Wrench	Insert Size ø
JMBE031138T-S050	148-777	402.50	5/16	1/2	1.378	3.583	0.283	ETND02506F	TWP07S	5/16
JMBE031217T-S050	147-430	417.00	5/16	1/2	2.165	4.370	0.283	ETND02506F	TWP07S	5/16
JMBE031295T-S050	147-431	431.50	5/16	1/2	2.953	5.157	0.283	ETND02506F	TWP07S	5/16
JMBE037138T-S050	147-883	402.50	3/8	1/2	1.378	3.583	0.335	ETND0307F	TWP08S	3/8
JMBE037217T-S050	147-442	417.00	3/8	1/2	2.165	4.370	0.335	ETND0307F	TWP08S	3/8
JMBE050217T-S050	147-637	417.00	1/2	1/2	2.165	4.370	0.433	ETND03509	TWP10S	1/2
JMBE062256T-S062	147-638	446.10	5/8	5/8	2.559	4.921	0.571	ETND0413	TWP15S	5/8
JMBE062394T-S075	147-663	320.10	5/8	3/4	3.937	6.693	0.571	ETND0413	TWP15S	5/8
JMBE075453T-S100	147-664	642.00	3/4	1	4.528	7.677	0.689	ETKD0516	TWP20	3/4
JMBE100354T-S100	147-722	632.20	1	1	3.543	6.693	0.906	ETKD0620	TWP25	1
JMBE100532T-S125	147-723	685.60	1	1-1/4	5.315	8.858	0.906	ETKD0620	TWP25	1
JMBE125413T-S125	147-776	654.50	1-1/4	1-1/4	4.134	7.677	1.142	ETGD0825	TWP40	1-1/4
JMBE125630T-S125	147-777	716.50	1-1/4	1-1/4	6.299	9.843	1.142	ETGD0825	TWP40	1-1/4

Inserts Available

Insert Styles	JMBE031	JMBE037	JMBE050	JMBE062	JMBE075	JMBE100	JMBE125
JMBH (Ball type) 		JMBH0375 **147-891** **$ 74.10**	JMBH0500 **147-086** **$ 82.50**	JMBH0625 **147-966** **$ 95.40**	JMBH0750 **147-967** **$ 129.10**	JMBH1000 **147-088** **$ 190.00**	JMBH1250 **146-776** **$ 200.30**
JMFH (High Feed type) 		JMFH0375 **147-943** **$ 88.00**	JMFH0500 **147-944** **$ 87.00**	JMFH0625 **147-945** **$ 109.90**	JMFH0750 **147-946** **$ 146.10**	JMFH1000 **147-991** **$ 174.10**	JMFH1250 **147-992** **$ 234.10**
JMCF (Chamfer type) 				JMCF0625 **147-785** **$ 109.90**	JMCF0750 **147-786** **$ 146.10**	JMCF1000 **147-942** **$ 174.10**	
JMBS (Ball type) 	JMBS0312 **147-084** **$ 65.40**	JMBS0375 **146-858** **$ 74.10**		JMBS0625 **147-781** **$ 158.90**	JMBS0750 **147-782** **$ 129.10**		JMBS1250 **147-784** **$ 200.30**

P. E101, 102

Parts

Clamp Screw							
	ETND02506F **147-332** **$ 13.90**	ETND0307F **147-334** **$ 13.90**	ETND03509 **147-378** **$ 12.00**	ETND0413 **147-385** **$ 13.90**	ETKD0516 **147-392** **$ 16.10**	ETKD0620 **147-395** **$ 16.10**	ETGD0825 **147-421** **$ 16.10**
Wrench							
	TWP07S **147-224** **$ 36.00**	TWP08S **147-246** **$ 36.00**	TWP10S **147-249** **$ 36.00**	TWP15S **147-295** **$ 36.00**	TWP20 **147-318** **$ 19.80**	TWP25 **147-321** **$ 23.70**	TWP40 **147-330** **$ 33.10**

Milling Cutters

Mold Mill



Kits Also Available
P. E181

Figure 1

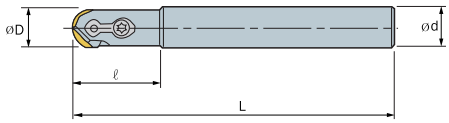
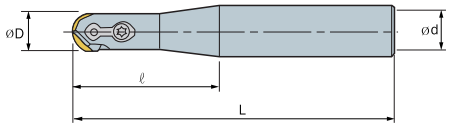


Figure 2



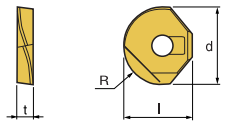
(inch)

Designation		Code No.	Price $	Figure	ØD	Ød	ℓ	L	Available Insert	Parts				
										Screw	Clamp	Clamp Screw	C-Ring	Wrench
MM	5/8"-S	148-094	444.70	1	0.625	0.625	1.417	5.51	RC 5/8	FTGA0513	CBH4.5R1	CTX04513	ER03	TW20
	5/8"-M	147-853	464.80	2	0.625	0.750	2.559	6.69						
	5/8"-L	148-095	489.80	2	0.625	1.000	2.559	7.87						
	3/4"-S	148-096	647.70	1	0.750	0.750	1.772	6.30	RC 3/4	FTGA0517	CBH4.5R2	CTX04513	ER03	TW20
	3/4"-M	147-854	685.00	2	0.750	1.000	3.150	7.87						
	3/4"-L	148-097	722.20	2	0.750	1.000	3.150	9.84						
	1"-S	148-098	697.30	1	1.000	1.000	1.772	6.30	RC 1	FTGA0621	CBH5R1	CTX0517	ER04	TW20
	1"-M	147-855	748.00	2	1.000	1.250	3.543	8.27						
	1"-L	148-099	818.20	2	1.000	1.250	3.543	11.81						
	1-1/8"-S	148-100	550.10	1	1.125	1.250	2.559	6.89	RC 1-1/8	FTGA0826	CBH6R1	CTX0621	ER05	TW25
	1-1/8"-M	147-856	600.00	2	1.125	1.250	3.937	9.84						
	1-1/8"-L	148-102 •	657.00	2	1.125	1.250	3.937	13.78						
	1-1/4"-S	148-103	748.20	1	1.250	1.250	2.205	6.89	RC 1-1/4	FTGA0826	CBH6R1	CTX0621	ER05	TW25
	1-1/4"-M	147-857	816.20	1	1.250	1.250	3.937	9.84						
	1-1/4"-L	148-104	893.70	1	1.250	1.250	3.937	13.78						

• Available only while quantities last

Available Insert

RC



Designation
RC 5/8
RC 3/4
RC 1
RC 1-1/8
RC 1-1/4

P. E106

Recommended cutting condition

Work piece	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

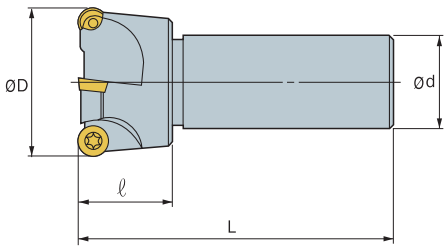
Parts

Screw		Clamp		Clamp Screw		C-Ring		Wrench	
FTGA0513	FTGA0621	CBH4.5R1	CBH5R1	CTX04513	CTX0517	ER03	ER04	TW20	TW25
148-194	**148-196**	**148-198**	**148-214**	**148-217**	**148-218**	**148-220**	**148-221**	**148-291**	**148-223**
$ 11.10	**$ 13.80**	**$ 36.30**	**$ 36.30**	**$ 11.70**	**$ 11.10**	**$ 2.00**	**$ 2.00**	**$ 18.40**	**$ 22.20**
FTGA0517	FTGA0826	CBH4.5R2	CBH6R1		CTX0621		ER05		
148-195	**148-197**	**148-213**	**148-215**		**148-219**		**148-222**		
$ 11.10	**$ 11.70**	**$ 36.30**	**$ 36.30**		**$ 13.80**		**$ 2.00**		

Milling Cutters

Mold Max



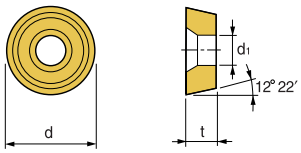


(inch)

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	147-830	163.70	1.250	1.250	1.575	4.724	2	.197		6°	-3°
4150R	147-831	204.50	1.500				3				
4200R	147-832	245.20	2.000				4				

Available Insert

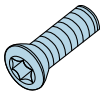
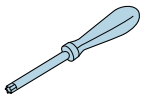
RPMM



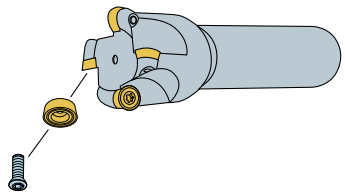
Designation
RPMM 120400

P. E107

Parts

Screw	Wrench
	
FTNC 04511 **146-424 - $ 6.90**	TW20S **147-216 - $ 35.90**

Assembling



Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980 230~590	.003~.012	Coated (PM25C,PM30P) Uncoated (PM20U)
M			
K			

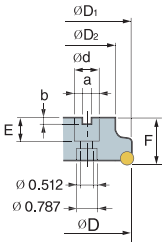
M & K Class grades available, none are stock standard

Milling Cutters

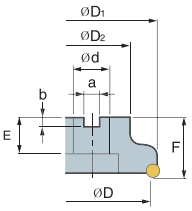
Mold Max Face Mill







Ø3.150



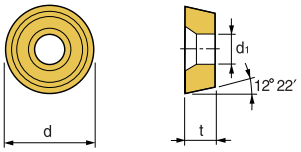
Ø3.937 ~ Ø6.299

(Inch)

Designation		Code No.				ØD	Ød	ØD1	ØD2	a	b	E	F	No. of Inserts
		R	Price $	L	Price $									
MMFM	4050R/L	146-997	259.90			1.969(50)	0.750	-	1.750	0.321	0.220	0.750	1.620	4
	4080R/L	146-125	400.30			3.150(80)	1.000	3.646	2.126	0.384	0.248	0.984	1.969	5
	4100R/L	146-126	514.60	147-948	514.60	3.937(100)	1.250	4.433	2.756	0.500	0.315	1.260	1.969	6
	4125R/L	148-259	609.50			4.921(125)	1.500	5.417	2.953	0.626	0.394	1.496	2.480	7
	4160R/L	148-260	789.60			6.299(160)	2.000	6.795	3.937	0.748	0.433	1.496	2.480	8

Available Insert

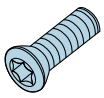
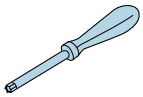
RPMM



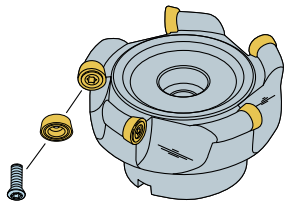
Designation
RPMM 120400

P. E107

Parts

Screw	Wrench
	
FTNC 04511 **146-424 - $ 6.90**	TW20S **147-216 - $ 35.90**

Assembling



Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P	490~980 230~590	.003~.012	Coated (PM25C,PM30P) Uncoated (PM20U)
M			
K			

M & K Class grades available, none are stock standard

Milling Cutters

Multi-functional 45º Chamfer Tool



Uses
- Centering
- Grooving
- Chamfering

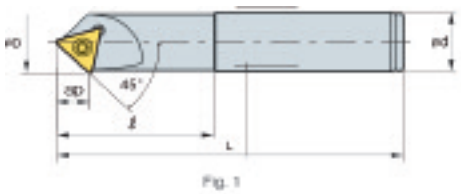


Fig. 1

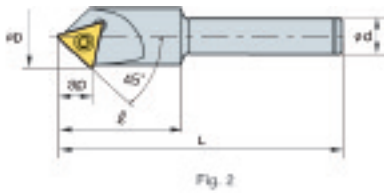


Fig. 2

*AR: -12~15º (inch)

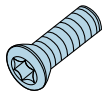
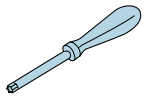
Designation	Code No.	Price $	ØD	Ød	ℓ	L	ap	Fig.	Insert
CTP45 1600R-S050	147-543	212.80	0.87	0.50	1.6	3.5	0.4	2	TWX16R-KC
CTP45 1600R-S075	147-548	167.10	0.87	0.75	2.0	4.5	0.4	1	
CTP45 1600R-L075	147-552	174.80	0.87	0.75	2.4	8.0	0.4	1	
CTP45 2200R-S050	147-930	243.20	1.14	0.50	1.6	3.5	0.6	2	TWX22R-KC
CTP45 2200R-S075	147-931	186.20	1.14	1.00	2.0	3.5	0.6	1	
CTP45 2200R-L100	147-932	205.10	1.14	1.00	2.4	8.0	0.6	1	

Available Insert

TWX	Designation
	TWX16R-KC TWX22R-KC

☞ P. E113

Parts

Screw	Wrench
	
FTNA0408 **146-948 - $ 7.70**	TW15L **148-225 - $ 3.10**

45º Chamfer Mill



Kits Also Available
☞ P. E181

Designation	Chamfer Range	Code No.	Price $	Shank	No. Of Inserts	Insert
CT 45 - .625	0.125" - 0.625" 45º	147-113	291.20	3/4	1	TC_T 21.5_
CT 45 - 1.125	0.470" - 1.125" 45º	147-112	164.10	3/4	2	TC_T 32.5_

☞ P. E25, 26

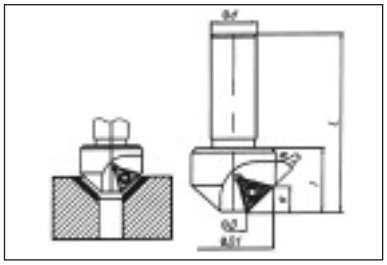
Parts

	
FTKA02565 **146-930 - $ 12.30** *FTGA03510 **146-957 - $ 10.50**	TW08P **146-596 - $ 17.30** *TW15P **146-940 - $ 15.20**

Indexable Countersink End Mills

45º, 60º, 82º and 90°, RH Cut
with Weldon Shank





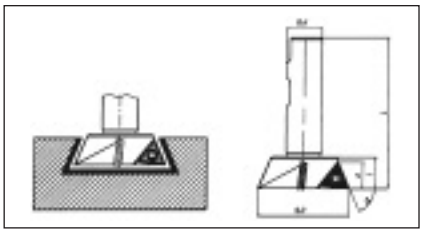
Cutter Body ØD Min.	ØD1 Max.	Shank Dia. Ød	a	l	L	Angle	No. of Inserts	Insert Style	Cutter Code No.	Cutter Price $	Locking Screw Code No.	Locking Screw Price $	Torx Key Code No.	Torx Key Price $
1/4	9/16	3/8	.355	1	2-1/4	45°	1	TDGW-21.51	143-766	**208.20**	143-790	**26.90**	143-792	**21.50**
1/2	31/32	1/2	.559	1	2-1/2	45°	1	TDGW-321	143-768	**240.70**	143-762	**1.80**	143-752	**21.20**
3/4	1-15/64	3/4	.559	1-1/4	3-1/2	45°	1	TDGW-321	-	-	143-762	**1.80**	143-752	**21.20**
1/4	21/32	3/8	.335	1	2-1/4	60°	1	TDGW-21.51	143-772	**223.90**	143-790	**26.90**	143-792	**21.50**
1/2	1-1/8	1/2	.524	1	2-1/2	60°	1	TDGW-321	-	-	143-762	**1.80**	143-752	**21.20**
3/4	1-3/8	3/4	.524	1-1/4	3-1/2	60°	3	TDGW-321	143-776	**433.80**	143-762	**1.80**	143-752	**21.20**
1/4	51/64	3/8	.291	1	2-1/4	82°	1	TDGW-21.51	-	-	143-790	**26.90**	143-792	**21.50**
1/2	1-11/32	1/2	.453	1	2-1/2	82°	1	TDGW-321	-	-	143-762	**1.80**	143-752	**21.20**
3/4	1-9/16	3/4	.453	1-1/4	3-1/2	82°	3	TDGW-321	-	-	143-762	**1.80**	143-752	**21.20**
1/4	53/64	3/8	.272	1	2-1/4	90°	1	TDGW-21.51	-	-	143-790	**26.90**	143-792	**21.50**
1/2	1-25/64	1/2	.425	1	2-1/2	90°	1	TDGW-321	143-786	**259.90**	143-762	**1.80**	143-752	**21.20**
3/4	1-41/64	3/4	.425	1-1/4	3-1/2	90°	3	TDGW-321	143-788	**452.30**	143-762	**1.80**	143-752	**21.20**

P. E112

60º 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	Cutter Code No.	Cutter Price $	Locking Screw Code No.	Locking Screw Price $	Torx Key Code No.	Torx Key Price $
1/2	3/8	.325	.142	2.300	1	TDGW-21.5	143-794	**210.80**	143-790	**26.90**	143-792	**21.50**
3/4	3/8	.325	.202	2.390	2	TDGW-21.5	143-796	**262.90**	143-790	**26.90**	143-792	**21.50**
1	1/2	.325	.375	2-5/8	3	TDGW-21.5	143-798	**316.90**	143-790	**26.90**	143-792	**21.50**
1-3/8	5/8	.510	.550	2.862	3	TDGW-32	143-800	**316.90**	143-762	**1.80**	143-752	**21.20**
1-7/8	7/8	.510	.550	3	3	TDGW-32	143-802	**358.30**	143-762	**1.80**	143-752	**21.20**
2-1/4	1	.700	.750	3-1/2	3	TDGW-43	143-804	**421.20**	143-808	**9.70**	143-752	**21.20**

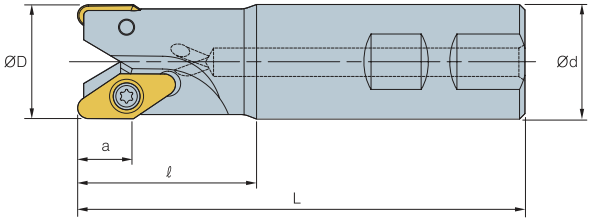
P. E112

Milling Cutters

Alumi Mill End Mill



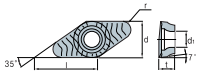
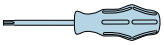
- High rake angle ensures excellent finish and reduces cutting resistance
- For Shouldering, curved surface and slanted shouldering
- Buffed mirror finish of inserts allows outstanding chip control and prevents edge build up



(inch)

Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AME 2050HR	146-887	323.10	0.500	0.625	0.315	0.984	3.346	1	
AME 2062HR	146-404	434.00	0.625	0.625	0.315	0.984	3.543	2	
AME 2075HR	148-935	510.10	0.750	0.750	0.315	1.181	3.937	2	VDKT 11T210N-MA
AME 2100HR	146-405	635.80	1.000	1.000	0.315	1.378	4.528	3	
AME 2125HR	146-406	769.80	1.250	1.250	0.315	1.575	4.921	4	
AME 2150HR	146-409	825.60	1.500	1.500	0.315	1.654	5.118	5	
AME 4125HR	147-422	331.50	1.250	1.250	0.590	1.969	4.921	2	VCKT 43.57.5N-A
AME 4150HR	147-423	430.10	1.500	1.250	0.590	1.969	5.512	3	

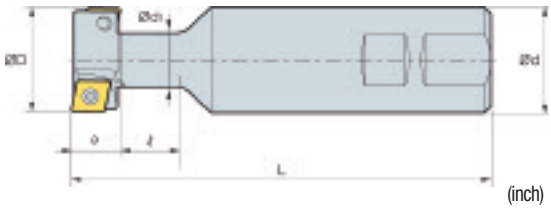
Inserts / Parts

Designation	Available Insert	Screw	Wrench
			
AME 2050 & 2062	VDKT 11T210N-MA	ETNA 02505 **147-870 - $ 12.40**	TW07S **148-209 - $ 37.70**
AME 2075 - 2150		ETNA 02506 **147-596 - $ 12.40**	
AME 4000 type	VCKT 43.57.5N-A	FTNC 04509 **146-752 - $ 6.90**	TW20S **147-216 - $ 35.90**

☞ P. E114

TSC



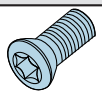
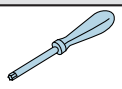


(inch)

Designation	Code No.	Price $	ØD	Ød	Ød1	a	ℓ	L	No. of Inserts	Insert
TSC 083100R	147-892	535.30	0.83	1.00	0.41	0.35	0.79	4.25	2	CPMT060204-M
098100R	147-925	561.10	0.98	1.00	0.49	0.43	0.83	4.50	2	CPMT080308-M
126125R	147-973	596.30	1.26	1.25	0.65	0.55	1.02	5.00	2	CPMT09T308-M
157125R	147-982	760.50	1.57	1.25	0.81	0.71	1.26	5.25	2	
197125R	147-985	1,008.10	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 **147-769 - $ 7.80**	TW 08S **146-728 - $ 37.70**
CPMT - 098100R		FTNA0306 **145-548 - $ 7.80**	TW 09S **148-211 - $ 37.70**
CPMT - 126125R		FTNA0407 **148-006 - $ 11.40**	TW 15S **146-801 - $ 37.70**
CPMT - 157125R		PTMA0511A **147-235 - $ 11.40**	TW 15S **146-801 - $ 37.70**
CPMH - 197125R	CPMH	PTMA0511A **147-235 - $ 11.40**	TW 15S **146-801 - $ 37.70**

☞ P. E100

Milling Cutters

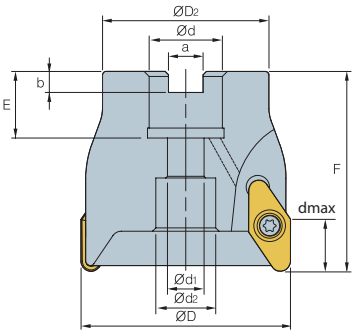
Alumi Mill Face Mill



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

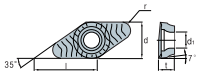
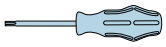
Kits Also Available
P. E180



(inch)

Designation		Code No.	Price $	ØD	Ød	ØD2	a	b	E	F	dmax	No. of Inserts
AMFM	4150R	147-833	447.90	1.500	0.500	1.417	0.252	0.169	0.630	2.165	0.59	3
	4200R	147-424	455.00	2.000	0.750	1.772	0.321	0.220	0.787	2.165	0.59	3
	4250R	147-834	558.50	2.500	0.750	1.970	0.321	0.220	0.787	2.362	0.59	4
	4300R	147-470	615.70	3.000	1.000	2.205	0.384	0.248	0.866	2.362	0.59	4
	4400R	147-471	753.90	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 **146-752 - $ 6.90** FTNC04511 **146-424 - $ 6.90**	TW20S **147-216 - $ 35.90**

P. E114

* For 4150R

Recommended cutting condition

Work piece	Cutting Condition		Grade
	V(sfm)	f(ipt)	
P			
M			
K	Aluminum 750~2000	.002~.010	Uncoated (KTM10U)

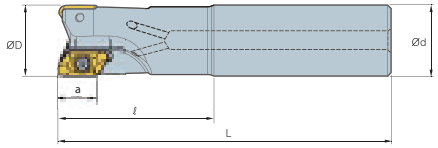
Milling Cutters

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
- Multifunctional aluminum milling tool: Shouldering, Slotting, Helical ramping, and Copying

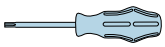


(inch)

Designation	Code No.	Price $	ØD	Ød	a	ℓ	L	No. of Inserts	Insert
AME-X 5100HR-A	146-411	438.60	1.00	1.00	0.669	2.362	5.512	2	
AME-X 5100HR-B	146-413	438.60	1.00	1.00	0.669	2.362	5.512	2	
AME-X 5125HR-A	146-419	468.00	1.25	1.25	0.669	2.756	5.901	2	XEKT 19M5
AME-X 5125HR-B	146-423	468.00	1.25	1.25	0.669	2.756	5.901	2	
AME-X 5150HR-A	146-431	637.00	1.50	1.50	0.669	2.756	6.229	3	
AME-X 5150HR-B	146-432	637.00	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	XEKT 19M50 to 19M53	PTKA 0408	TW15S
AME-X HR-B	XEKT 19M54 to 19M55	**148-716 - $ 18.70**	**146-801 - $ 37.70**

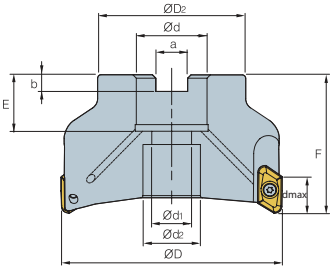
P. E115

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
- Multifunctional aluminum milling tool: Shouldering, Slotting, Helical ramping, and Copying

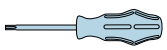


(inch)

Designation	Code No.	Price $	ØD	Ød	ØD2	a	b	E	F	dmax	No. of Inserts
AMFM-X 5150HR-A	146-434	602.50	1.50	0.50	1.417	0.252	0.169	0.630	1.50	0.67	3
AMFM-X 5150HR-B	146-445	602.50	1.50	0.50	1.417	0.252	0.169	0.630	1.50	0.67	3
AMFM-X 5200HR-A	146-467	642.60	2.00	0.75	1.772	0.321	0.220	0.787	1.75	0.67	4
AMFM-X 5200HR-B	146-469	642.60	2.00	0.75	1.772	0.321	0.220	0.787	1.75	0.67	4
AMFM-X 5250HR-A	146-481	719.40	2.50	0.75	1.772	0.321	0.220	0.787	1.75	0.67	5
AMFM-X 5250HR-B	146-490	719.40	2.50	0.75	1.772	0.321	0.220	0.787	1.75	0.67	5
AMFM-X 5300HR-A	146-525	746.40	3.00	1.00	2.205	0.384	0.248	0.866	2.00	0.67	5
AMFM-X 5300HR-B	146-526	746.40	3.00	1.00	2.205	0.384	0.248	0.866	2.00	0.67	5
AMFM-X 5400HR-A	146-534	850.90	4.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	6
AMFM-X 5400HR-B	146-535	850.90	4.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	6
AMFM-X 5500HR-A	146-544	869.30	5.00	1.50	3.386	0.636	0.394	1.181	2.50	0.67	7
AMFM-X 5500HR-B	146-550	869.30	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

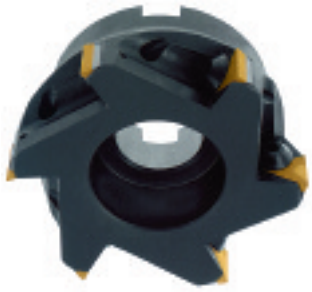
Designation	Available Insert	Screw	Wrench
			
AMFM-X HR-A	XEKT 19M50 to 19M53	PTKA 0408	TW15S
AMFM-X HR-B	XEKT 19M54 to 19M55	**148-716 - $ 18.70**	**146-801 - $ 37.70**

P. E115

Square Shoulder Milling Cutters 90º

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	141-220	**354.00**
2-1/2	1	3	TPU 43_	141-200	**482.70**
3	1	4	TPU 43_	141-202	**757.80**
4	1-1/2	5	TPU 43_	141-204	**960.00**
5	1-1/2	6	TPU 43_	141-206	**1,386.70**
6	2	7	TPU 43_	141-208	**1,767.30**

P. E113

Spare Parts

Cutting Dia.	For 2" Cutters Code No.	For 2" Cutters Price $	For 2-1/2" to 6" Cutters Code No.	For 2-1/2" to 6" Cutters Price $
Clamp Screw	141-061	**10.60**	141-210	**25.30**
Shim	-	-	141-212	**9.20**
Shim Screw	-	-	141-214	**5.50**
Hex Key	-	-	-	-

Carbide Insert End Mills 90º

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	141-000	**167.10**
3/4	3/4" Str. Shk. Weldon	2	TPG/TPU-21	141-002	**183.60**
1	3/4" Str. Shk. Weldon	2	TPG/TPU-22	141-003	**187.30**
1-1/4	3/4" Str. Shk. Weldon	2	TPG/TPU/TPC-32	141-004	**243.30**
1-1/2	3/4" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141-005	**340.80**
1-3/4	3/4" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141-006	**478.80**
2	3/4" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141-007	**360.30**
1	1" Str. Shk. Weldon	2	TPG/TPU-22	141-008	**219.90**
1-1/4	1" Str. Shk. Weldon	2	TPG/TPU/TPC-32	141-009	**243.70**
1-1/2	1" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141-010	**352.00**
2	1" Str. Shk. Weldon	3	TPG/TPU/TPC-32	141-012	**395.40**
1-1/4	R-8 Bridgeport	2	TPG/TPU/TPC-32	141-013	**337.20**
1-1/2	R-8 Bridgeport	3	TPG/TPU/TPC-32	141-014	**434.50**
1-3/4	R-8 Bridgeport	3	TPG/TPU/TPC-32	141-015	**478.20**
2	R-8 Bridgeport	3	TPG/TPU/TPC-32	141-016	**486.50**

P. E113

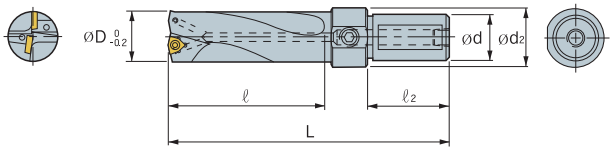
Spare Parts

Description	Code No.	Price $
Screw for 1/2"	141-244	**10.40**
Screw for 3/4", 7/8", 1"	141-060	**10.40**
Screw for 1-1/2"	141-064	**10.30**
All other sizes	141-061	**10.60**

Milling Cutters

GP Indexable Drill





(inch)

Designation		Code No.	Price $	ØD	Ød	Ød2	ℓ	ℓ2	L
GP	0625	146-332	343.20	0.625	1.000	1.260	2.360	2.200	5.160
	0750	146-333	343.20	0.750	1.000	1.260	2.800	2.200	5.590
	0875	146-334	367.60	0.875	1.000	1.380	3.230	2.200	6.020
	1000	146-335	367.60	1.000	1.000	1.380	3.620	2.200	6.420
	1125	146-336	416.60	1.125	1.000	1.570	4.250	2.200	7.200
	1250	146-337	459.50	1.250	1.500	1.770	4.720	2.200	7.680
	1375	146-338	459.50	1.375	1.500	1.770	5.120	2.360	8.070
	1500	146-339	582.00	1.500	1.500	1.970	5.510	2.360	8.860
	1625	146-341	643.00	1.625	1.500	1.970	5.870	2.360	9.210
	1750	146-342	643.00	1.750	1.500	2.360	6.340	2.360	9.880
	2000	146-329	704.40	2.000	1.500	2.360	7.200	2.360	10.750

Available Insert

WCMT-C20



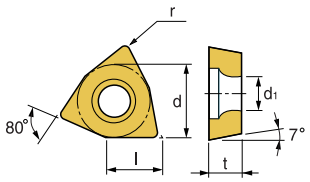
Drill Designation	Insert		
	Designation	Screw	
GP0625 - GP0750	WCMT1.81.52 - C20	FTKA02565	146-930 - $ 12.30
GP0812 - GP1000	WCMT21.52 - C20	FTKA02565	146-930 - $ 12.30
GP1062 - GP1187	WCMT2.522 - C20	FTNA0307	146-283 - $ 7.90
GP1250 - GP1625	WCMT32.52 - C20, DS WCKT32.52 - DA	FTGA03508	146-931 - $ 11.40
GP1687 - GP2250	WCMT432 - C20,DS WCMT432 - DS WCKT432 - DA	FTNA0408	146-948 - $ 7.70

Recommended cutting condition

Work piece	Cutting Condition	
	V(sfm)	f(ipr)
P	250~720	.004~.010
M Stainless Steel	160~660	.004~.008
K	250~750	.004~.016

WCMT-C20/C21 Drilling Insert

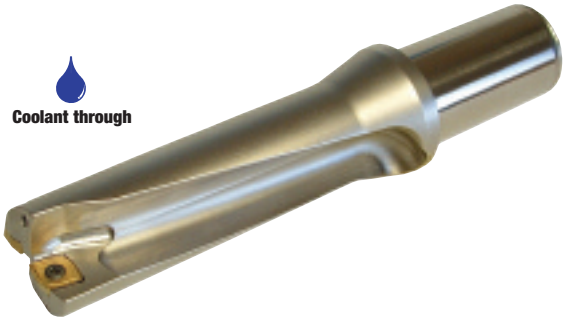




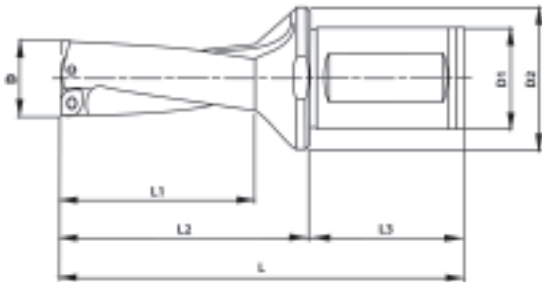
		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
WCMT 1.81.51-C21	030204		146-241 $ 16.40										146-536 $ 15.50	.149	7/32	3/32	1/64	.110	MAX DRILL GP-DRILL	E170 E159
WCMT 1.81.52-C20	030208		146-242 $ 16.40										146-537 $ 15.50	.149	7/32	3/32	1/32	.110		
WCMT 21.52-C20	040208		146-237 $ 16.40										147-155 $ 15.50	.169	1/4	3/32	1/32	.118		
WCMT 2.522-C20	050308		146-236 $ 17.60			148-431 $ 17.60								.212	5/16	5/16	1/32	.134		
WCMT 32.52-C20	06T308		146-235 $ 17.60			148-432 $ 17.60							146-539 $ 39.70	.256	3/8	5/32	1/32	.157		
WCMT 432-C20	080408		146-855 $ 21.50											.342	1/2	3/16	1/32	.169		
WCMT 433-C20	080412		146-000 $ 21.50										146-563 $ 20.40	.342	1/2	3/16	3/64	.169		

Milling Cutters

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		Stock	Price $	ØD	Ød1	Ød2	L	ℓ1	ℓ2	Insert	Screw	Wrench
PRO-SP	0500 - 1/2	147-894	581.90	0.500	0.75	-	4.14	1.50	1.97	SPMT 050203-MD	FTNA 0204 **148-207** **$ 11.90**	TW06P **147-222** **$ 22.80**
	0531 - 17/32	147-895	581.90	0.531	0.75	-	4.23	1.59	1.97			
	0562 - 9/16	147-896	581.90	0.562	0.75	-	4.36	1.69	1.97			
	0625 - 5/8	147-897	492.30	0.625	1.00	-	4.59	1.88	1.97	SPMT 060204-MD	FTKA 02206S **148-208 - $ 11.80**	TW07S **148-209** **$ 37.70**
	0687 - 11/16	147-898	581.90	0.687	1.00	1.40	5.01	2.07	2.20			
	0750 - 3/4	147-899	473.30	0.750	1.00	1.40	5.24	2.25	2.20			
	0812 - 13/16	147-900	669.40	0.812	1.00	1.40	5.50	2.44	2.20	SPMT 070204-MD	FTKA 02565 **146-930** **$ 12.30**	
	0875 - 7/8	147-901	566.50	0.875	1.00	1.40	5.69	2.63	2.20			
PRO-NP	0937 - 15/16	147-902	669.40	0.937	1.25	1.80	6.12	2.81	2.36	NPMT 222408-00		
	1000 - 1”	147-903	589.80	1.000	1.25	1.80	6.34	3.00	2.36	NPMT 252808-00	FTKA 0307 **148-210** **$ 12.30**	TW09S **148-211** **$ 37.70**
	1031 - 1-1/32	147-904	724.90	1.031	1.25	1.80	6.44	3.09	2.36			
	1062 - 1-1/16	147-905	724.90	1.062	1.25	1.80	6.53	3.19	2.36			
	1125 - 1-1/8	147-906	613.50	1.125	1.25	1.80	6.80	3.38	2.36			
	1187 - 1-3/16	147-907	724.90	1.187	1.25	1.80	7.06	3.56	2.36	NPMT 293208-00		
	1250 - 1-1/4	147-908	692.40	1.250	1.25	1.80	7.25	3.75	2.36			
	1312 - 1-5/16	147-909	818.20	1.312	1.50	2.00	7.92	3.94	2.76	NPMT 334008-00	FTKA 03508 **148-212** **$ 11.30**	TW15S **146-801** **$ 37.70**
	1375 - 1-3/8	147-910	692.40	1.375	1.50	2.00	8.17	4.16	2.76			
	1437 - 1-7/16	147-911	862.70	1.437	1.50	2.00	8.37	4.31	2.76			
	1500 - 1-1/2	147-912	729.90	1.500	1.50	2.00	8.60	4.50	2.76			
	1562 - 1-9/16	147-913	862.70	1.562	1.50	2.00	8.78	4.69	2.76			
	1625 - 1-5/8	147-914	784.40	1.625	1.50	2.00	9.09	4.88	2.76	NPMT 415008	FTKA 0410 **146-969** **$ 10.00**	
	1687 - 1-11/16	147-915	926.80	1.687	1.50	2.00	9.32	5.06	2.76			
	1750 - 1-3/4	147-916	784.40	1.750	1.50	2.00	9.51	5.25	2.76			
	1812 - 1-13/16	147-917	980.40	1.812	1.50	2.00	9.73	5.44	2.76			
	1875 - 1-7/8	147-918	980.40	1.875	1.50	2.00	9.96	5.63	2.76			
	1937 - 1-15/16	147-919	980.40	1.937	1.50	2.00	10.22	5.81	2.76			
	2000 - 2”	147-920	829.80	2.000	1.50	2.60	10.41	6.00	2.76			

☞ P. 104, 111

Recommended Cutting Condition

Work piece	Cutting Condition	
	V(sfm)	f(ipr)
P	250~720	.004~.010
M Stainless Steel	120~500	.004~.008
K	250~750	.004~.016

Milling Cutters

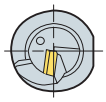
Combo Turning & Drilling Tool

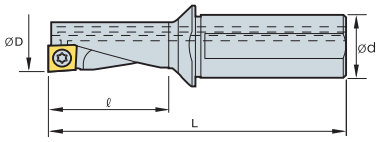


Coolant through

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	147-993	529.60	0.394	0.472	0.886	2.736	QCMT 050204-CM
CTD12R-2.25D	147-243	545.90	0.472	0.630	1.063	1.890	QCMT 060204-CM
CTD14R-2.25D	147-698	557.00	0.551	0.630	1.240	3.287	QCMT 070304-CM
CTD16R-2.25D	147-008	569.60	0.630	0.787	1.417	3.701	QCMT 080304-CM
CTD20R-2.25D	147-061	668.70	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	147-736	$ 11.90	TW06P	147-222	$ 22.80
CTD12R-2.25D	QCMT 060204-CM	FTNA02205S	147-756	$ 11.90	TW06P	147-222	$ 22.80
CTD14R-2.25D	QCMT 070304-CM	FTNA02555	147-769	$ 7.80	TW07P	146-939	$ 13.20
CTD16R-2.25D	QCMT 080304-CM	FTNA0306	145-548	$ 7.80	TW09P	146-951	$ 17.30
CTD20R-2.25D	QCMT 10T304-CM	FTNA03508	147-771	$ 7.80	TW15P	146-940	$ 15.20

NC Spot Drills

NC Spot Drill with indexable carbide insert

High efficiency! Low cost!

CNC lathes, CNC turning centers and machining centers.

Features

- Spotting produces better hole position and geometrically uniform holes
- Available in a variety of shank diameters
- One tool will perform multiple applications
  - Long tool life
  - Each insert has 2 cutting or 4 cutting edges
  - Suitable for spotting, chamfering, grooving, and engraving
  - 45º, 60º, 82º, 90º, 100º, 120º, 142º angle for different applications
  - Increase cutting speed with coated carbide inserts



a Engraving

b Spotting

c Chamfering

d Grooving



Inserts

NC10
- High positive angle and fully ground cutting edge and relief angle
- Universal grade for non-ferrous metal, cast iron, and stainless steel

NC40
- General purpose, universal grade for all unhardened steel
- Fully ground cutting edge and relief angle

NC60
- Cermet insert, for hardened steel up to HRC56
- Reduces heat and low tool wearing at the cutting edge

NC9076
- High positive geometry and sharp edge
- For non-ferrous material such as aluminum, titanium, brass, copper, and long cutting chip metal
- Produces excellent surface finish on non-ferrous metal

NC2071
- Universal grade for all unhardened steel, free cutting steel and tool steel up to 750N/mm2
- Cutting geometry has been designed to optimize the tool's performance and to use in high speed machining

Grade	Coating	P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous	H Hardened Up to 56HRC	S Titanium
NC10	TiAlN		•••	•••	••		
NC40	TiN	•••	•	••			
NC2071	TiN	•••	••	•	••		
NC9076	DLC		••		•••		••
NC60	Cermet	••				•••	

••• Best •• Suited • Possible

90º NC Spot Drills

Mini Spotting Drill - N9MT05T1 Insert



Insert not included

- Smallest indexable spotting drill holder
- Single cutting edge design gives higher precision when spotting
- Applications:
  - Spotting, engraving, and chamfering on milling machines, machining centers
  - Spotting, facing on CNC lathes

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Application	Code No.	List $
6mm	00-99616-06-6	35mm	N9MT05T1CT-N2071	2.8mm	6mm	Universal	612-514	**65.00**

Available Insert



Insert	Coating	Cutting Edges	Application	Code No.	List $
N9MT05T1CT-N2071	TiN	2	Universal	612-516	**24.00**

90º NC Spot Drills

NC Spotting Drill - N9MT0802 Inserts



Insert not included

- Single cutting edge design gives higher precision when spotting
- Applications:
  - Spotting, engraving, grooving, and chamfering on milling machines, machine centers
  - Spotting, facing, turning on CNC lathes

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
3/8”	00-99616-10-3/8	90mm	N9MT0802	4.5mm	10mm	612-518	**85.00**

Available Inserts



Insert	Coating	Cutting Edges	Application	Code No.	List $
N9MT080208CT-NC40	TiN	4	Unhardened Steel	612-036	**27.50**
N9MT080204CT-NC40	TiN	4	Unhardened Steel	612-520	**27.50**
N9MT080204CT-NC10	TiAlN	4	Non-Ferrous, Cast Iron, Stainless	612-034	**27.50**
N9MT0802CT2T-H-NC40	TiN	2	Universal	612-038	**27.50**
N9MT0802CT2T-H-NC9076	DLC	2	Non-Ferrous	612-522	**30.00**

Single Sets

User friendly, each set is fitted with one complimentary insert.

Model	Shank	Insert	Code No.	List $
00-99616-10-3/8-02S	3/8”	N9MT080208CT-NC40	612-084	**109.00**

Starter Packages

Selected package for starter who wants to try NC Spot Drill
- Includes 6 inserts, 1 toolholder, and 1 key

Model	Shank	Insert	Code No.	List $
00-99616-10-IN6	3/8”	N9MT080204CT-NC40	612-524	**219.00**

90º NC Spot Drills

NC Spotting Drill - N9MT11T3 Inserts



Insert not included

- Single cutting edge design gives higher precision when spotting
- Applications: • Spotting, engraving, grooving, and chamfering on milling machines, machine centers
  • Spotting, facing, on CNC lathes

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
16mm	00-99616-14-150L	150mm	N9MT11T3	7mm	14mm	612-526	**125.00**
1/2”	00-99616-14-1/2	100mm	N9MT11T3	7mm	14mm	612-528	**85.00**
5/8”	00-99616-14-5/8	100mm	N9MT11T3	7mm	14mm	612-530	**85.00**

Available Inserts



Insert	Coating	Cutting Edges	Application	Code No.	List $
N9MT11T3CT2T-NC40	TiN	4	Unhardened Steel	612-040	**27.50**
N9MT11T3CT2T-NC10	TiAlN	4	Non-Ferrous, Cast Iron, Stainless	612-042	**27.50**
N9MT11T3CT-NC60	Cermet	4	Hardened Steel Up To HRC56	612-044	**30.30**
N9MT11T3CT-H-NC40	TiN	2	Universal	612-532	**27.50**
N9MT11T3CT-H-NC9076	DLC	2	Non-Ferrous	612-534	**30.00**

Single Sets

User friendly, each set is fitted with one complimentary insert.

Model	Shank	Insert	Code No.	List $
00-99616-14-5/8-02S	5/8”	N9MT11T3CT-NC40	612-010	**109.00**
00-99616-14-5/8-02SAL	5/8”	N9MT11T3CT-NC10	612-536	**109.00**

Starter Packages

Selected package for starter who wants to try NC Spot Drill
- Includes 6 inserts, 1 toolholder, and 1 key

Model	Shank	Insert	Code No.	List $
00-99616-14-IN6	5/8”	N9MT11T3CT-NC40	612-058	**219.00**
00-99616-14-IN6AL	5/8”	N9MT11T3CT-NC10	612-060	**219.00**

82º NC Spot Drills

NC Spotting Drill - V0820802/V08212T3 Inserts



Insert not included

- Single cutting edge design gives higher precision when spotting
- Applications:
  - Spotting, engraving, grooving, and chamfering on milling machines, machine centers
  - Spotting, facing, on CNC lathes

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
3/8”	00-99619-V082-3/8	90mm	V0820802	4.8mm	9mm	612-538	**85.00**
5/8”	00-99619-V082-5/8	100mm	V08212T3	7.5mm	14mm	612-151	**85.00**

Available Inserts

- Match the geometry of American standard flat head screw hole
- Special geometry with supporting edges for use in high speed machining



Insert	Coating	Cutting Edges	Application	Code No.	List $
V0820802-NC2071	TiN	2	Universal	612-540	**29.00**
V08212T3-NC2071	TiN	2	Universal	612-085	**39.00**

60º NC Spot Drills

NC Spotting Drill - V9MT0802/V9MT12T3 Inserts



Insert not included

- Single cutting edge design gives higher precision when spotting
- Applications:
  - Spotting, engraving, grooving, and chamfering on milling machines, machine centers
  - Spotting, facing, on CNC lathes

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
8mm	00-99616-09V	60mm	V9MT08	7.3mm	9mm	612-544	**66.00**
5/8”	00-99616-13V-5/8	100mm	V9MT12	10.3mm	13mm	612-546	**85.00**

Available Inserts

- Special geometry with supporting edges for use in high speed machining
- Excellent tool for grooving.



Insert	Coating	Cutting Edges	Application	Code No.	List $
V9MT0802CT-NC2071	TiN	2	Universal	612-548	**29.00**
V9MT12T3CT-NC2071	TiN	2	Universal	612-550	**42.00**

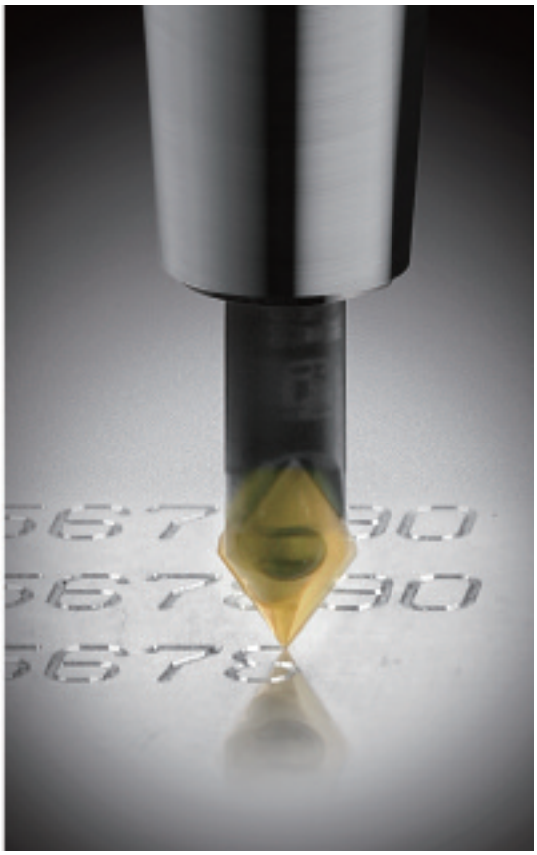
Nine9®

Engraving 45º/60º

This is a revolutionary new concept of engraving tools with indexable carbide inserts. They offer the ability to produce HIGH QUALITY ENGRAVING in most materials. The latest coated carbide grades help you to obtain higher speed and feed rate, dramatically reducing your cycle time.

Features

- High Positive Rake Angle - suitable for engraving all types of materials, such as plastic, non-ferrous metals, aluminum, copper, carbon steel, stainless steel
- Multi-Side grinding - full peripherally ground insert to ensure efficient repeatability. It performs excellently without producing burrs, especially in copper, aluminum, and stainless steel
- High Speed, High Feed Rate - Designed to run at speeds up to 40,000rpm. Feed rate 0.08mm (0.003")/rev apply to aluminum; 0.05mm (0.002")/rev apply to stainless steel
- Economical - Each insert has 2 cutting edges. No resharpening required. Tool length is unchanged. No need to reset after changing insert or cutting edge. Excellent repeatability.





Inserts

NC2032
- For all kinds of steel from 30~50HRC, carbon steel, alloy steel, and cast iron
- TiAlN coating provides longer tool life

NC2071
- Universal grade for all kinds of steel <30HRC, non-ferrous metal, and stainless steel
- The cutting geometry of this insert has been designed with a strong cutting edge

NC9031
- For non-ferrous metal, aluminum, brass, copper, plastic, acrylic, and stainless steel
- Very sharp edge for shallow engraving

NC2035
- For steel with heat treatment up to 56 HRC
- Latest ALDURA coating to reduce heat and tool wear

Grade	Coating	P Steel	M Stainless Steel	K Cast Iron	N Non-Ferrous	H Hardened Up to 56HRC	S Titanium
NC2032	TiAlN	•••	•	•••			
NC2071	TiN	••	•••		••		
NC9031	TiN		••		•••		
NC2035	ALDURA	••		•		•••	

••• Best •• Suited • Possible

Engraving Tool 45º



Insert not included

* • Carbide shank holders designed for shrink fit holders, engraving machines, high speed cutting
** • XL (100mm length) is only for Al, Al-alloy cutting, unbalanced <0.6gm

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
6mm	00-99619-V045-06	40mm	V04506T1W06	2.0mm	2.1mm	612-552	**69.00**
6mm	*00-99619-V045-06L	60mm	V04506T1W06	2.0mm	2.1mm	612-554	**125.00**
6mm	**00-99619-V045-06XL	100mm	V04506T1W06	2.0mm	2.1mm	612-556	**169.00**

Available Inserts



Insert	Coating	Cutting Edges	Application	Code No.	List $
V04506T1W06-NC2071	TiN	2	Universal	612-558	**27.00**
V04506T1W06-NC2032	TiAlN	2	Steel 30~50 HRC	612-560	**30.00**
V04506T1W06-NC9031	TiN	2	Non-Ferrous	612-562	**30.00**

Starter Packages

- Includes 3 inserts, 1 toolholder, and 1 T7 key

Model	Shank	Insert	Code No.	List $
00-99619-V045-03K-71	6mm	V04506T1W06-NC2071	612-564	**139.00**
00-99619-V045-03K-32	6mm	V04506T1W06-NC2032	612-566	**149.00**
00-99619-V045-03K-31	6mm	V04506T1W06-NC9031	612-568	**149.00**



Engraving Tool 60º



Insert not included

* • Carbide shank holders designed for shrink fit holders, engraving machines, high speed cutting
** • XL (100mm length) is only for Al, Al-alloy cutting, unbalanced <0.6gm

Shank	Model No.	Length	Insert	Max Depth	Max Dia.	Code No.	List $
6mm	00-99619-V060-06	40mm	V06006T1W06	2.0mm	2.7mm	612-570	**69.00**
6mm	*00-99619-V060-06L	60mm	V06006T1W06	2.0mm	2.7mm	612-572	**125.00**
6mm	**00-99619-V060-06XL	100mm	V06006T1W06	2.0mm	2.7mm	612-574	**169.00**

Available Inserts



Insert	Coating	Cutting Edges	Application	Code No.	List $
V06006T1W06-NC2071	TiN	2	Universal	612-576	**27.00**
V06006T1W06-NC2032	TiAlN	2	Steel 30~50 HRC	612-578	**30.00**
V06006T1W06-NC2035	ALDURA	2	Heat treated steel up to 56 HRC	612-580	**33.00**
V06006T1W06-NC9031	TiN	2	Non-Ferrous	612-582	**30.00**

Starter Packages

• Includes 3 inserts, 1 toolholder, and 1 T7 key

Model	Shank	Insert	Code No.	List $
00-99619-V060-03K-71	6mm	V06006T1W06-NC2071	612-584	**139.00**
00-99619-V060-03K-32	6mm	V06006T1W06-NC2032	612-586	**149.00**
00-99619-V060-03K-35	6mm	V06006T1W06-NC2035	612-588	**159.00**
00-99619-V060-03K-31	6mm	V06006T1W06-NC9031	612-590	**149.00**

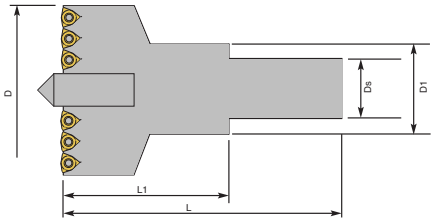


Milling Cutters

MAX DRILL
DEEP HOLE DRILLING SYSTEM

VMD Max Drill - MX Modular Shank Type





Note: Drill head complete with cartridges - Pilot Drill not included

(mm)

Model	Code No.	Price $	D	Ds	D1	L1	L	Pilot Drill	Cartridge
VMD-045050	156-000	1,092.80	1.77-1.97	13	28	50	85	PLD-1035 TiN-H	VMC-045050N/T
VMD-050055	156-002	1,170.80	1.97-2.17	13	28	50	85	PLD-1035 Tin-H	VMC-050055N/T
VMD-055060	156-004	1,248.90	2.17-2.36	16	32	60	100	PLD-1238 Tin-H	VMC-055060N/T
VMD-060065	156-006	1,463.50	2.36-2.56	16	32	60	100	PLD-1238 Tin-H	VMC-060065N/T
VMD-065070	156-008	1,560.90	2.56-2.76	16	32	60	100	PLD-1238 Tin-H	VMC-065070N/T
VMD-070075	156-010	1,560.90	2.76-2.95	22	40	70	115	PLD-1238 Tin-H	VMC-070075N/T
VMD-075080	156-012	1,626.10	2.95-3.15	22	40	70	115	PLD-1645 Tin-H	VMC-075080N/T
VMD-080085	156-014	1,723.60	3.15-3.35	22	40	70	115	PLD-1645 Tin-H	VMC-080085N/T
VMD-085090	156-016	1,723.60	3.35-3.54	27	48	70	120	PLD-1645 Tin-H	VMC-085090N/T
VMD-090095	156-018	1,723.60	3.54-3.74	27	48	70	120	PLD-1645 Tin-H	VMC-090095N/T
VMD-095100	156-020	1,853.70	3.74-3.94	27	48	70	120	PLD-1645 Tin-H	VMC-095100N/T
VMD-100105	156-022	1,853.70	3.94-4.13	32	58	80	130	PLD-2045 Tin-H	VMC-100105N/T
VMD-105110	156-024	1,853.70	4.13-4.33	32	58	80	130	PLD-2045 Tin-H	VMC-105110N/T
VMD-110115	156-026	1,853.70	4.33-4.53	32	58	80	130	PLD-2045 Tin-H	VMC-110115N/T
VMD-115120	156-028	2,211.30	4.53-4.72	40	70	90	145	PLD-2045 Tin-H	VMC-115120N/T
VMD-120125	156-030	2,471.50	4.72-4.92	40	70	90	145	PLD-2556 Tin-H	VMC-120125N/T
VMD-125130	156-032	2,471.50	4.92-5.12	40	70	90	145	PLD-2556 Tin-H	VMC-125130N/T
VMD-130135	156-034	2,471.50	5.12-5.32	40	70	90	145	PLD-2556 Tin-H	VMC-130135N/T
VMD-135140	156-036	2,471.50	5.32-5.51	40	70	90	145	PLD-2556 Tin-H	VMC-135140N/T
VMD-140150	156-038	2,991.90	5.51-5.91	50	80	100	160	PLD-2556 Tin-H	VMC-140150N/T
VMD-150160	156-040	2,991.90	5.91-6.30	50	80	100	160	PLD-2556 Tin-H	VMC-150160N/T
VMD-160170	156-042	3,056.70	6.30-6.69	50	80	100	160	PLD-3068 Tin-H	VMC-160170N/T
VMD-170180	156-043	3,902.40	6.69-7.09	50	80	100	160	PLD-3068 Tin-H	VMC-170180N/T

P. E172 P. E171

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	<HB300	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	>HB300	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:
.08mm= .0031 In/Rev
.12mm= .00472 In/Rev
.16mm= .0063 In/Rev

Conversion examples
60-100 (195-325 sfm)
120-180 (390-585 sfm)

Milling Cutters

MAX DRILL
DEEP HOLE DRILLING SYSTEM

Cartridges for VMD Max Drill



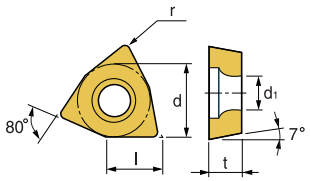
Specify Inner or Outer when ordering

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	156-044	191.00	VMC-045050T	156-090	191.00	TSB-22045	2	WCMT 1.81.51
50-55	VMC-050055N	156-046	191.00	VMC-050055T	156-092	191.00			
55-60	VMC-055060N	156-048	191.00	VMC-055060T	156-094	191.00	TSB-25055	2	WCMT 21.52
60-65	VMC-060065N	156-050	210.10	VMC-060065T	156-096	210.10			
65-70	VMC-065070N	156-052	210.10	VMC-065070T	156-098	210.10	TSB-30070	2	WCMT 2.522
70-75	VMC-070075N	156-054	210.10	VMC-070075T	156-100	210.10			
75-80	VMC-075080N	156-056	229.30	VMC-075080T	156-102	229.30			
80-85	VMC-080085N	156-058	229.30	VMC-080085T	156-104	229.30			
85-90	VMC-085090N	156-060	229.30	VMC-085090T	156-106	229.30	TSB-35090	2	WCMT 32.52
90-95	VMC-090095N	156-062	229.30	VMC-090095T	156-108	229.30			
95-100	VMC-095100N	156-064	229.30	VMC-095100T	156-110	229.30			
100-105	VMC-100105N	156-066	267.30	VMC-100105T	156-112	267.30	TSB-30070	3	WCMT 2.522
105-110	VMC-105110N	156-068	286.40	VMC-105110T	156-114	286.40			
110-115	VMC-110115N	156-070	286.40	VMC-110115T	156-116	286.40			
115-120	VMC-115120N	156-072	286.40	VMC-115120T	156-118	286.40			
120-125	VMC-120125N	156-074	286.40	VMC-120125T	156-120	286.40	TSB-35090	3	WCMT 32.52
125-130	VMC-125130N	156-076	286.40	VMC-125130T	156-122	286.40			
130-135	VMC-130135N	156-078	286.40	VMC-130135T	156-124	286.40			
135-140	VMC-135140N	156-080	286.40	VMC-135140T	156-126	286.40			
140-150	VMC-140150N	156-082	305.50	VMC-140150T	156-128	305.50			
150-160	VMC-150160N	156-084	305.50	VMC-150160T	156-130	305.50	TSB-40110	3	WCMT 432
160-170	VMC-160170N	156-086	305.50	VMC-160170T	156-132	305.50			
170-180	VMC-170180N	156-088	305.50	VMC-170180T	156-134	305.50			

• Outer cartridge can be ground to achieve the size in the range of head

WCMT-C20/C21 Drilling Inserts for VMD Max Drill





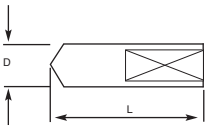
		Coated Carbide										Uncoated Carbide		(inch)					Applicable Cutter	
Designation	ISO	PM10C	PM25C	PM30C	PM30P	PM35P	PM40P	KM20C	MM30P	MT30P	SM20P	PM20U	KTM10U	l	d	t	r	d1	Cutter	Page No.
WCMT 1.81.51-C21	030204		146-241 $ 16.40										146-536 $ 15.50	.149	7/32	3/32	1/64	.110	MAX DRILL GP-DRILL	E170 E159
WCMT 1.81.52-C20	030208		146-242 $ 16.40										146-537 $ 15.50	.149	7/32	3/32	1/32	.110		
WCMT 21.52-C20	040208		146-237 $ 16.40										147-155 $ 15.50	.169	1/4	3/32	1/32	.118		
WCMT 2.522-C20	050308		146-236 $ 17.60			148-431 $ 17.60								.212	5/16	5/16	1/32	.134		
WCMT 32.52-C20	06T308		146-235 $ 17.60			148-432 $ 17.60							146-539 $ 39.70	.256	3/8	5/32	1/32	.157		
WCMT 432-C20	080408		146-855 $ 21.50											.342	1/2	3/16	1/32	.169		
WCMT 433-C20	080412		146-000 $ 21.50										146-563 $ 20.40	.342	1/2	3/16	3/64	.169		

Milling Cutters

MAX DRILL
DEEP HOLE DRILLING SYSTEM

Parts for VMD Max Drill

PILOT DRILL

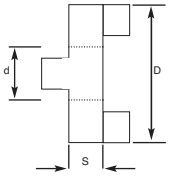




(mm)

Model	Code No.	Price $	D	L
PLD-1035 TiN-H	156-146	80.10	10	35
PLD-1238 TiN-H	156-148	102.00	12	38
PLD-1645 TiN-H	156-150	120.20	16	45
PLD-2045 TiN-H	156-152	181.90	20	45
PLD-2556 TiN-H	156-154	232.70	25	56
PLD-3068 TiN-H	156-156	323.60	30	68

DRIVE RING





(mm)

Model	Code No.	Price $	D	d	S
DVR-281310	156-158	80.10	28	13	10
DVR-321610	156-160	80.10	32	16	10
DVR-402212	156-162	102.00	40	22	12
DVR-482712	156-164	116.60	48	27	12
DVR-583214	156-166	160.20	58	32	14
DVR-704014	156-168	185.60	70	40	14
DVR-805016	156-170	229.30	80	50	16

SET SCREW



(mm)

Model	Code No.	Price $	Size	Hex Driver
MTB-08115	156-206	9.30	M8 x 11.5mm	4
MTB-10145	156-208	9.30	M10 x 14.5mm	5
MTB-12175	156-210	9.30	M12 x 17.5mm	6
MTB-12195	156-212	9.30	M12 x 19.5mm	6
MTB-16260	156-214	11.20	M16 x 26.5mm	8

INSERT SCREW



(mm)

Model	Code No.	Price $	Size	Hex Driver
TSB-22045	156-136	8.10	M2.2 x 4.5mm	T-6
TSB-25055	156-138	5.80	M2.5 x 5.5mm	T-8
TSB-30070	156-140	5.80	M3 x 7.0mm	T-8
TSB-35090	156-142	5.80	M3.5 x 9.0mm	T-15
TSB-40110	156-144	9.90	M4 x 11.0mm	T-15

Assembly for VMD Max Drill

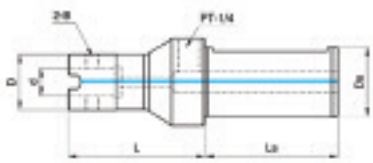


Milling Cutters

MAX DRILL
DEEP HOLE DRILLING SYSTEM

MX Holders for VMD Max Drill - Cylindrical Shank Type



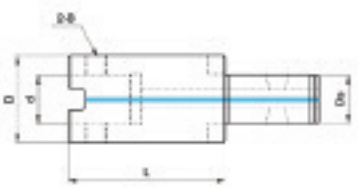


(mm)

Model	Code No.	Price $	Ds	d	L	D	Ls	Screw (B)	Drive Ring
MXA-3213115	156-172	291.00	32	13	115	28	70	MTB-08115	DVR-281310
MXA-3213200	156-174	436.20	32	13	200	28	70	MTB-08115	DVR-281310
MXA-3213300	156-176	436.20	32	13	300	28	70	MTB-08115	DVR-281310
MXA-4016125	156-178	327.30	40	16	125	32	80	MTB-08115	DVR-321610
MXA-4016200	156-180	363.70	40	16	200	32	80	MTB-08115	DVR-321610
MXA-4016300	156-182	471.60	40	16	300	32	80	MTB-08115	DVR-321610
MXA-4022148	156-184	363.70	40	22	148	40	80	MTB-10145	DVR-402212
MXA-4022200	156-186	436.20	40	22	200	40	80	MTB-10145	DVR-402212
MXA-4022300	156-188	509.00	40	22	300	40	80	MTB-10145	DVR-402212
MXA-4027168	156-190	436.20	40	27	168	48	80	MTB-12175	DVR-482712
MXA-4027300	156-192	581.60	40	27	300	48	80	MTB-12175	DVR-482712
MXA-4032186	156-194	509.00	40	32	186	58	80	MTB-12195	DVR-583214
MXA-4032300	156-196	581.60	40	32	300	58	80	MTB-12195	DVR-583214
MXA-5040186	156-198	581.60	50	40	186	70	100	MTB-16260	DVR-704014
MXA-5040300	156-200	727.10	50	40	300	70	100	MTB-16260	DVR-704014
MXA-5050184	156-202	654.30	50	50	184	80	100	MTB-16260	DVR-805016
MXA-5050300	156-204	836.00	50	50	300	80	100	MTB-16260	DVR-805016

MXB Extension Holders for VMD Max Drill





(mm)

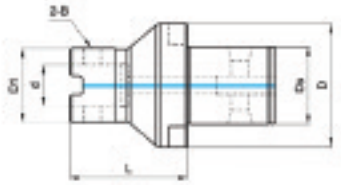
Model	Code No.	Price $	Ds	d	L	D	Screw (B)	Drive Ring
MXB-2813115	156-216	291.00	13	13	115	28	MTB-08115	DVR-281310
MXB-2813150	156-218	309.10	13	13	150	28	MTB-08115	DVR-281310
MXB-2813200	156-220	309.10	13	13	200	28	MTB-08115	DVR-281310
MXB-2813300	156-222	363.70	13	13	300	28	MTB-08115	DVR-281310
MXB-3216115	156-224	309.00	16	16	115	32	MTB-08115	DVR-321610
MXB-3216200	156-226	327.30	16	16	200	32	MTB-08115	DVR-321610
MXB-3216300	156-228	399.90	16	16	300	32	MTB-08115	DVR-321610
MXB-4022113	156-230	327.30	22	22	113	40	MTB-10145	DVR-402212
MXB-4022200	156-232	363.70	22	22	200	40	MTB-10145	DVR-402212
MXB-4022300	156-234	436.20	22	22	300	40	MTB-10145	DVR-402212
MXB-4827113	156-236	363.70	27	27	113	48	MTB-12175	DVR-482712
MXB-1827200	156-238	436.20	27	27	200	48	MTB-12175	DVR-482712
MXB-4827300	156-240	509.00	27	27	300	48	MTB-12175	DVR-482712
MXB-5832186	156-242	472.70	32	32	186	58	MTB-12195	DVR-583214
MXB-5832300	156-244	581.60	32	32	300	58	MTB-12195	DVR-583214
MXB-7040186	156-246	509.00	40	40	186	70	MTB-16260	DVR-704014
MXB-7040300	156-248	654.30	40	40	300	70	MTB-16260	DVR-704014
MXB-7040500	156-250	908.60	40	40	500	70	MTB-16260	DVR-704014
MXB-8050204	156-252	581.60	50	50	204	80	MTB-16260	DVR-805016
MXB-8050300	156-254	799.60	50	50	300	80	MTB-16260	DVR-805016
MXB-8050500	156-256	1,090.40	50	50	500	80	MTB-16260	DVR-805016

Milling Cutters

MAX DRILL
DEEP HOLE DRILLING SYSTEM

Reducers for VMD Max Drill



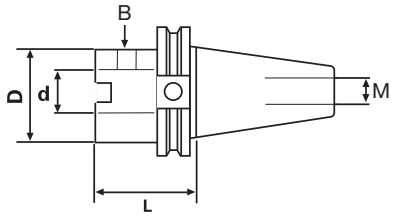


(mm)

Model	Code No.	Price $	Ds	d	L	D	D1	Screw (B)	D1/Drive Ring	D/Drive Ring
MXR-1613100	156-270	291.00	16	13	100	32	28	MTB-08115	DVR-28130	DVR-32610
MXR-2216100	156-272	291.00	22	16	100	40	32	MTB-08115	DVR-321610	DVR-402212
MXR-2722100	156-274	291.00	27	22	100	48	40	MTB-10145	DVR-402212	DVR-482712
MXR-3227100	156-276	363.70	32	27	100	58	48	MTB-12175	DVR-482712	DVR-583214

SK MXA Holders for VMD Max Drill



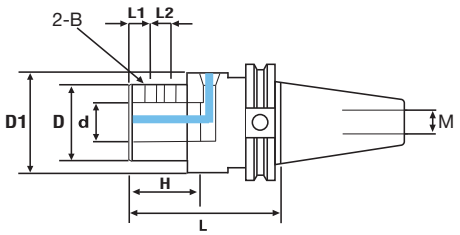


(mm)

Model	Code No.	Price $	d	L	D	M	Screw (B)
SK40-MXA-32065	156-258	363.60	32	65	58	M16	MTB-12195
SK50-MXA-32070	156-260	545.30	32	70	58	M24	MTB-12195
SK50-MXA-50070	156-262	654.30	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	L1	L2	Screw (B)	M
SK40-OMS-20110	156-201	1,017.70	20	110	50	78	50	20	-	M12	M16
SK40-OMS-25125	156-203	1,017.70	25	125	50	78	60	20	20	M12	M16
SK40-OMS-32130	156-205	1,017.70	32	130	65	88	70	20	20	M14	M16
SK50-OMS-20105	156-207	1,162.90	20	105	50	78	50	20	-	M12	M24
SK50-OMS-25120	156-209	1,162.90	25	120	50	78	60	20	20	M12	M24
SK50-OMS-32125	156-211	1,162.90	32	125	65	98	70	20	20	M14	M24
SK50-OMS-40135	156-213	1,162.90	40	135	65	98	80	20	25	M16	M24

INDEXABLE KITS

MILLING KITS
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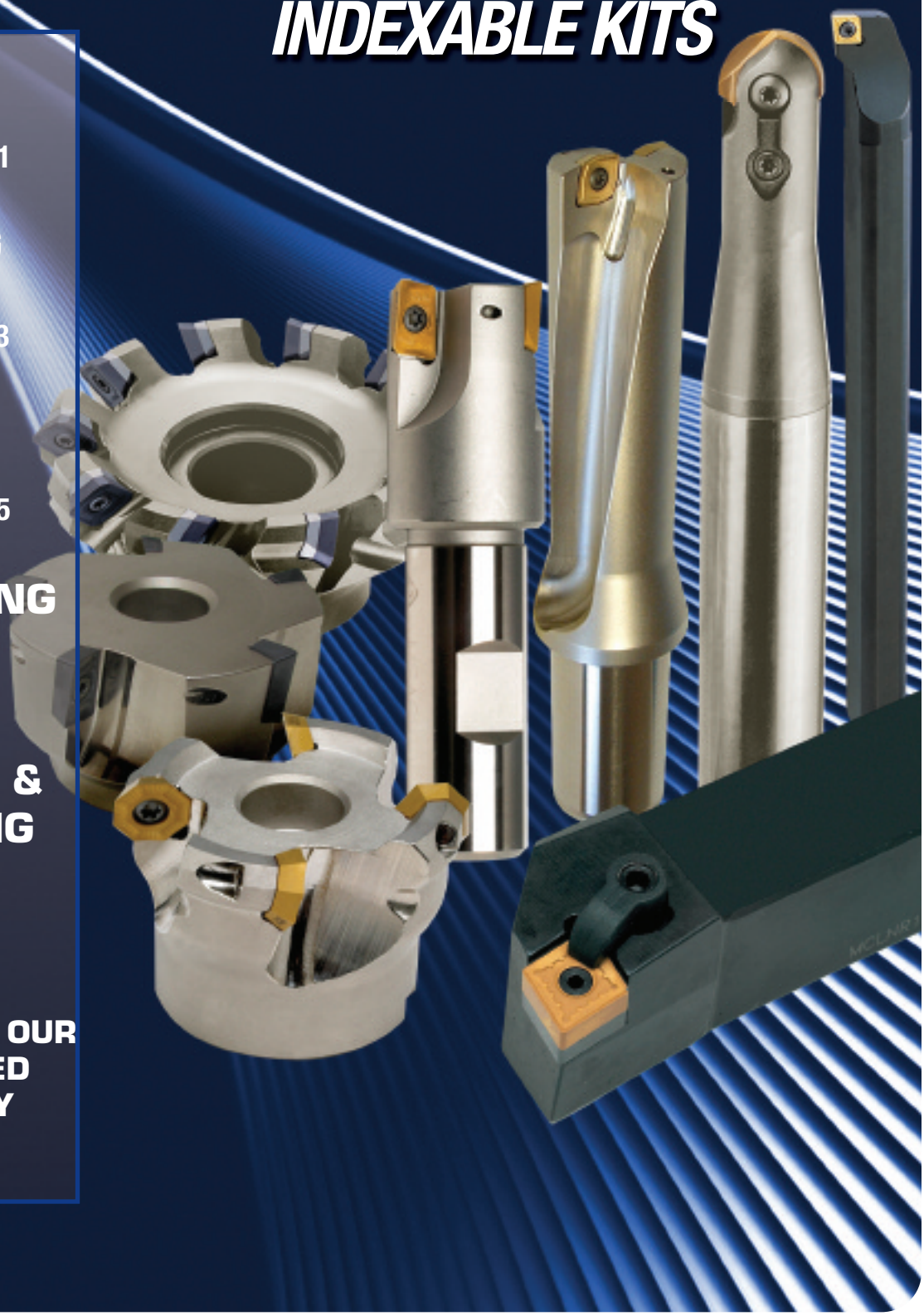
TURNING KITS
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BORING KITS
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THREADING KITS
PAGE E185

PARTING & GROOVING KITS
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ASK ABOUT OUR GUARANTEED TEST POLICY

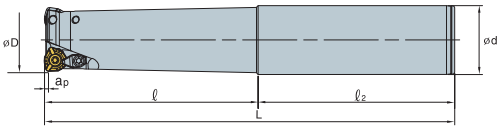


HFPA End Mill Kits



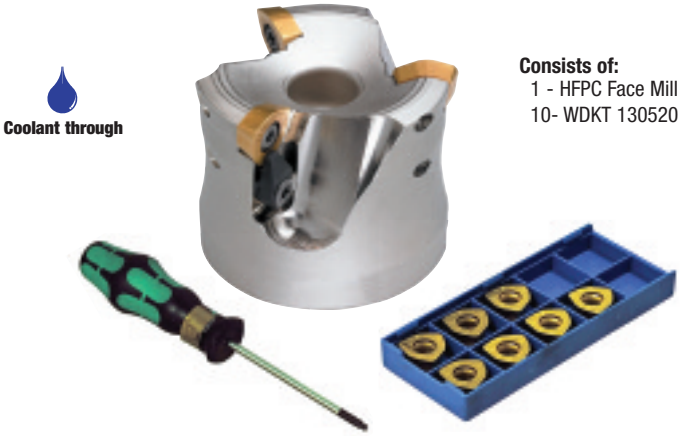
Consists of:
1 - HFPA End Mill
10- WDKT 130520 Inserts (Coated)



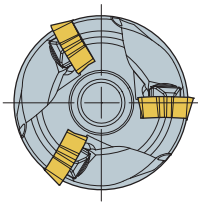


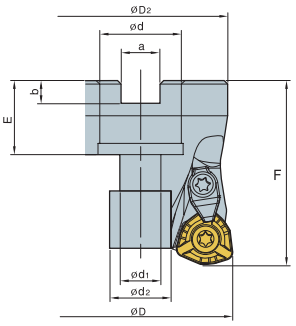
Model No.	Cutting Dia. (ØD)	Shank Dia.(Ød)	l	l2	L	Insert	No. of Inserts	Kit Code No.	Price $
HFPA 1-1/4 (148-646)	1-1/4	1.000	2.756	3.150	5.906	WDKT 130520 ZDSR-MH PM10C (148-653)	10	149-990	**591.90**
HFPA 1-1/4 (148-647)	1-1/4	1.000	4.725	3.150	7.874	WDKT 130520 ZDSR-MH PM10C (148-653)	10	149-991	**604.60**

HFPC Face Mill Kits



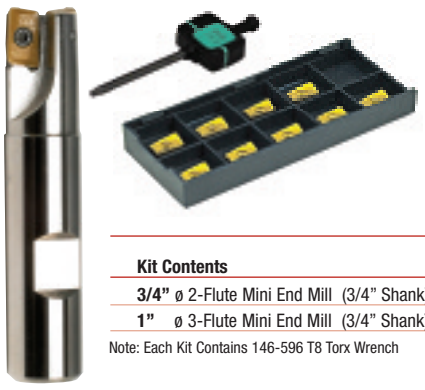
Consists of:
1 - HFPC Face Mill
10- WDKT 130520 Inserts (Coated)





Model No.	Cutting Dia. (ØD)	Bore Dia.(Ød)	ØD2	Ød2	a	b	E	F	Insert	No. of Inserts	Kit Code No.	Price $
HFPC 13200R-3 (148-636)	2.000	.750	1.772	.630	.321	.221	.778	1.969	WDKT 130520 ZDSR-MH PM10C (148-653)	10	149-992	**723.30**
HFPC 13250R-4 (148-639)	2.500	.750	1.772	.630	.321	.221	.778	1.969	WDKT 130520 ZDSR-MH PM10C (148-653)	10	149-993	**882.30**
HFPC 13300R-5 (148-641)	3.000	1.000	2.205	.827	.384	.248	.985	2.756	WDKT 130520 ZDSR-MH PM10C (148-653)	10	149-994	**1,076.40**

AP11 End Mill Kits



Consists of:
1 - AP11-90 End Mill
10- APXT 11T3 Inserts (Coated)

Kit Contents	Insert	Kit Code No.	Price $
3/4" ø 2-Flute Mini End Mill (3/4" Shank) (#146-373)	10 - APXT 11T3 Coated Inserts (#146-356)	149-864	**195.30**
1" ø 3-Flute Mini End Mill (3/4" Shank) (#146-374)	10 - APXT 11T3 Coated Inserts (#146-356)	149-865	**207.30**

Note: Each Kit Contains 146-596 T8 Torx Wrench

AP11 Master End Mill Kit





Consists of:
1 - Each 1/2", 5/8", 3/4", 1" AP11-90 End Mills
20- APXT 11T3 Inserts (Coated)

Kit Contents	Insert	Kit Code No.	Price $
1/2" ø, 5/8" ø, 3/4" ø, and 1" ø Mini-Mill (#146-371, #146-372, #146-373, #146-374)	20 - APXT 11T3 PM25C Inserts (#146-356)	149-866	**758.30**

Note: Each Kit Contains 146-596 T8 Torx Wrench

AP16 End Mill Kits





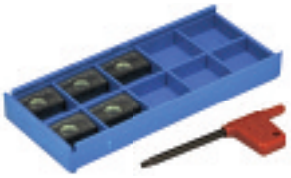
Consists of:
1 - AP16-90 Endmills
10- APKT 1604 Inserts (Coated)

Kit Contents	Insert	Kit Code	Price $
1" 2-FL. End Mill (1" Shank) (#145-705)	10 - APKT 1604PDSR M PM30P Coated Inserts (#147-333)	149-900	**234.30**
1-1/4" 3-FL. End Mill (1" Shank) (#145-706)	10 - APKT 1604PDSR M PM30P Coated Inserts (#147-333)	149-901	**249.30**
1-1/2" 3-FL. End Mill (1-1/4" Shank) (#145-707)	10 - APKT 1604PDSR M PM30P Coated Inserts (#147-333)	149-902	**264.60**

Note: Each Kit Contains 146-596 T8 Torx Wrench

APFM Face Mill Kits





Consists of:
1 - APFM 16-90 Face Mill
10- APKT 1604 Inserts (Coated)

Kit Contents		Insert	Kit Code	Price $
2" Face Mill (147-009)	c/w 10 inserts (147-333)	APKT 1604 PDSR M PM30P	149-907	**306.80**
2-1/2" Face Mill (147-011)	c/w 10 inserts (147-333)	APKT 1604 PDSR M PM30P	149-908	**359.70**
3" Face Mill (147-013)	c/w 10 inserts (147-333)	APKT 1604 PDSR M PM30P	149-909	**394.50**
4" Face Mill (147-000)	c/w 10 inserts (147-333)	APKT 1604 PDSR M PM30P	149-910	**451.10**
5" Face Mill (147-015)	c/w 10 inserts (147-333)	APKT 1604 PDSR M PM30P	149-911	**866.20**

R8 Milling Cutter & Insert Kit



Kit Contents		Insert	Kit Code	Price $
2" R8 (Bridgeport shank) End Mill (141-016)	c/w 10 inserts (146-709)	TPU 322 PM25C Inserts (Coated)	500-732	**594.50**

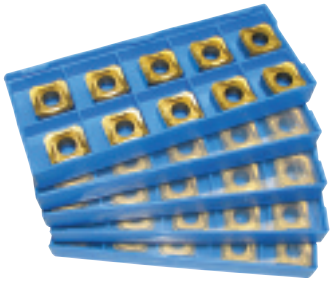


Consists of:
1 - R8 Shank End Mill 2" Dia.
10- TPU 322 Inserts (Coated)

DS8 45º Milling Kits

Coolant through



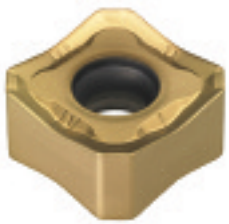


Consists of:
1 - DS8 45º Face Mill
20-80 SNMX 1206ANN-M Inserts

Kit Contents		Insert	Kit Code No.	Price $
2"(Z=4) DS8 4200HR-M (148-979)	c/w 20 inserts (145-679)	SNMX 1206ANN-M PM30P	149-779	**555.70**
2-1/2"(Z=6) DS8 4250HR-M (148-980)	c/w 20 inserts (145-679)	SNMX 1206ANN-M PM30P	149-778	**894.40**
3"(Z=5) DS8 4300HR (148-885)	c/w 30 inserts (145-679)	SNMX 1206ANN-M PM30P	149-777	**1,074.60**
3"(Z=7) DS8 4300HR-M (148-887)	c/w 30 inserts (145-679)	SNMX 1206ANN-M PM30P	149-776	**1,420.90**
3"(Z=10) DS8 4300HR-H (148-886)	c/w 30 inserts (145-679)	SNMX 1206ANN-M PM30P	149-775	**1,150.90**
4"(Z=6) DS8 4400HR (148-888)	c/w 40 inserts (145-679)	SNMX 1206ANN-M PM30P	149-774	**1,329.00**
4"(Z=8) DS8 4400HR-M (148-890)	c/w 40 inserts (145-679)	SNMX 1206ANN-M PM30P	149-773	**1,739.30**
4"(Z=12) DS8 4400HR-H (148-889)	c/w 40 inserts (145-679)	SNMX 1206ANN-M PM30P	149-772	**1,419.40**
5"(Z=8) DS8 4500HR (148-891)	c/w 50 inserts (145-679)	SNMX 1206ANN-M PM30P	149-771	**2,274.10**
5"(Z=10) DS8 4500HR-M (148-893)	c/w 50 inserts (145-679)	SNMX 1206ANN-M PM30P	149-764	**2,193.50**
5"(Z=16) DS 4500HR-H (148-892)	c/w 50 inserts (145-679)	SNMX 1206ANN-M PM30P	149-770	**1,848.40**
6"(Z=10) DS8 4600HR (148-894)	c/w 60 inserts (145-679)	SNMX 1206ANN-M PM30P	149-769	**2,066.70**
6"(Z=12) DS8 4600HR-M (148-896)	c/w 60 inserts (145-679)	SNMX 1206ANN-M PM30P	149-768	**2,826.40**
6"(Z=18) DS8 4600HR-H (148-895)	c/w 60 inserts (145-679)	SNMX 1206ANN-M PM30P	149-767	**1,676.30**
8"(Z=14) DS8 4800HR-M (148-898)	c/w 80 inserts (145-679)	SNMX 1206ANN-M PM30P	149-766	**3,723.30**
8"(Z=24) DS8 4800HR-H (148-897)	c/w 80 inserts (145-679)	SNMX 1206ANN-M PM30P	149-765	**3,020.30**

2"- 5" With Coolant hole
6"- 8" No Coolant Hole

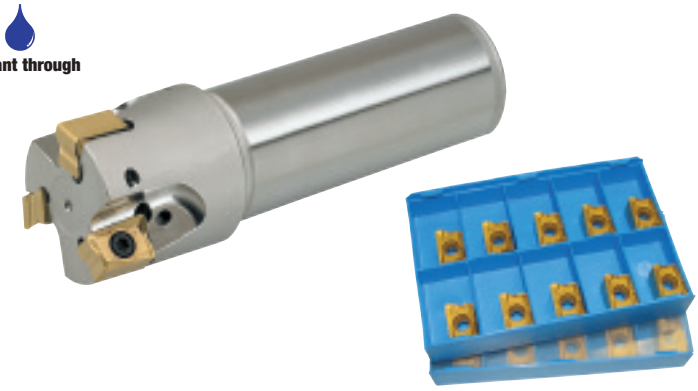
Features Of The DS8 Insert



- Innovative double-sided high rake angle insert makes it possible to use 8 cutting edges.
- Smooth cutting with low cutting load that has been acquired from the unique geometry & high rake angle of cutting edge guarantees excellent surface finish.
- The combination of the innovative geometries & the variety of grades provides wide coverage for milling applications.
- Applicable for various workpieces including Steel, Cast Iron & Stainless Steel.

DS4 End Mill Kits

Coolant through



Consists of:
1 - DS4 45º End Mill
10-20 LNMX100605PNR-F2 Inserts or
10-20 LNMX151008PNR-M Inserts



Features Of The DS4 Insert

- Chip breaker has a high rake angle for smooth chip control.
- Step design improves chip control by reducing the cutting load
- Major cutting edge for low cutting
- Concave design to avoid interference between each cutting edge.
- Specially designed minor cutting edge improves surface finish.
- Periphery face has a strong and negative face. (Clearance angle 0º).

Kit Contents		Insert	Kit Code No.	Price $
1-1/4"(Z=3) DS4 3125HR-S125 (146-390)	c/w 10 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-763	**628.20**
1-1/4"(Z=4) DS4 3125HR-S125M (146-391)	c/w 10 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-780	**710.40**
1-1/4"(Z=2) DS4 4125HR-S125 (148-870)	c/w 10 inserts (145-678)	LNMX151008PNR-M PM30P	149-781	**611.90**
1-1/2"(Z=3) DS4 4150HR-S125 (148-871)	c/w 10 inserts (145-678)	LNMX151008PNR-M PM30P	149-782	**737.40**
2"(Z=4) DS4 4200HR-S125M (148-872)	c/w 10 inserts (145-678)	LNMX151008PNR-M PM30P	149-783	**872.60**
1-1/2"(Z=4) DS4 3150HR-S125 (146-392)	c/w 20 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-784	**751.10**
1-1/2"(Z=5) DS4 3150HR-S125M (148-372)	c/w 20 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-785	**850.60**
2"(Z=5) DS4 3200HR-S125 (146-394)	c/w 20 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-786	**889.30**
2"(Z=7) DS4 3200HR-S125M (146-395)	c/w 20 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-787	**1,191.40**

DS4 Face Mill Kits

Coolant through





Consists of:
1 - DS4 45º Face Mill
20-30 LNMX100605PNR-F2 Inserts or
20-60 LNMX151008PNR-M Inserts

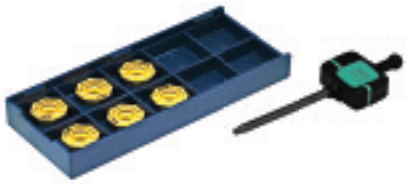


Kit Contents		Insert	Kit Code No.	Price $
1-1/2"(Z=5) DS4 3150HR-M (146-393)	c/w 20 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-788	**1,026.30**
2-1/2(Z=9) DS4 3250HR-M (148-374)	c/w 30 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-789	**1,704.20**
3"(Z=10) DS4 3300HR-M (148-376)	c/w 30 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-790	**1,120.70**
4"(Z=12) DS4 3400HR-M (148-391)	c/w 30 inserts (145-636)	LNMX100605PNR-F2 PM30P	149-791	**2,287.40**
2-1/2"(Z=4) DS4 4250HR (148-875)	c/w 20 inserts (145-678)	LNMX151008PNR-M PM30P	149-792	**1,161.10**
2-1/2"(Z=6) DS4 4250HR-M (148-876)	c/w 20 inserts (145-678)	LNMX151008PNR-M PM30P	149-793	**1,161.30**
3"(Z=5) DS4 4300HR (148-877)	c/w 30 inserts (145-678)	LNMX151008PNR-M PM30P	149-794	**1,606.60**
4"(Z=8) DS4 4400HR-M (146-880)	c/w 40 inserts (145-678)	LNMX151008PNR-M PM30P	149-795	**2,246.40**
5"(Z=7) DS4 4500HR (148-881)	c/w 50 inserts (125-678)	LNMX151008PNR-M PM30P	149-796	**2,619.10**
5"(Z=10) DS4 4500HR-M (148-882)	c/w 50 inserts (145-678)	LNMX151008PNR-M PM30P	149-797	**3,011.20**
6"(Z=8) DS4 4600HR (148-883)*	c/w 60 inserts (145-678)	LNMX151008PNR-M PM30P	149-798	**2,970.20**
6"(Z=11 DS4 4600HR-M (148-884)*	c/w 60 inserts (145-678)	LNMX151008PNR-M PM30P	149-799	**3,395.20**

* non coolant through

OKT-MAX Face Mill Kits





Consists of:
1 - OKT-MAX Face Mill
10- OFKT 05T3 Inserts (Coated)

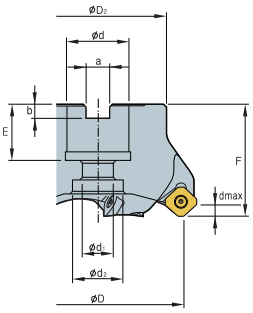
Kit Contents		Insert	Kit Code	Price $
1-1/2" OKT-MAX Face Mill (147-029)	c/w 10 inserts (146-843)	OFKT 05T3 PM25C Inserts (Coated)	149-862	**492.30**
2" OKT-MAX Face Mill (147-019)	c/w 10 inserts (146-843)	OFKT 05T3 PM25C Inserts (Coated)	149-863	**554.30**

Note: Each Kit Contains 146-940 T15 Torx Wrench

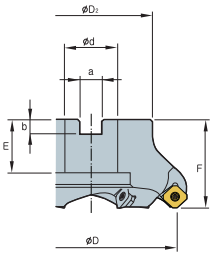
45º Max Mill Kits



Consists of:
1 - MM 45º Face Mill
10- SEXT 14M4 Inserts (Coated)



Ø50 ~ Ø63



Ø3.150 ~ Ø6.299

Designation		Cutter No.	ØD	Ød	ØD₂	Ød₁	Ød₂	a	b	E	F	No. of Inserts	d max
MM 45º	Coarse Pitch												
	4200FM	**147-811**	2.000	0.750	1.654	0.433	0.709	0.321	0.181	0.787	1.575	3	
	4250FM	**147-812**	2.500	0.750	1.654	0.433	0.709	0.321	0.181	0.787	1.575	4	0.256
	4300FM	**147-813**	3.000	1.000	1.969	0.551	0.787	0.384	0.248	0.866	1.969	5	
	4400FM	**147-814**	4.000	1.250	2.362	-	1.772	0.510	0.319	0.866	1.969	5	

Kit Contents		Insert	Kit Code No.	Price $
2" Cutter (147-811)	c/w 10 inserts (147-730)	SEXT 14M4 AGSN PM25C	149-932	**369.20**
2" Cutter (147-811)	c/w 10 inserts (148-182)	SEXT 14M4 AGSN PM30P	149-933	**369.20**
2 1/2" Cutter(147-812)	c/w 10 inserts (147-730)	SEXT 14M4 AGSN PM25C	149-934	**537.70**
2 1/2" Cutter (147-812)	c/w 10 inserts (148-182)	SEXT 14M4 AGSN PM30P	149-935	**442.70**
3" Cutter (147-813)	c/w 10 inserts (147-730)	SEXT 14M4 AGSN PM25C	149-936	**480.40**
3" Cutter (147-813)	c/w 10 inserts (148-182)	SEXT 14M4 AGSN PM30P	149-937	**585.40**
4" Cutter (147-814)	c/w 10 inserts (147-730)	SEXT 14M4 AGSN PM25C	149-938	**723.30**
4" Cutter (147-814)	c/w 10 inserts (148-182)	SEXT 14M4 AGSN PM30P	149-939	**723.30**

Alumimill Kits

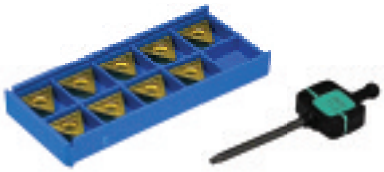


Consists of:
1 - AMFM Face Mill Complete With
VCKT 43.57.5 Inserts (Polished)

Kit Contents		Insert	Kit Code	Price $
2" Face Mill (147-424)	c/w 3 inserts (147-425)	VCKT 43.57.5 NA KT10U	149-927	**542.70**
2-1/2" Face Mill (147-834)	c/w 4 inserts (147-425)	VCKT 43.57.5 NA KT10U	149-928	**674.90**
3" Face Mill (147-470)	c/w 4 inserts (147-425)	VCKT 43.57.5 NA KT10U	149-929	**704.40**
4" Face Mill (147-471)	c/w 5 inserts (147-425)	VCKT 43.57.5 NA KT10U	149-930	**865.50**

Chamfer Tool Kits





Consists of:
1 - CT 45º Chamfer Tool
10- TCMT/TCGT Inserts

Kit Contents		Insert	Kit Code	Price $
1/8-5/8" Chamfer Tool 1 Flute (147-113)	c/w 10 inserts (148-811)	TCMT 21.51 Inserts (Coated)	149-853	**268.00**
1/8-5/8" Chamfer Tool 1 Flute (147-113)	c/w 10 inserts (146-506)	TCGT 21.52 Inserts For **Aluminum**	149-854	**217.00**
15/32-1-1/8" Chamfer Tool 2 Flute (147-112)	c/w 10 inserts (148-707)	TCMT 32.52 Inserts (Coated)	149-855	**282.60**
15/32-1-1/8" Chamfer Tool 2 Flute (147-112)	c/w 10 inserts (146-508)	TCGT 32.52 Inserts For **Aluminum**	149-856	**327.90**

Mold Mill Kits



Consists of:
1 - Mold Mill
2 - RC Inserts (Coated)

KIT CONTENTS		Kit Code	Price $
5/8" Standard Length Moldmill (148-094)	c/w 2 pcs RC-5/8 Inserts (147-858)	149-912	**428.40**
5/8" Medium Length Moldmill (147-853)	c/w 2 pcs RC-5/8 Inserts (147-858)	149-913	**447.30**
5/8" Long Length Moldmill (148-095)	c/w 2 pcs RC-5/8 Inserts (147-858)	149-914	**465.70**
3/4" Standard Length Moldmill (148-096)	c/w 2 pcs RC-3/4 Inserts (147-859)	149-915	**599.80**
3/4" Medium Length Moldmill (147-854)	c/w 2 pcs RC-3/4 Inserts (147-859)	149-916	**599.80**
3/4" Long Length Moldmill (148-097)	c/w 2 pcs RC-3/4 Inserts (147-859)	149-917	**655.00**
1" Standard Length Moldmill (148-098)	c/w 2 pcs RC-1 Inserts (147-860)	149-918	**665.10**
1" Medium Length Moldmill (147-855)	c/w 2 pcs RC-1 Inserts (147-860)	149-919	**702.60**
1" Long Length Moldmill (148-099)	c/w 2 pcs RC-1 Inserts (147-860)	149-920	**754.70**
1-1/8" Standard Length Moldmill (148-100)	c/w 2 pcs RC-1-1/8 Inserts (147-861)	149-923	**602.20**
1-1/8" Medium Length Moldmill (147-856)	c/w 2 pcs RC-1-1/8 Inserts (147-861)	149-924	**639.00**
1-1/8" Long Length Moldmill (148-102)	c/w 2 pcs RC-1-1/8 Inserts (147-861)	149-925	**681.40**
1-1/4" Standard Length Moldmill (148-103)	c/w 2 pcs RC-1-1/4 Inserts (147-862)	149-921	**748.90**
1-1/4" Medium Length Moldmill (147-857)	c/w 2 pcs RC-1-1/4 Inserts (147-862)	149-922	**799.30**
1-1/4" Long Length Moldmill (148-104)	c/w 2 pcs RC-1-1/4 Inserts (147-862)	149-926	**856.90**

MCLNR/L Turning Kits



Consists of:
1 - MCLNR/L Toolholder
10 - CNMG 432 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Finishing	Steel	1 pc MCLNR 16-4D (145-828) 10 pcs CNMG 432 F2 PT10C (146-471)	149-800	**155.70**	-	-
Medium/Finishing	Steel	1 pc MCLNR 16-4D (145-828) 10 pcs CNMG 432 M PT22C (146-677)	149-806	**155.70**	-	-
Medium	Steel	1 pc MCLNR 16-4D (145-828)/MCLNL 16-4D (145-829)10 pcs CNMG 432 MM PT22C (146-557)	149-801	**155.70**	149-805	**155.70**
Roughing	Steel	1 pc MCLNR 16-4D (145-828) 10 pcs CNMG 432 R1 PT22C (146-569)	149-802	**155.70**	-	-
Medium	Stainless Steel	1 pc MCLNR 16-4D (145-828) 10 pcs CNMG 432 MM MT20C (146-765)	149-803	**155.70**	-	-
Medium	Cast Iron	1 pc MCLNR 16-4D (145-828) 10 pcs CNMA 432 KT10C (147-473)	149-804	**155.70**	-	-

MDJNR/L Turning Kits



Consists of:
1 - MDJNR/L Toolholder
10 - DNMG 432 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Finishing	Steel	1 pc MDJNR 16-4D (145-845) 10 pcs DNMG 432 F2 PT10C (146-757)	149-807	**173.60**	-	-
Medium/Finishing	Steel	1 pc MDJNR 16-4D (145-845) 10 pcs DNMG 432 M PT22C (146-555)	149-813	**173.60**	-	-
Medium	Steel	1 pc MDJNR 16-4D (145-845)/MDJNL 16-4D (145-846) 10 pcs DNMG 432 MM PT22C (148-669)	149-808	**173.60**	149-812	**173.60**
Roughing	Steel	1 pc MDJNR 16-4D (145-845) 10 pcs DNMG 432 R1 PT10C (146-263)	149-809	**173.60**	-	-
Medium	Stainless Steel	1 pc MDJNR 16-4D (145-845) 10 pcs DNMG 432 MM MT20C (146-768)	149-810	**173.60**	-	-
Medium	Cast Iron	1 pc MDJNR 16-4D (145-845) 10 pcs DNMA 432 KT10C (147-551)	149-811	**173.60**	-	-

MTGNR Turning Kits



Consists of:
1 - MTGNR Toolholder
10 - TNMG 432 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $
Finishing	Steel	1 pc MTGNR 16-4D (145-814) 10 pcs TNMG 432 F2 PT10C (146-632)	149-814	**174.90**
Medium/Finishing	Steel	1 pc MTGNR 16-4D (145-814) 10 pcs TNMG 432 M PT22C (148-771)	149-824	**174.90**
Roughing	Steel	1 pc MTGNR 16-4D (145-814) 10 pcs TNMG 432 MM PT22C (149-088)	149-815	**174.90**
Medium	Cast Iron	1 pc MTGNR 16-4D (145-814) 10 pcs TNMA 432 R1 KT10C (147-609)	149-816	**174.90**

MTJNR/L Turning Kits



Consists of:
1 - MTJNR/L Toolholder
10 - TNMG 432 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Medium Finishing	Steel	1 pc MTJNR 16-4D (145-757) 10 pcs TNMG 432 M PT22C (148-771)	149-823	**228.60**	-	-
Medium	Steel	1 pc MTJNR 16-4D 1" Shank (145-757)/MTJNL 16-4D (145-756) 10 pcs TNMG 432 MM PT22C (149-040)	149-817	**228.60**	149-820	**228.60**
Medium	Steel	1 pc MTJNR 12-3D 3/4" Shank (145-887)/MTJNL 12-3B (145-888) 10 pcs TNMG 322 G PT30C (146-093)	149-818	**186.70**	149-821	**186.70**
Medium	Steel	1 pc MTJNR 10-3B 5/8" Shank (145-891)/MTJNL 10-3B (145-892) 10 pcs TNMG 322 G PT30C (146-093)	149-819	**190.70**	149-822	**190.70**

MVJNR/L Turning Kits



Consists of:
1 - MVJNR/L Toolholder
10 - VNMG 332 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Medium	Steel	1 pc MVJNR 16-3D (145-893)/MVJNL 16-3D (145-738) 10 pcs VNMG 332 M PT22C (147-587)	149-833	**201.20**	149-834	**201.20**

MWLNR/L Turning Kits



Consists of:
1 - MWLNR/L Toolholder
10 - WNMG 432 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Medium Finish	Steel	1 pc MWLNR 16-4D (145-808) 10 pcs WNMG 432 M PT22C (148-773)	149-832	**160.30**	-	-
Medium	Steel	1 pc MWLNR 16-4D 1" Shank (145-808)/MWLNL 16-4D (145-809) 10 pcs WNMG 432 MM PT22C (145-868)	149-825	**160.30**	149-830	**160.30**
Medium	Steel	1 pc MWLNR 12-4D 3/4" Shank (145-875)/MWLNL 12-4D (145-876) 10 pcs WNMG 432 MM PT22C (145-868)	149-826	**161.80**	149-831	**161.80**
Medium	Stainless Steel	1 pc MWLNR 16-4D (145-808) 10 pcs WNMG 432 MM MT20C (146-769)	149-827	**160.30**	-	-
Medium	Cast Iron	1 pc MWLNR 16-4D (145-808) 10 pcs WNMA 432 KT05C (147-429)	149-828	**160.30**	-	-
Roughing	Cast Iron	1 pc MWLNR 16-4D (145-808) 10 pcs WNMA 432 KT10C (147-672)	149-829	**160.30**	-	-

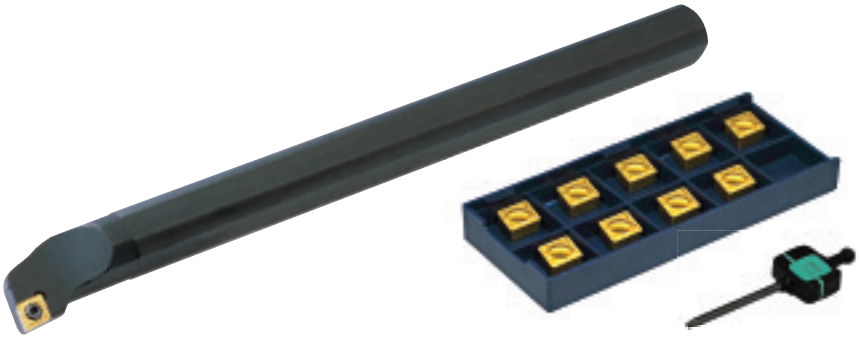
SI-SCLCR/L Master Boring Bar Kits



Consists of:
1 - 5/8" ø B/Bar, SI-SCLCR 10-3 (#145-925)
1 - 3/4" ø B/Bar, SI-SCLCR 12-3 (#145-926)
1 - 1" ø B/Bar, SI-SCLCR 16-3 (#145-927)
10 - CCMT 32.51 inserts
1- wrench (#146-940)

Application	Material	Kit Contents	Right Hand Kit Code	Price $	Left Hand Kit Code	Price $
Medium	Steel	1 pc SI SCLCR 5/8", 3/4", 1" Boring Bars 10 pcs CCMT 32.51 F2P PT22C (146-361)	149-844	**293.60**	-	-
Medium	Steel	1 pc SI SCLCL 5/8", 3/4", 1" Boring Bars 10 pcs CCMT 32.51 F2P PT22C (146-361)	-		149-845	**293.80**
Medium	Cast Iron	1 pc SI SCLCR 5/8", 3/4", 1" Boring Bars 10 pcs CCMT 32.51 F2P KT05C (146-641)	149-846	**293.60**	-	-
Medium	Aluminum	1 pc SI SCLCR 5/8", 3/4", 1" Boring Bars 10 pcs CCGT 32.51 AP KT10U (146-011)	149-847	**328.10**	-	-

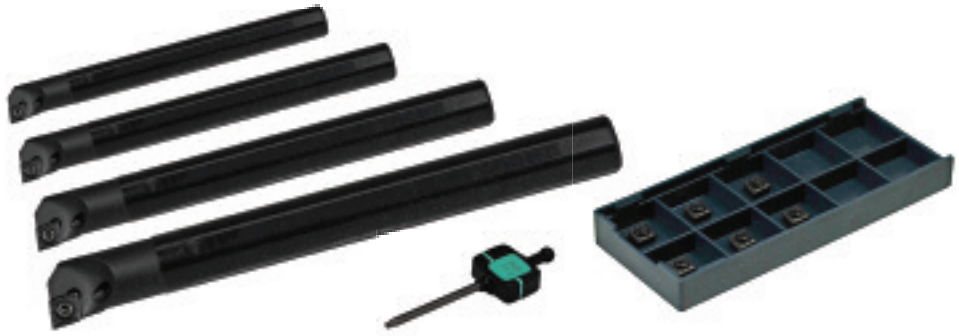
SI-SCLCR Boring Bar Kits



Consists of:
1 - SI-SCLCR Boring Bar
10 - CCMT 32.51 Inserts (Coated)

Application	Material	Kit Contents	Right Hand Kit Code	Price $
Medium	Steel	1 pc SI SCLCR 10-3(5/8")(145-925) 10 pcs CCMT 32.51 F2P PT22C (146-361)	149-873	**133.80**
Medium	Steel	1 pc SI SCLCR 12-3(3/4")(145-926) 10 pcs CCMT 32.51 F2P PT22C (146-361)	149-874	**140.20**
Medium	Steel	1 pc SI SCLCR 16-3(1")(145-927) 10 pcs CCMT 32.51 F2P PT22C (146-361)	149-875	**154.90**

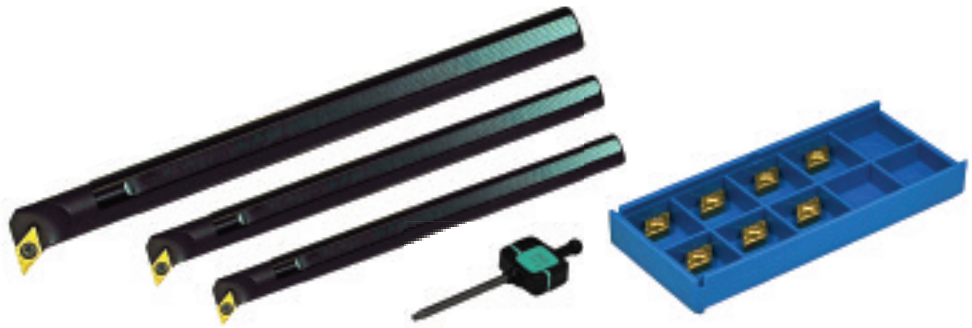
A-SCLCR Coolant Thru Boring Bar Kits



Consists of:
1 - 5/16" ø B/Bar, A-SCLCR 5-2 (#146-589)
1 - 3/8" ø B/Bar, A-SCLCR 6-2 (#146-590)
1 - 1/2" ø B/Bar, A-SCLCR 8-2 (#146-591)
1 - 5/8" ø B/Bar, A-SCLCR 10-2 (#147-348)
1 - wrench (#146-939)
10 - CC_T21.51 Inserts

Application	Material	Kit Contents	Right Hand Kit Code	Price $
Finishing	Steel	1 pc A-SCLCR 5/16", 3/8", 1/2", 5/8 10 pcs CCMT 21.50.5 F2P PT22C (147-464)	149-848	**347.30**
Medium	Steel	1 pc A-SCLCR 5/16", 3/8", 1/2", 5/8 10 pcs CCMT 21.51 F2P PT22C (148-711)	149-849	**347.30**
Medium	Aluminum	1 pc A-SCLCR 5/16", 3/8", 1/2", 5/8 10 pcs CCGT 21.51 AP KT10U (146-024)	149-850	**368.60**

SI-SDUCR Boring Bar Kits



Consists of:
1 - 3/8" ø B/Bar, SI-SDUCR 6-2 (#145-939)
1 - 1/2" ø B/Bar, SI-SDUCR 8-2 (#145-940)
1 - 5/8" ø B/Bar, SI-SDUCR 10-2 (#145-941)
10 DC__T21.51 Inserts

Application	Material	Kit Contents	Right Hand Kit Code	Price $
Medium	Steel	1 pc SI-SDUCR 3/8", 1/2", 5/8" Boring Bars 10 pcs DCMT 21.51 F2P PT22C (146-578)	149-851	**242.60**
Medium	Aluminum	1 pc SI-SDUCR 3/8", 1/2", 5/8" Boring Bars 10 pcs DCGT 21.51 AP KT10U (146-989)	149-852	**253.00**

External Threading Kits



Consists of:
1 - ETH3 Toolholder
2 - ECTR 300 Inserts (Coated)

Kit Contents	Insert	Kit Code	Price $
3/4" Toolholder (146-708) c/w 2pcs 3/8" Partial Profile inserts Coated (146-597)	ECTR 300 8-28 PM30P	149-839	**167.80**
1" Toolholder (146-290) c/w 2pcs 3/8" Partial Profile inserts Coated (146-597)	ECTR 300 8-28 PM30P	149-840	**175.00**

Internal Threading Kits



Consists of:
1 - ITH3 Toolholder
2 - ICTR 300 Inserts (Coated)

Kit Contents	Insert	Kit Code	Price $
3/4" Toolholder (146-255) c/w 2pcs - 3/8" Partial Profile inserts Coated (146-610)	ICTR 300 8-28 PM30P	149-842	**194.90**
1" Toolholder (146-254) c/w 2pcs - 3/8" Partial Profile inserts Coated (146-610)	ICTR 300 8-28 PM30P	149-843	**206.10**
1-1/4" Toolholder (146-256) c/w 2pcs - 3/8" Partial Profile inserts Coated (146-610)	ICTR 300 8-28 PM30P	149-879	**234.60**

PRO Part Off Kits



Consists of:
1 - PP-B Part Off Blade
10 - SP 300 Inserts (Coated)
1 - SW15S Wrench

Kit Contents	Insert	Kit Code	Price $
PP-B 326S 1" Blade (146-232) c/w 10-1/8" inserts (146-452)	SP300 PT30C	149-835	**357.80**
PP-B 332S 1-1/4" Blade (146-898) c/w 10-1/8" inserts (146-452)	SP300 PT30C	149-836	**375.10**
PP-B 432S 1-1/4" Blade (146-899) c/w 10-0.161" inserts (146-454)	SP400 PT30C	147-441	**380-60**

PRO Part Off Kits



Consists of:
1 - PP-B Part Off Blade
1 - P.O.B. Part Off Block
10 - SP 300 Inserts (Coated)
1 - SW15S Wrench

Kit Contents	Insert	Kit Code	Price $
PP-B 326S 1" Blade (146-232) c/w 10-1/8" inserts (146-452) & P.O.B. 19-5 Part Off Block (146-510)	SP300 PT30C	149-837	**405.50**
PP-B 326S 1-1/4" Blade (146-898) c/w 10-1/8" inserts (146-452) & P.O.B. 25; 4-6 Part Off Block (145-895)	SP300 PT30C	149-838	**412.30**

MTG - Multi Turn Groove Kits



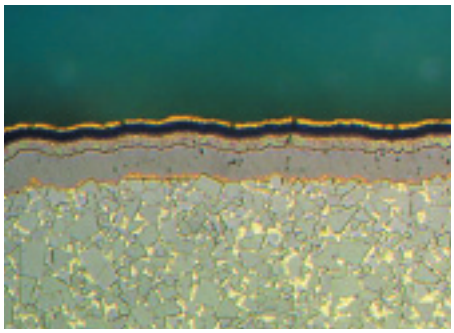
Consists of:
1 - MGEHR Toolholder
5 - MGMN Inserts (Coated)

Kit Contents	Insert	Kit Code	Price $
MGEHR 16-3 1" Shank (148-066) c/w 5-**3mm** inserts (146-834)	MGMN 300M PT20C	149-898	**212.30**
MGEHR 16-4 1" Shank (148-074) c/w 5-**4mm** inserts (149-049)	MGMN 400M PT22C	149-899	**216.40**

CVD Coated Grades

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 Reduce Friction-force

Al_2O_3 Wear Resistance, Prevent Build-up-edge

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

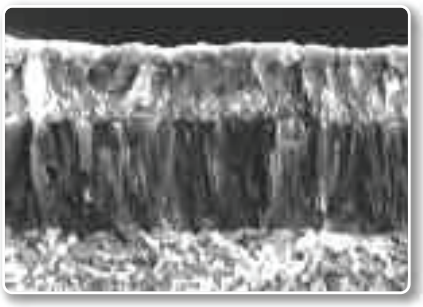
Work-piece	Cutting Condition	1st choice	Cutting Speed (sfm)	ISO	Application Range
Steel	Continuous cutting			P01	PT10C, PT15C, PT22C, PT30C, PT40C
		PT10C	925(725 ~ 1150)	P10	
		PT22C	918(590 ~ 1,246)	P20	
	Intermittent cutting	PT20C	600(500 ~ 650)	P30	
		PT30C	500(400 ~ 650)S	P40	
Cast Iron	Continuous 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

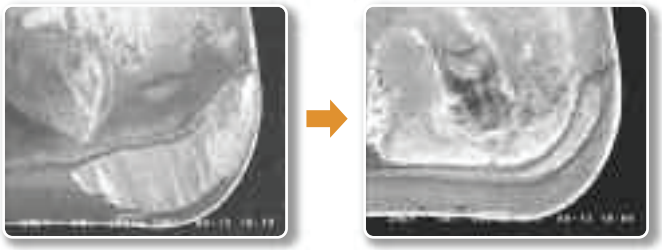
Work-piece	1st choice	Cutting Speed (sfm)	ISO	Application Range
Steel	PM25C	825(500 ~ 975)	P20 M20	PM25C, PM30C
			P30 M30	
	PM30C	650(500 ~ 825)	P40 M40	
Cast Iron			K10	KM20C
			K20	
	KM20C	650(500 ~ 825)	K30	

Introducing The New & Improved PT22C

Features of PT22C [New coating layer with oxidation resistance and adhesion]

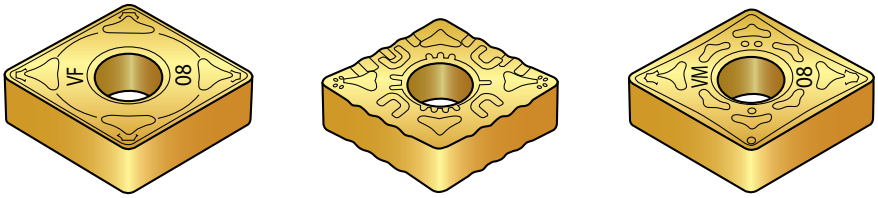


- Coating with good surface roughness and welding resistance
- Coating with oxidation resistance at high temperature and plastic deformation resistance
- Coating with excellent chipping resistance due to improved adhesion
- Fine coating layer with toughness and wear resistance
- Exclusive substrate material for coating improving wear resistance



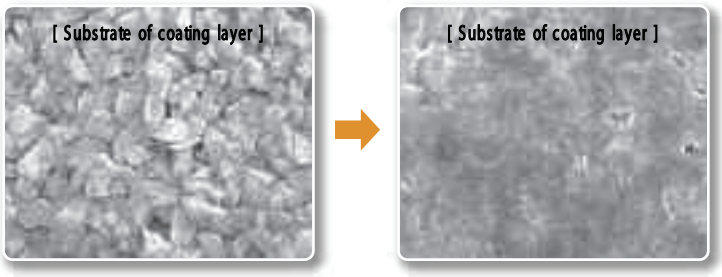
[Current grade] [New grade (PT22C)]

- Coating with oxidation resistance at high temperature and plastic deformation resistance
  ••• Improved wear resistance on the rake surface of insert
- Exclusive substrate material for coating improving wear resistance
  ••• Improved wear resistance on the flank surface of insert



[For Finishing] [For Medium Machining] [For Medium Machining]

Superior surface finish

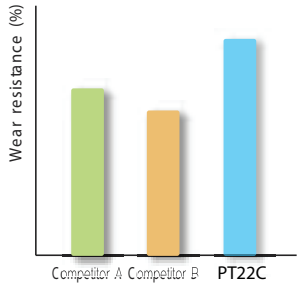


[Current grade] [New grade (PT22C)]

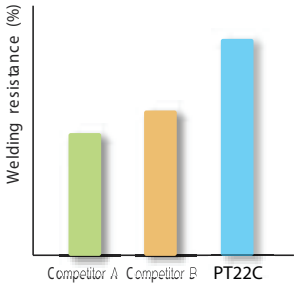
- Improved adhesion and surface finish
  ••• Stable machining and increased welding resistance and wear resistance

Increased wear resistance, welding resistance, and chipping resistance

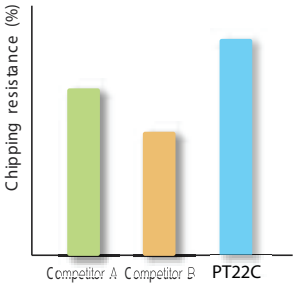
• Wear resistance



• Welding resistance

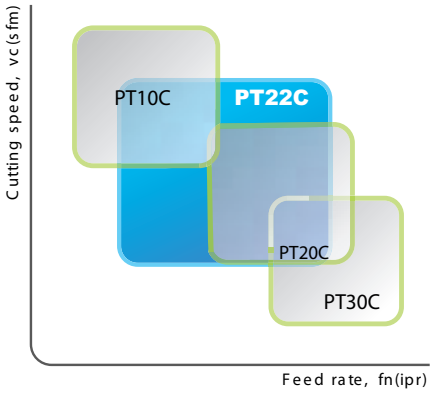


• Chipping resistance



Application and Features

• Application



• 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	
			PT22C	918(590~ 1,246)	P20	PT22C
			PT20C	820(492~ 1,148)	P20	PT20C
		Interrupted cutting	PT30C	656(492~ 820)	P30	PT30C
			PTM50C	623(328~ 754)	P35	PTM50C
					P40	

CVD Coated Grades

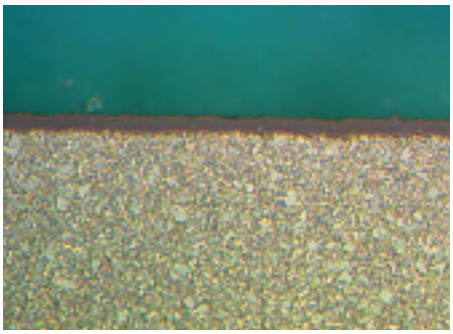
CVD Coating Grades

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 Al2O3 film ·MT-TiCN + Al2O3 + 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 + Al2O3 + TiN	Turning
PT22C	P15 - P30	·For medium cutting of steel ·Excellent combination of tough substrate and coating having superior chipping resistance provide stable and consistent cutting performance. ·MT-TiCN + Al2O3 + TiN	Turning
PT30C	P25 - P35 M15 - M25	·For medium to roughing and intermittent cutting of steel and stainless steel. ·Toughest substrate provide wide available application range. ·MT-TiCN + Al2O3 + TiN	Turning
PT40C	P25 - P40 M15 - M25	·For medium to roughing and intermittent cutting of steel and stainless steel. ·Toughest substrate provide wide available application range. ·MT-TiCN + Al2O3 + TiN	Turning
KT05C	K05 - K15	·For high speed cutting of cast iron. ·High hardness substrate and thick CVD Al2O3 coating provide excellent wear resistance. ·MT-TiCN + Al2O3 + 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 Al2O3 coating provide stable and consistent cutting performance. ·MT-TiCN + Al2O3 + 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 + Al2O3 + 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 Al2O3 film ·MT-TiCN + Al2O3 + 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 + Al2O3 + 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 + Al2O3 + TiN	Milling
KM20C	K15 - K25	·For general milling of cast iron ·Tough substrate and fine grain size Al2O3 coating provide wide available cutting range for both dry and wet cutting. ·MT-TiCN + Al2O3	Milling

PVD Coated Grades

Special Features

1) PVD coating technique has inherent advantage such as superior chipping resistance of coated film itself and maintain 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 work piece.



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

Work-piece	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

Work-piece	Cutting Condition	1st choice	Cutting Speed (sfm)	ISO	Application Range
Steel	TiAlN	PM10P	650(500 ~ 825)	P10	
				P20	PM10P
		PM30P	400(325 ~ 500)	P30	PM30P
		PM40P		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 Coated Grades

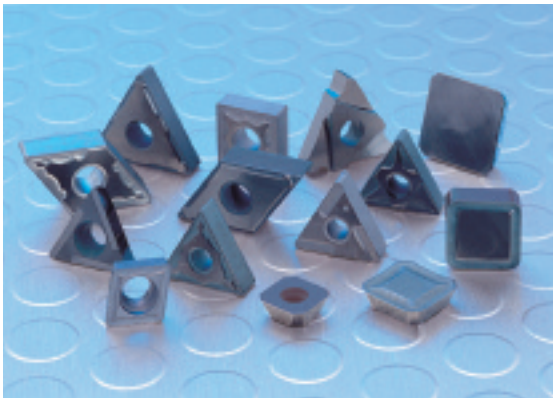
PVD Coating Grades

Grade	ISO	Special Features	Use
PM10P	P05 - P15	·For milling of steel ·Tough exclusive substrate with Nano-TiAlN coating provide 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 provide 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 provide 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 provide 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 have superior property of prevent build-up-edge, thus extend and having consistent tool life. ·TiAlN coating	Turning Threading
MM30P	M35 - M45	·For medium to rough milling of Stainless Steel ·Toughest sub-micron substrate provide 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

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

Work-piece	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

Work-piece	Cutting Condition	1st choice	Cutting Speed (sfm)	ISO	Application Range
Steel	Finishing	PM20S	750(500 - 975)	P01	
	Light to medium cutting	PM30S	650(500 - 825)	P10	PM20S
				P20	PM30S

Cermet Grades

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 have 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

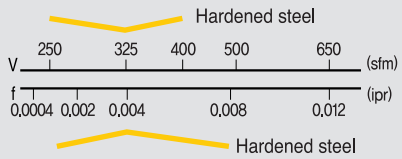
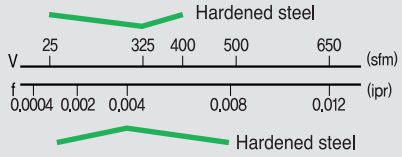
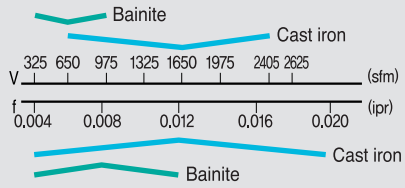
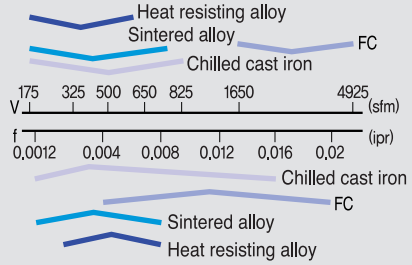
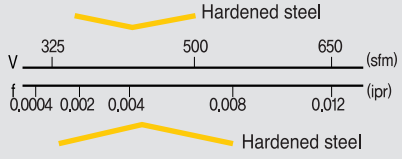
C.B.N. Grades

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	Work piece
	**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** HB : 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

C.B.N. Grades

Cutting condition

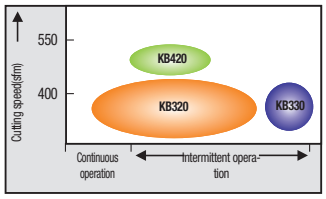
Hardened Steel

● Grade

Grade	Application range	Hardness	TRS (kgm²)
KB320	Comprehensive grade for hardened steel	>HRC45	100 ~ 110
KB330	Severe intermittent cutting	>HRC45	110 ~ 120
KB420	For difficult intermittent operations	>HRC45	110 ~ 120

TRS = Transverse ruptural strength

● Application



Cast Iron

● Grade

Grade	Application range	Hardness	TRS (kgm²)
KB350	Cast Iron, Ductile Cast Iron	180~230HB	100 ~ 110
KB360	Milling of cast iron	180~230HB	95 ~ 110

TRS = Transverse ruptural strength

● Application range

Work piece	Hardness(HB)	Part name	Cutting speed(sfm) 325 650 1325 1975 2625
GC250 (Ferrite & Pearlite)	180	Oil Pump Housing Brake Disc	KB360 / KB350
GC300 Pearlite		Engine Block Scroll Compressor	
Alloy Iron Pearlite	250	Brake Drum Liner	
GCD400 Ferrite & Pearlite	150	Differential Case	KB350
		Brake body	
GCD700 Bainite	300	Knuckle	

Sintered Alloy

● Grade

Grade	Application range	Hardness	TRS (kgm²)
KB360	Machining of sintered alloy, roll, heat resistant alloy	180~230HB	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 work piece	low Hv300 high	low Hv300 high

Heat Resistant Alloy

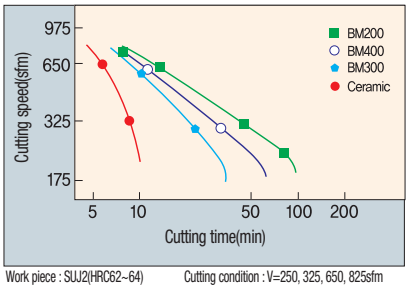
● Grade

Grade	Application range	Hardness	TRS (kgm²)
KB360	Machining of sintered alloy, roll, heat resistant alloy	180~230HB	95 ~ 110

TRS = Transverse ruptural strength

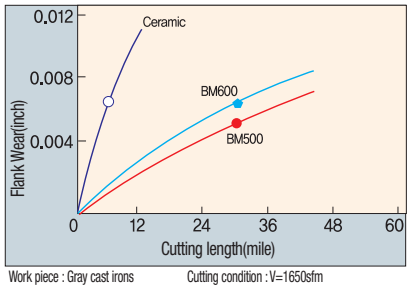
Cutting test examples

● Heat treated steels



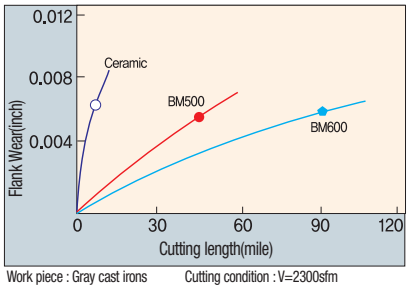
Work piece : SUJ2(HRC62~64)
Insert : SNGN 432
Cutting condition : V=250, 325, 650, 825sfm f=0.004ipr d=0.008inch
Cutting condition : BM200,BM300,BM400

● Gray cast iron(No45B)



Work piece : Gray cast irons (No35B)
Cutting condition : V=1650sfm f=0.012ipr d=0.005inch, Wet cut

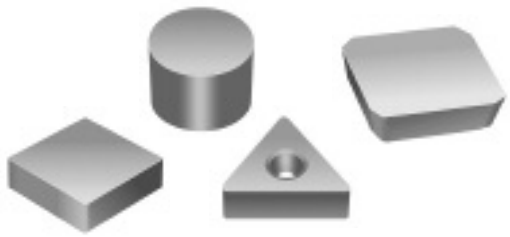
● Gray cast iron(No35B)



Work piece : Gray cast irons (No35B)
Cutting condition : V=2300sfm f=0.01ipr d=0.01inch, Wet cut

Ceramic Grades

SOWA Ceramic Grades



SOWA Grade	ISO	Special Features	Use
GP100	P01 - P10 K01 - K10	GP100 offers excellent shock resistance and wear resistance. It is a general machining grade for hardened steel and difficult cutting. It can be used for finish and medium cutting for soft cast iron without interruption.	Turning
GP300	P01 - P15 K01 - K15	GP300 was developed for extremely hardened steel and high hardness alloy steel. It is a Al-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	Work-piece		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	.008~.02 .012~.02	.118~.236 .004~.020
		•Chilled Cast Iron	Rough Finish	90~300 150~600	.004~.008 .002~.006	.020~.059 .004~.020
GP300	Steel	•Carbon Steel •Alloy Steel •Bearing Steel	Rough Finish	450~1,200 600~2,400	.008~.02 .002~.008	.079~.197 .004~.020
		•Hard Steel (HRC 45 >)	Rough Finish	60~300 120~600	.004~.008 .002~.02	.020~.059 .004~.020

Milling

Grade	Work-piece	Cutting Style	Speed (sfm)	Feed (in/rev)	Depth (D.O.C) (in)
S300	•Gray Cast Iron	Rough Finish	300~3,600 450~4,500	.012~.020 .012~.028	.118~.236 .004~.020
S400	•Ductile Cast Iron •Alloy Steel	Rough Medium Finish	270~1,500 300~2,100 600~4,500	.004~.012 .004~.016 .004~.020	<0.197 <0.118 <0.118

Ceramic Grades

Guide of Grade Selection

Turning

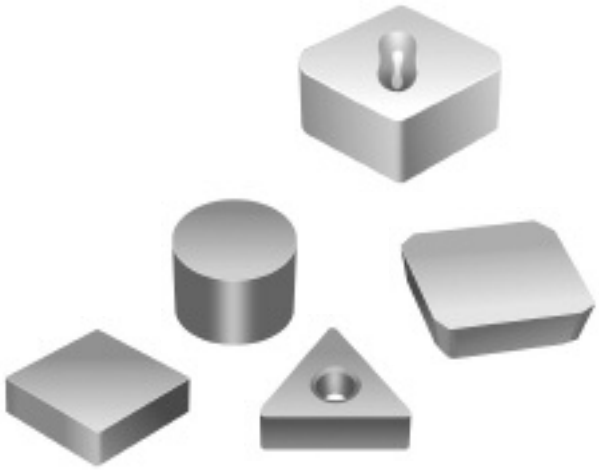
ISO	Application Range	ISO	Application Range
P01		K01	
P10	GP100 GP300	K10	GP100 GP300
P20		K20	

Milling

ISO	Application Range	ISO	Application Range
P01		K01	
P10	S300 S400	K10	S300 S400
P20		K20	

Choice of Ceramic

Work-piece \ 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 Alloy Steel	○	○



Uncoated Carbide Grades

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 work piece.
3. They have excellent toughness in general.



● **Special Features**

ISO	Composition	Characteristics	Work piece
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/mm²)	Young's modulus (x103kg/mm²)	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

Uncoated Carbide Grades

Special Features

For Turning

Work Piece	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	

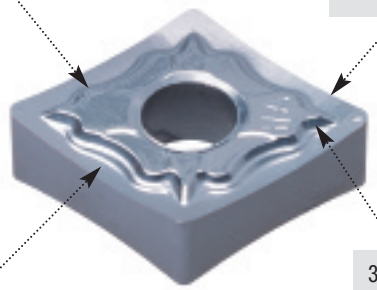
For Milling

Work Piece	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
   - Prevent build-up-edge
   - Reduce cutting force

2. Reinforce Cutting Edge Strength
   - Increase main cutting edge toughness
   - Induce smooth chip flow at shallow depth of cut
   - Prevent chipping



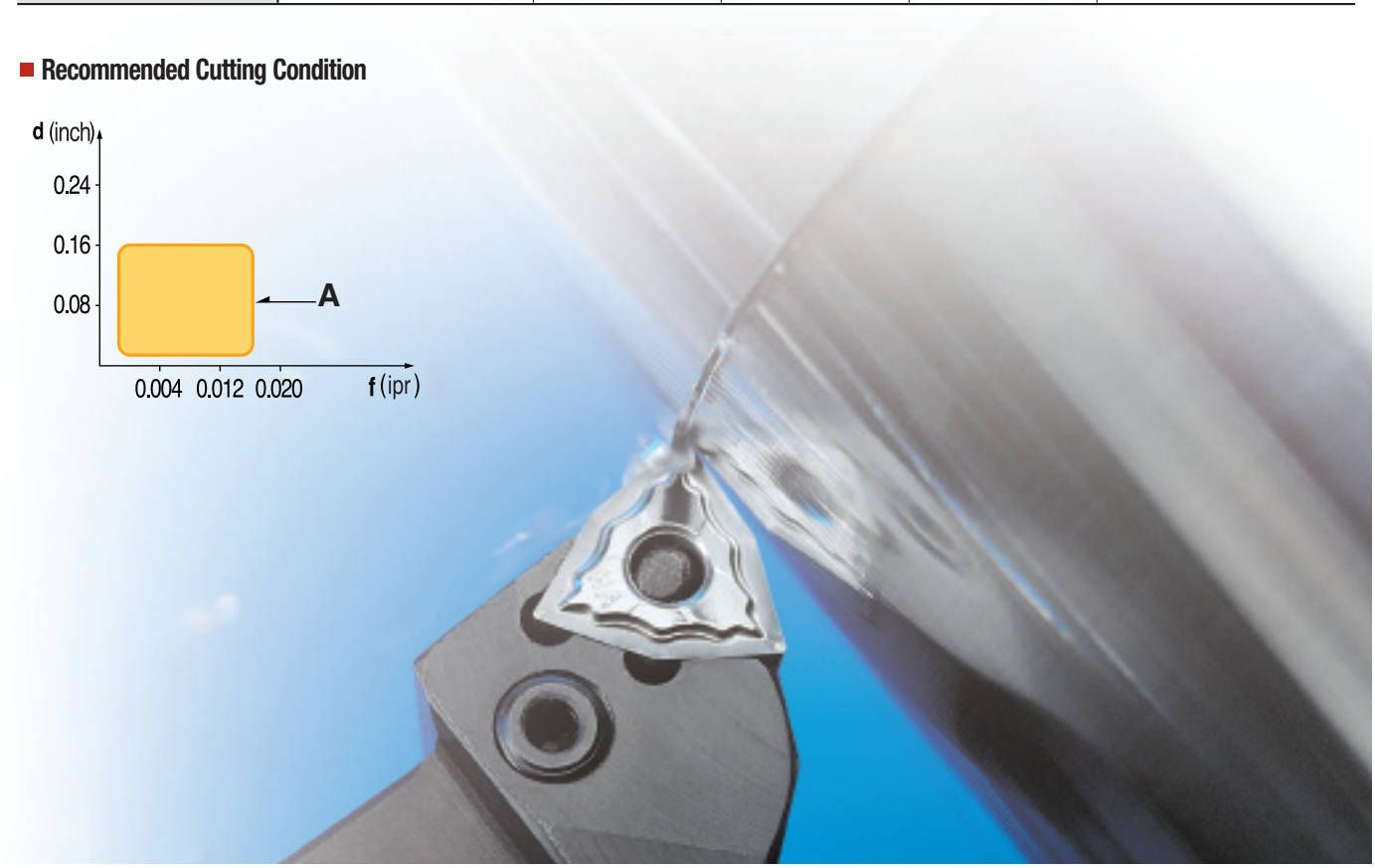
3. 2 Step Chip Breaker
   - Induce smooth chip curl.
   - Reduce cutting force at high speed, high feed machining

4. Curved Cutting Edge
   - Sharp cutting edge provide effective shallow cutting
   - Excellent surface finish of work piece and smooth cut.

Cutting Condition

Work piece	Hardness	Recommended Grade	Recommended Cutting Condition		
			Speed(sfm)	Feed(ipr)	Depth of cut(inch)
Aluminum and Aluminum alloy	20°~125HB	KT10U KTM10U	650-2650	0.004-0.016	0.020-0.040

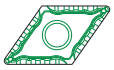
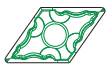
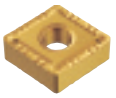
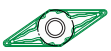
Recommended Cutting Condition



Chipbreaker Recomendation As Per Workpiece

1. Work-Piece Material : 1010, 1015, 12L14, 5015, 1112, etc.
Soft steel
Hardness(Hardness) : under HB180 (18 HRc)

■ Chipbreaker, Grade, Cutting condition Recommendation

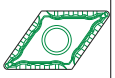
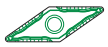
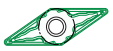
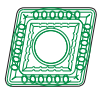
Work piece	Chipbreaker & Grade Selection				Insert shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80° 80°	80° 80°	55° 55°	60° 60°	35° 35°	90° 90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.008 ~ 0.020 ~ 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 PT22C PT20S	1025 957 875 875	CNMG  P. E10	WNMG  P. E34	DNMG  P. E15	TNMG  P. E27	VNMG  P. E32	SNMG  P. E21
0.03 ~ 0.08 ~ 0.14 Medium-Finishing	A 	0.004 ~ 0.010 ~ 0.016	PT22C PT30C	1000 750	CNMG  P. E10	WNMG  P. E34	DNMG  P. E15	TNMG  P. E27		SNMG  P. E21
0.031~ 0.059 ~ 0.138 Medium-Finishing	F3 	0.004 ~ 0.008 ~ 0.014	PT10C PT30C PT20S	975 950 825 825	CNMG  P. E10		DNMG  P. E16	TNMG  P. E27		
0.059 ~ 0.098 ~ 0.197 Medium cutting, Medium-Roughing	M 	0.006 ~ 0.01 ~ 0.02	PT10C PT22C PT30C PT20S	875 825 750 700 725	CNMG  P. E11	WNMG  P. E35	DNMG  P. E16	TNMG  P. E28	VNMG  P. E32	SNMG  P. E22
0.100 ~ 0.160 ~ 0.280 Roughing	R2 	0.01 ~ 0.018 ~ 0.026	PT10C PT22C PT30C	500 475 425 325	CNMG  P. E12	WNMG  P. E36		TNMG  P. E29		SNMG  P. E23
0.197 ~ 0.280 ~ 0.440 Heavy duty	R3 	0.02 ~ 0.04 ~ 0.044	PT22C PT30C	500 425 325	CNMM  P. E13					SNMM  P. E23
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 PT22C	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 PT22C PT20S	850 800 750 750	CCMT  P. E8		DCMT  P. E14	TCMT  P. E25		SCMT  P. E20
0.039~ 0.079 ~ 0.118 Medium cutting	F3P 	0.004 ~ 0.01 ~ 0.014	PT10C PT22C	825 750 725	CCMT  P. E9		DCMT  P. E14	TCMT  P. E26		SCMT  P. E20

: 1st Recommended cutting condition

Chipbreaker Recomendation As Per Workpiece

2. Work-Piece Material : 1045,1050,4130, 4140 etc.
General steel
Hardness : 180~260HB (up to 26 HRc)

■ **Chipbreaker, Grade, Cutting condition Recommendation**

Work piece	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 PT22C PT20S	725 650 625 600	CNMG  P. E10	WNMG  P. E34	DNMG  P. E15	TNMG  P. E27	VNMG  P. E32	SNMG  P. E21
1.031 ~ 0.059 ~ 0.138 Medium-Finishing	F3 	0.004 ~ 0.008 ~ 0.014	PT10C PT22C PT30C PT20S	700 950 600 525 550	CNMG  P. E10		DNMG  P. E16	TNMG  P. E27		
0.059 ~ 0.098 ~ 0.197 General Medium	M 	0.004 ~ 0.010 ~ 0.016	PT10C PT22C PT30C PT20S	650 600 550 500 525	CNMG  P. E11	WNMG  P. E35	DNMG  P. E16	TNMG  P. E28	VNMG  P. E32	SNMG  P. E22
0.098 ~ 0.138 ~ 0.280 Roughing	R2 	0.01 ~ 0.018 ~ 0.026	PT10C PT22C PT30C	550 525 500 425	CNMG  P. E12	WNMG  P. E36		TNMG  P. E29		SNMG  P. E23
0.160~ 0.280 ~ 0.520 Heavy duty	R3 	0.016 ~ 0.028 ~ 0.044	PT10C PT22C PT30C	425 400 375 300	CNMM  P. E13					SNMM  P. E23
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 PT22C	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 PT22C PT30C PT20S	700 625 600 500 550	CCMT  P. E8		DCMT  P. E14	TCMT  P. E25		SCMT  P. E20
0.039 ~ 0.079 ~ 0.118 Medium-Roughing	F3P 	0.004 ~ 0.01 ~ 0.014	PT10C PT22C PT30C	650 600 550 500	CCMT  P. E9		DCMT  P. E14	TCMT  P. E26		SCMT  P. E20

: 1st Recommended cutting condition

Chipbreaker Recomendation As Per Workpiece

3. Work-Piece Material : 3310, 8640, 4340.
Hardened steels
Hardness : 260~350HB (26-35 HRc)

■ **Chipbreaker, Grade, Cutting condition Recommendation**

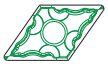
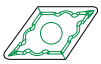
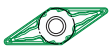
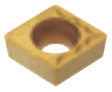
Work piece	Chipbreaker & Grade Selection				Insert shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80° 80°	80° 80°	55° 55°	60° 60°	35° 35°	90° 90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.020 ~ 0.039 ~ 0.079 Finishing	F2	0.003 ~ 0.006 ~ 0.012	PT10C PT22C PT20S	425 400 375 375	CNMG P. E10	WNMG P. E34	DNMG P. E15	TNMG P. E27	VNMG P. E32	SNMG P. E21
0.031~ 0.059 ~ 0.138 Medium-Finishing	F3	0.004 ~ 0.008 ~ 0.014	PT22C PT30C PT20S	500 425 375 325	CNMG P. E10		DNMG P. E16	TNMG P. E27		
0.079 ~ 0.118 ~ 0.197 General Medium	M	0.006 ~ 0.01 ~ 0.02	PT10C PT22C PT20S	425 400 325 300	CNMG P. E11	WNMG P. E35	DNMG P. E16	TNMG P. E28	VNMG P. E32	SNMG P. E22
0.1 ~ 0.14 ~ 0.24 Roughing	R2	0.01 ~ 0.014 ~ 0.024	PT10C PT22C PT30C	325 300 300 275	CNMG P. E12	WNMG P. E36		TNMG P. E29		SNMG P. E23
0.197 ~ 0.24 ~ 0.4 Heavy duty	R3	0.02 ~ 0.024 ~ 0.04	PT10C PT22C PT30C	300 275 275 225	CNMM P. E13					SNMM P. E23
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 PT22C	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 PT22C PT20S	400 375 375 325	CCMT P. E8		DCMT P. E14	TCMT P. E25		SCMT P. E20
0.020 ~ 0.059 ~ 0.098 Medium-Roughing	F3P	0.004 ~ 0.01 ~ 0.014	PT10C PT22C PT30C	375 325 325 300	CCMT P. E9		DCMT P. E14	TCMT P. E26		SCMT P. E20

: 1st Recommended cutting condition

Chipbreaker Recomendation As Per Workpiece

4. Work-Piece Material : 430,444, 416, 432, etc.
Stainless steels
Hardness : 180~260HB (up to 26 HRc)

■ Chipbreaker, Grade, Cutting condition Recommendation

Work piece	Chipbreaker & Grade Selection				Insert shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80° 80°	80° 80°	55° 55°	60° 60°	35° 35°	90° 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. E34	DNMG  P. E15	TNMG  P. E27		SNMG  P. E21
0.04 ~ 0.1 ~ 0.16 Medium-Cutting	SM 	0.004 ~ 0.01 ~ 0.016	MT20C MT30P	600 525	CNMG  P. E13	WNMG  P. E36	DNMG  P. E17	TNMG  P. E30		SNMG  P. E23
0.031 ~ 0.079 ~ 0.157 Medium-Finishing	MM 	0.003 ~ 0.01 ~ 0.016	MT20C MT30P	450 560	CNMG  P. E11	WNMG  P. E35	DNMG  P. E17	TNMG  P. E29		
0.039 ~ 0.079 ~ 0.157 General Medium	M 	0.004 ~ 0.010 ~ 0.016	MT20C MT30P	525 400	CNMG  P. E11	WNMG  P. E35	DNMG  P. E16	TNMG  P. E28	VNMG  P. E32	SNMG  P. E22
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	525 450	CCMT  P. E8		DCMT  P. E14	TCMT  P. E25		SCMT  P. E20
0.04 ~ 0.06 ~ 0.012 Medium-Roughing	F3P 	0.006 ~ 0.01 ~ 0.014	MT20C MT30P	500 525	CCMT  P. E9		DCMT  P. E14	TCMT  P. E26		SCMT  P. E20

: 1st Recommended cutting condition

Chipbreaker Recomendation As Per Workpiece

5. Work-Piece Material : 304, 316, 202, etc.
Austenitic Stainless steel
Hardness : 260~350HB (26-35 HRc)

■ **Chipbreaker, Grade, Cutting condition Recommendation**

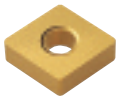
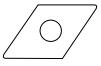
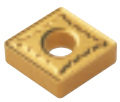
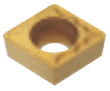
Work piece	Chipbreaker & Grade Selection				Insert shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80°	80°	55°	60°	35°	90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	[NEG] CN□G	[NEG] WN□G	[NEG] DN□G	[NEG] TN□G	[NEG] VN□G	[NEG] SN□G
0.02 ~ 0.060 ~ 0.100 Medium-Finishing	A	0.0012 ~ 0.006 ~ 0.012	MT20C MT30P	530 450	CNMG P. E10	WNMG P. E34	DNMG P. E15	TNMG P. E27		SNMG P. E21
0.04 ~ 0.1 ~ 0.16 Medium-Cutting	SM	0.004 ~ 0.01 ~ 0.016	MT20C MT30P	500 425	CNMG P. E13	WNMG P. E36	DNMG P. E17	TNMG P. E30		SNMG P. E23
0.031 ~ 0.08 ~ 0.16 Medium-Finishing	MM	0.004 ~ 0.008 ~ 0.016	MT20C MT30P	450 560	CNMG P. E11	WNMG P. E35	DNMG P. E17	TNMG P. E29		
0.04 ~ 0.08 ~ 0.16 General Medium	M	0.004 ~ 0.008 ~ 0.016	MT20C MT30P	425 400	CNMG P. E11	WNMG P. E35	DNMG P. E16	TNMG P. E28	VNMG P. E32	SNMG P. E22
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. E8		DCMT P. E14	TCMT P. E25		SCMT P. E20
0.04 ~ 0.06 ~ 0.012 Medium-Roughing	F3P	0.004 ~ 0.008 ~ 0.012	MT20C MT30P	425 350	CCMT P. E9		DCMT P. E14	TCMT P. E26		SCMT P. E20

: 1st Recommended cutting condition

Chipbreaker Recomendation As Per Workpiece

6. Work-Piece Material : G1800, G2500, G3000, G3500, M3210, M4504 etc.
Gray Cast iron, Ductile Cast iron
Hardness : 135~185HB (up to 18 HRc)
Tensile Strength : Under 450N/ß±

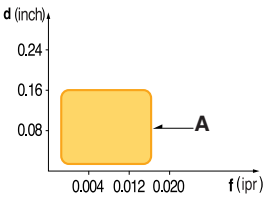
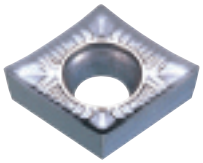
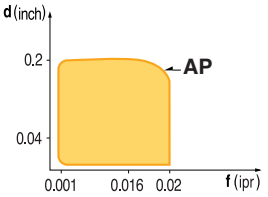
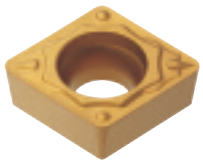
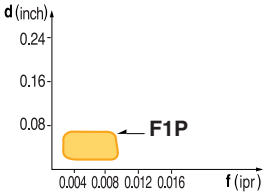
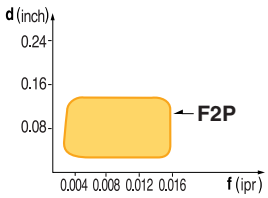
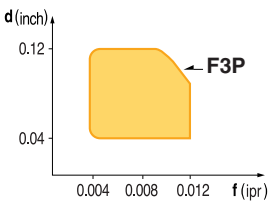
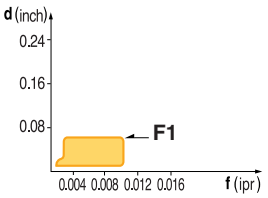
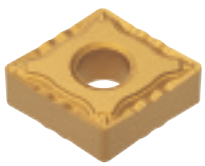
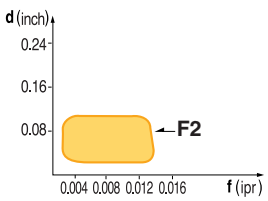
■ Chipbreaker, Grade, Cutting condition Recommendation

Work piece	Chipbreaker & Grade Selection				Insert shape					
	Chipbreaker & Feed		Grade & Cutting Speed		80° 80°	80° 80°	55° 55°	60° 60°	35° 35°	90° 90°
Depth of Cut (inch)	Chipbreaker	Feed (ipr)	Grade	Cutting Speed (sfm)	CNMG CNGG	WNMG WNGG	DNMG DNGG	TNMG TNGG	VNMG VNGG	SNMG SNGG
0.005 ~ 0.015 ~0.04 Finishing		0.002 ~ 0.004 ~ 0.02	KB350 KT05C	650 ~ 1650 ~ 2300 975	CNMA  P. E9	WNMA  P. E33	DNMA  P. E15	TNMA  P. E26		SNMA  P. E21
0.02 ~ 0.08 ~ 0.14 Medium-Finishing	G 	0.004 ~ 0.008 ~ 0.012	KT05C	425~ 825 ~1150	CNMG  P. E11		DNMG  P. E16	TNMG  P. E28		SNMG  P. E22
0.04~ 0.1 ~ 0.16 General Medium	M 	0.006 ~ 0.012 ~ 0.02	KT05C KT10C	500 ~ 825 ~1150	CNMG  P. E11	WNMG  P. E35	DNMG  P. E16	TNMG  P. E28	VNMG  P. E32	SNMG  P. E22
0.004 ~ 0.12 ~ 0.18 Medium-Roughing	R1 	0.008 ~ 0.014 ~ 0.02	KT05C KT10C	825 725	CNMG  P. E12	WNMG  P. E35	DNMG  P. E17	TNMG  P. E29		SNMG  P. E22
0.1~ 0.14 ~0.24 Roughing	R2 	0.01 ~ 0.014 ~ 0.024	PT10C PT22C PT30C	325 300 300 275	CNMG  P. E12	WNMG  P. E36		TNMG  P. E29		SNMG  P. E23
0.16 ~ 0.26 ~0.4 Heavy duty	R3 	0.012 ~ 0.0028 ~ 1.043	KT10C	500	CNMM  P. E13					SNMM  P. E23
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

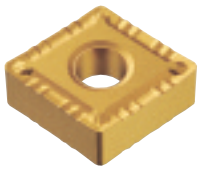
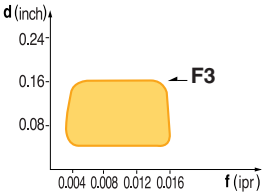
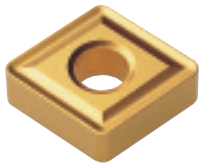
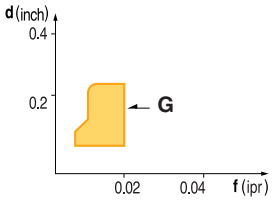
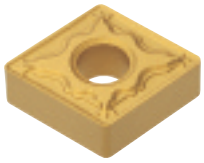
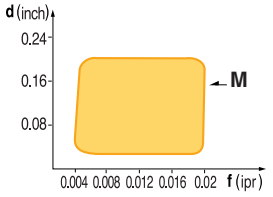
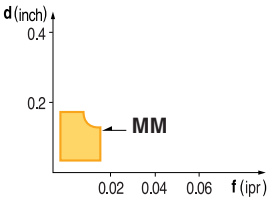
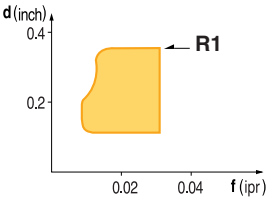
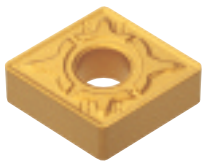
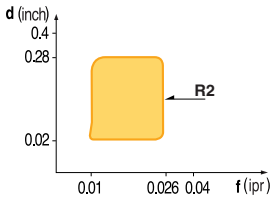
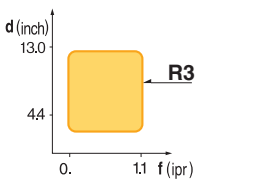
TURNING CHIPBREAKERS

Shape	Application Range	Special Feature
A (Neg) 		**For Light-alloy, Stainless-steel machining.** ・Sharp cutting edge generate 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 work piece 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 a machining need fine surface finish and a machining generate low cutting force due to sharp cutting edge design. ・Specially designed chip breaker ensure 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

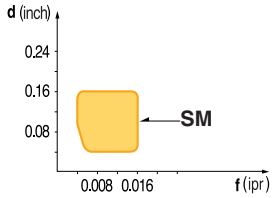
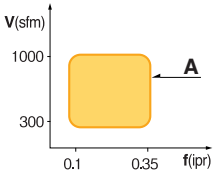
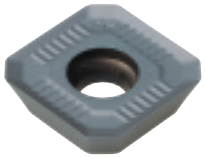
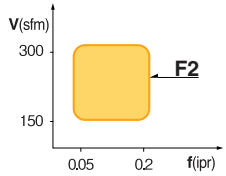
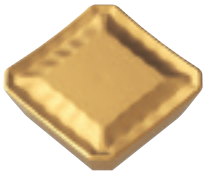
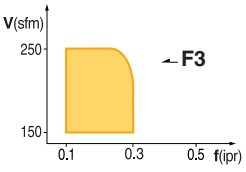
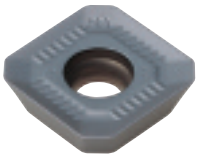
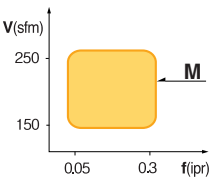
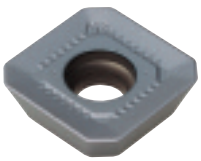
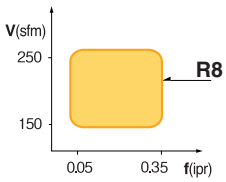
Turning Chipbreakers

TURNING CHIPBREAKERS

Shape	Application Range	Special Feature
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

Turning & Milling Chipbreakers

	Shape	Application Range	Special Feature
	SM (Neg) 		■ **For Medium cutting of Stainless-steel** ・Exclusive design for stainless steel cutting provide longer tool life ・Wear resistance have 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, provide 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 provide 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 design to cover general cutting condition provide wide available application range. ・Ground type and as sintered type is available. ■ **Recommended Cutting Conditions** d = 0.04 ~ 0.2inch f = 0.002 ~ 0.012ipr
	R8 (Pos) 		■ **For Roughing of Milling** ・Strongest cutting edge strength provide 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

The Comparison of Chipbreaker for Turning

APPLICATION			SOWA	KORLOY	SUMITOMO	SANDVIK	KENNAMETAL	KYOCERA	MITSUBISHI	ISCAR	TOSHIBA	SECO	WALTER	DIJET
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	⁰⁄	01 PF	F1	PF4 PF5	FT
		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	
		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	Al		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	PT20U PM20U PTM30U	PT10C PT20C PT30C	PT10S PT20S PT30S	ST05 ST10 ST15 ST20 MA2 ST30A ST30N ST40	NC310 NC3015 NC3020 NC330	CN100 CT10 CC115★ CN200 CN20	ST10P ST20E A30 ST40E	AC700G AC900G AC2000 New AC2000 AC3000	T110A T2000Z★ T1200A T3000Z★ T130A CN8000	PW30	CR7015 CR7025 CA5025 CA5045	TN30 PV30★ PV60★ TN60 PV7020★ TN6020 TN90	IC70 IC50M IC54	IC507 IC9015 IC9025 IC3028★	IC20N IC520N★ IC30N★ IC40T IC530N★	S1P SMA SM30 S30T S6	GC4005 GC4015 GC4025 GC4035	CT5005 CT5015 CT525 GC1525	TTX TTM TTR	TP100 TP1000 TP200 TP2000 TP300	CM C15M	K45 KM K420	KC9010 KC9125 KC9025 KC8050 KC935 KC9040 KC9045	HT2 K125 HTX PS5 KZ205 KT175	TX10S TX20 TX30 TX40	T9005 T9015 T9025 T9035 TD930	NS520 GT530★ NS530 NS540 N308	UE6005 STi20T UTi20T	NX1010 STi10T UE6020 UC6025 UE6035	SRN5 UC6010 NX2525 AP25N★ UP35N★ NX335	GM8015 EX35 EX40 EX45	CH350 WS20B GM8020 GM8035	S1F CH530 CH550 CH570	SV305 CZ25★ VC5 VC56	VC6 SV325 SV330	SV310	WAP10 VC83 WAP20 WAP30		
M		MT20C PT30C MT30P	PT20S	U10 U20 U40	NC9020 NC330 PC9030★	CN200	U10E U2 A30 A40	AC304 AC3000	T1200A		CA6015 CA5045 PR905★ PR915★ PR930★	PV60★ TN60 TN6020 TN90 PV90★	IC08 IC28	IC9025 IC3028★		H13A H10F	GC2015 GC2025 GC2035	CT525 GC1525	AT10 AT15 TTR	TP400 CP50★		K313 K68 K420	KC9150 KC9215 KC5010★ KC9245 KC5025★	K125 PS5 KT175 HT2 KZ205	TU10 TU20 TU40	T6020 T6030	NS520 NS530 NS540	UTi20T	US7020 UP20M★ US735	AP25N★ NX2525	WAM10B	GM25 US735		VC27 EX35	GX30		WAM20 VC28		
K	KT10U KTM10U	KT05C KT10C KT10C		H02 H01 H05 H10 G10	NC305K NC6010 NC315K NC330		H1 G10E	AC300G EH510★ AC500G EH520Z★ AC700G	T110A T1200A	KW10H	CA4010 CR7015 PR610★	TN30 PV30★	IC4 IC20 IC28	IC9015 IC428 IC4050		H1P H10F H13A	GC3005 GC3205 GC3210 GC3015 GC3215 GC3025	CT515	THM THR	TX100 TX150		K313 K68 K1	KC9315 KC9325 KC7310★ KC7315★	HTX	TH03 TH10 KS20	T5010 T1015 T5020	NS520	HTi05T HTi10T HT20T UTi20T	UC5005 GP10H★ UC5015 UP10H★ UC6010	NX1010 AP25N★ NX2525	WH05 W10 WH20	GM3005 GM8015		VC3 VC2 VC1	SV405 SV415 SV515		WTA13 WTA33		

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 PM30P PM30P PM30C	PM20S PM30S		NCM325 PC230★ PC3530★ NCM335	CN100 CN20 CC125★ CN30		AC230 ACZ330★	T12A T1200A T250A		PR630★ PR730★ PR830★	TN60 TN100M TC60M		IC520M IC635 IC950★ IC908★ IC1008★	IC30N		GC1015★ GC1025★ GC4020 GC4030 GC1120★ GC4040			T20M T25M CP200★ T200M CP300★ T350M			KC725M★ KC792M KC935M	KT175 HT2 HT5 KZ205 KT195M		T325 AH330★ T3030 AH740★	AT520★ NS540 AT530★ GT530★		F7030 GP20M★ AP20M★	V45N NX2525 NX55 NX4545		CY150★ CY250★	CH550 CH570		SV935★ SM245			WQM15 WTL41 WQM25 WTL71 WQM35		
M	PM30C MM30P	PM30S		PC130★ NCM335 PC9530★	CN30 CN300		EH510Z★ EH520Z★ ACZ350	T250A		PR660★ PR730★ PR830★	TN100M TC60M		IC908★ IC328★ IC928★			GC1005★ GC2030 GC2040	CT520 CT530		CP200★ CP50★			KC9240 KC705M★	KT175 KZ205 HT5 KT195M HT7		T325 AH140★	AT520★ AT530★ GT530★		VP15TF★ VP20RT★			HC844★						WQM25		
K	KM20C			NCM310K PC205K★ NCM320K PC215K★			AC211 ACZ310★			PR510★	TN60		IC4050 IC907★ IC910★			GC3020 GC1020★ GC3040			T15M			KC915M KC992M KC709M★	HT5		T1015 T1020 AH110★ AH120★	AT520★ AT530★ GT530★		F5010 AP10H★			CY10H★			V01 VN8			WTA11 WTA21		

* Coated★ : PVD
Cermet★ : cermet+PVD

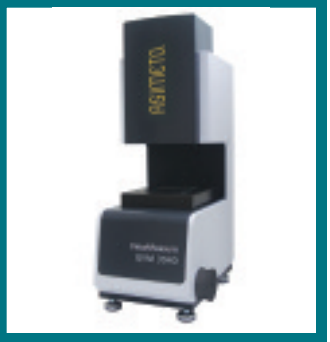












PRECISION TOOLING

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SOWA
METALWORKING SOLUTIONS

www.sowatool.com

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.

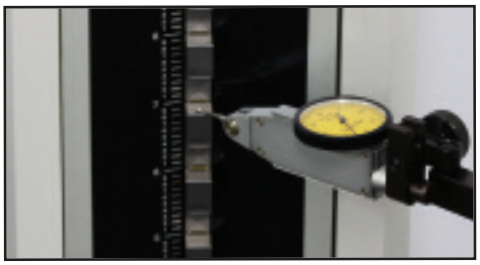
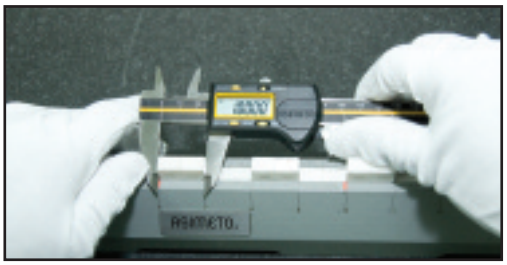
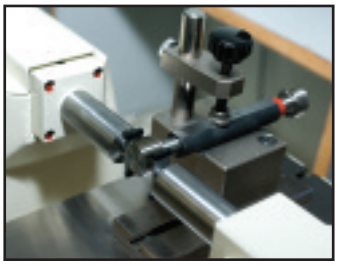
The quality and measuring accuracy of all Asimeto precision tools is guaranteed by the Asimeto Calibration Laboratory. All tools are inspected for conformance to the Asimeto design specifications and are then processed through the Asimeto calibration laboratory. Only the latest state of the art calibration 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.



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ASIMETO

Digital Outside Micrometers w/o SPC Output

Features
- 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



Inch Range	Inch Resolution	Inch Accuracy	Metric Range	Metric Resolution	Metric Accuracy	Thimble Type	Code No.	Price $
0-1	.00005"	.0001"	0-25	.001mm	.002mm	Ratchet	7105015	**217.70**
0-1	.00005"	.0001"	0-25	.001mm	.002mm	Ratchet	7105010*	**243.20**
1-2	.00005"	.0002"	25-50	.001mm	.002mm	Ratchet	7105025	**253.10**
2-3	.00005"	.0002"	50-75	.001mm	.003mm	Ratchet	7105035	**280.40**
3-4	.00005"	.0002"	75-100	.001mm	.003mm	Ratchet	7105045	**308.80**
4-5	.00005"	.0002"	100-125	.001mm	.003mm	Ratchet	7105055	**352.90**
5-6	.00005"	.0002"	125-150	.001mm	.003mm	Ratchet	7105065	**390.60**
6-7	.00005"	.0002"	150-175	.001mm	.004mm	Ratchet	7105071	**431.80**
7-8	.00005"	.0002'	175-200	.001mm	.004mm	Ratchet	7105081	**471.90**
8-9	.00005"	.0002"	200-225	.001mm	.004mm	Ratchet	7105091	**520.60**
9-10	.00005"	.0003"	225-250	.001mm	.004mm	Ratchet	7105101	**568.80**
10-11	.00005"	.0003"	250-275	.001mm	.005mm	Ratchet	7105111	**625.70**
11-12	.00005"	.0003"	275-300	.001mm	.005mm	Ratchet	7105121	**682.50**
0-1	.00005"	.0001"	0-25	.001mm	.002mm	Friction	7106015	**243.20**
1-2	.00005"	.0002"	25-50	.001mm	.002mm	Friction	7106025	**268.20**
2-3	.00005"	.0002"	50-75	.001mm	.003mm	Friction	7106035	**292.50**
3-4	.00005"	.0002"	75-100	.001mm	.003mm	Friction	7106045	**316.90**
Sets								
0-3	.00005"		0-75	.001mm		Ratchet	7105637	**801.50**
0-4	.00005"		0-100	.001mm		Ratchet	7105647	**1,115.50**
0-6	.00005"		0-150	.001mm		Ratchet	7105667	**1,854.20**

* Metric thimble

Digital Outside Micrometers with SPC Output

Features
- 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



Inch Range	Inch Resolution	Inch Accuracy	Metric Range	Metric Resolution	Metric Accuracy	Thimble Type	Code No.	Price $
0-1	.00005"	.0001"	0-25	.001mm	.002mm	Ratchet	7105013	**311.10**
1-2	.00005"	.0002"	25-50	.001mm	.002mm	Ratchet	7105023	**336.10**
2-3	.00005"	.0002"	50-75	.001mm	.003mm	Ratchet	7105033	**360.40**
3-4	.00005"	.0002"	75-100	.001mm	.003mm	Ratchet	7105043	**384.80**
4-5	.00005"	.0002"	100-125	.001mm	.003mm	Ratchet	7105053	**426.60**
5-6	.00005"	.0002"	125-150	.001mm	.003mm	Ratchet	7105063	**459.10**
6-7	.00005"	.0002"	150-175	.001mm	.004mm	Ratchet	7105073	**499.70**
7-8	.00005"	.0002'	175-200	.001mm	.004mm	Ratchet	7105083	**539.80**
8-9	.00005"	.0002"	200-225	.001mm	.004mm	Ratchet	7105093	**588.50**
9-10	.00005"	.0003"	225-250	.001mm	.004mm	Ratchet	7105103	**636.70**
10-11	.00005"	.0003"	250-275	.001mm	.005mm	Ratchet	7105113	**693.60**
11-12	.00005"	.0003"	275-300	.001mm	.005mm	Ratchet	7105123	**750.40**
0-1	.00005"	.0001"	0-25	.001mm	.002mm	Friction	7106017	**311.10**
1-2	.00005"	.0002"	25-50	.001mm	.002mm	Friction	7106027	**336.10**
2-3	.00005"	.0002"	50-75	.001mm	.003mm	Friction	7106037	**360.40**
3-4	.00005"	.0002"	75-100	.001mm	.003mm	Friction	7106047	**384.80**
Sets								
0-3	.00005"		0-75	.001mm		Ratchet	7105639	**1,029.00**
0-4	.00005"		0-100	.001mm		Ratchet	7105649	**1,423.10**
0-6	.00005"		0-150	.001mm		Ratchet	7105669	**2,333.60**

ASIMETO

Economic Digital Outside Micrometers

Features:
- 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	.00005"/0.001mm	±.00016"/0.004mm	7116011	**164.30**
1-2"/25-50mm	.00005"/0.001mm	±.00016"/0.004mm	7116021	**195.00**
2-3"/50-75mm	.00005"/0.001mm	±.0002"/0.005mm	7116031	**215.40**
3-4"/75-100mm	.00005"/0.001mm	±.0002"/0.005mm	7116041	**236.20**
4-5"/100-125mm	.00005"/0.001mm	±.00024"/0.006mm	7116051	**275.70**
5-6"/125-150mm	.00005"/0.001mm	±.00024"/0.006mm	7116061	**306.50**
Sets				
0-3"/0-75mm (3pc)			7116631	**572.80**
0-4"/0-100mm (4pc)			7116641	**805.60**
0-75mm/0-3" (3pc)			7116630	**572.80**

STM

Coolant Proof Digital Micrometers

- Water resistant
- Battery powered 1 year life
- Clear, easy to read LCD display
- .00005"/.001 mm resolution
- Carbide faces
- C/W Ball attachment



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-1 x 25	.00005 x 0.001	200-012	**213.90**
1-2 x 25-50	.00005 x 0.001	200-014	**246.30**
2-3 x 50-75	.00005 x 0.001	200-016	**278.70**

Coolant Proof Digital Micrometer Set

- Water resistant
- Battery powered 1 year life
- Clear, easy to read LCD display
- .00005"/.001 mm resolution
- Carbide faces
- C/W Ball attachment



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-3 x 0-75	.00005 x 0.001	200-018	**738.40**

Digital Micrometers

- Battery powered 1 year life
- Clear, easy to read LCD display
- .00005"/.001 mm resolution
- Carbide faces
- Friction thimble
- Min/Max
- Hold function
- Enamel finish
- Case included



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-1 x 0-25 Deluxe Model	.00005 x 0.001	200-020	**242.80**

Mitutoyo

QuantuMike



Speed
- Get the job done four times faster! Mitutoyo's patented high precision lead screw feeds the spindle by 2mm per revolution of the thimble instead of the standard 0.5mm.

Reliability
- Expect excellent repeatability results thanks to the patented ratchet thimble mechanism. It transmits microvibrations along the spindle to the contact face to provide a constant measuring force and encourage good workpiece contact.

Ergonomic
- The ratchet works from the thimble as well as the speeder, so it's always easy to use - even when taking one-handed measurements

Features:
- .00005" / 0.001mm resolution
- +/- .00005" / 1um accuracy

Mitutoyo Model No.	Range (in./mm)	SPC	Sowa Code No.	Price $
293-180	0-1" / 0-25.4 mm	YES	846-305	**343.00**
293-181	1-2" / 25.4-50.8 mm	YES	846-306	**360.00**
293-185	0-1" / 0-25.4 mm	NO	846-307	**271.00**
293-186	1-2" / 25.4-50.8 mm	NO	846-308	**316.00**

MDC LITE Digimatic Micrometers

- Extra large LCD readout
- Carbide face
- Inch/Metric conversion



Mitutoyo Model No.	Range (in./mm)	Grad (in./mm)	Thimble	Sowa Code No.	Price $
293-831	0-1 / 0-25.4mm	.00005 / .001mm	Ratchet Stop	842-888	**166.00**
293-832	0-1 / 0-25.4mm	.00005 / .001mm	Friction Thimble	845-774	**171.00**

Digimatic Micrometers

- Graduation: .00005"/.001mm
- Ratchet stop or ratchet thimble
- Extra large LCD readout
- Carbide face
- Measurement hold button
- Inch/Metric conversion



Mitutoyo Model No.	Range (in./mm)	SPC	Sowa Code No.	Price $
293-330	0-1 / 0-25.4 mm	YES	840-181	**276.00**
293-331	1-2 / 25.4-50.8 mm	YES	840-182	**339.00**
293-340	0-1 / 0-25.4 mm	NO	840-184	**215.00**
293-344*	0-1 / 0-25.4 mm	NO	840-428	**215.00**

*Ratchet thimble

ASIMETO

Micrometer Stands



These stands are designed to allow bench top use with hand micrometers

Notes	Code No.	Price $
Painted steel base	7109010	**59.20**
Painted aluminum base	7109020	**45.90**
Painted cast-iron base	7109021	**30.80**

STM

Micrometer Stand



Code No.: 200-500 **Price $: 33.20**

Mitutoyo

Micrometer Stand

These stands are designed to allow benchtop use with hand micrometers with range up to 4" or other gauges. Adjustable angle type.

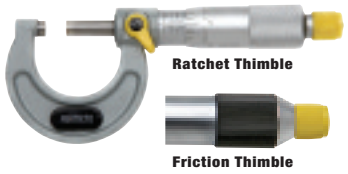


Mitutoyo Model No.	Sowa Code No.	Price $
156-101-10	840-086	**91.00**

ASIMETO

Outside Micrometers - Inch

Features:
- Locking clamp
- Carbide faces
- Satin chrome finish



Range	Graduation	Accuracy	Thimble Type	Code No.	Price $
0-0.6"	.001"	±.0001"	Ratchet	7101961	**63.90**
0-1"	.001"	±.0001"	Ratchet	7101011	**74.90**
1-2"	.001"	±.0002"	Ratchet	7101021	**80.10**
2-3"	.001"	±.0002"	Ratchet	7101031	**86.50**
3-4"	.001"	±.0002"	Ratchet	7101041	**92.90**
4-5"	.001"	±.0002"	Ratchet	7101051	**113.20**
5-6"	.001"	±.0002"	Ratchet	7101061	**126.60**
6-7"	.001"	±.0002"	Ratchet	7101071	**142.20**
7-8"	.001"	±.0002"	Ratchet	7101081	**155.60**
8-9"	.001"	±.0002"	Ratchet	7101091	**167.20**
9-10"	.001"	±.0003"	Ratchet	7101101	**180.50**
10-11"	.001"	±.0003"	Ratchet	7101111	**193.30**
11-12"	.001"	±.0003"	Ratchet	7101121	**206.70**
0-1"	.001"	±.0001"	Friction	7103015	**79.60**
1-2"	.001"	±.0002"	Friction	7103025	**84.80**
0-1"	.0001"	±.0001"	Ratchet	7101013	**74.90**
1-2"	.0001"	±.0002"	Ratchet	7101023	**80.10**
2-3"	.0001"	±.0002"	Ratchet	7101033	**86.50**
3-4"	.0001"	±.00015"	Ratchet	7101043	**92.90**
4-5"	.0001"	±.00015"	Ratchet	7101053	**113.20**
5-6"	.0001"	±.00015"	Ratchet	7101063	**126.60**
6-7"	.0001"	±.0002"	Ratchet	7101073	**142.20**
7-8"	.0001"	±.0002"	Ratchet	7101083	**155.60**
8-9"	.0001"	±.0002"	Ratchet	7101093	**167.20**
9-10"	.0001"	±.00025"	Ratchet	7101103	**180.50**
10-11"	.0001"	±.00025"	Ratchet	7101113	**193.30**
11-12"	.0001"	±.00025"	Ratchet	7101123	**206.70**
0-1"	.0001"	±.0001"	Friction	7103017	**79.60**
1-2"	.0001"	±.0001"	Friction	7103027	**84.80**

Outside Micrometers Sets- Inch

Features:
- Locking clamp
- Carbide faces
- Satin chrome finish

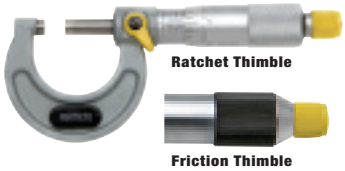


Range	Grad.	Notes	Code No.	Price $
0-3" (3 pc set)	.001"	All Ratchet Stop	7101639	**239.70**
0-4" (4 pc set)	.001"	All Ratchet Stop	7101649	**329.70**
0-6" (6 pc set)	.001"	All Ratchet Stop	7101669	**558.90**
6-12" (6 pc set)	.001"	All Ratchet Stop	7101829	**1,011.60**
0-12" (12 pc set)	.001"	All Ratchet Stop	7101729	**1,567.60**
0-3" (3 pc)	.0001"	• 0-1"+1-2" Friction 2-3" Ratchet	7101637	**249.00**
0-4" (4 pc)	.0001"	• 0-1"+1-2" Friction 2-3"+3-4" Ratchet	7101647	**339.00**
0-6" (6 pc)	.0001"	• 0-1"+1-2" Friction 2-3" to 5-6" Ratchet	7101667	**568.20**
6-12" (6 pc)	.0001"	• All Ratchet Stop	7101827	**1,011.60**
0-12" (12 pc)	.0001"	• 0-1"+1-2" Friction 2-3" to 11-12" Ratchet	7101727	**1,576.80**

ASIMETO

Outside Micrometers - Metric

Features:
- Locking clamp
- Carbide faces
- Satin chrome finish



Range	Graduation	Accuracy	Thimble Type	Code No.	Price $
0-25mm	0.001mm	±0.004mm	Ratchet	7101012	**74.90**
0-25mm	0.01mm	±0.004mm	Ratchet	7101010	**74.90**
25-50mm	0.001mm	±0.004mm	Ratchet	7101022	**80.10**
25-50mm	0.01mm	±0.004mm	Ratchet	7101020	**80.10**
50-75mm	0.001mm	±0.005mm	Ratchet	7101032	**86.50**
50-75mm	0.01mm	±0.005mm	Ratchet	7101030	**86.50**
75-100mm	0.001mm	±0.005mm	Ratchet	7101042	**92.90**
75-100mm	0.01mm	±0.005mm	Ratchet	7101040	**92.90**
100-125mm	0.001mm	±0.006mm	Ratchet	7101052	**113.20**
100-125mm	0.01mm	±0.006mm	Ratchet	7101050	**113.20**
125-150mm	0.001mm	±0.006mm	Ratchet	7101062	**126.60**
125-150mm	0.01mm	±0.006mm	Ratchet	7101060	**126.60**
150-175mm	0.001mm	±0.007mm	Ratchet	7101072	**142.20**
150-175mm	0.01mm	±0.007mm	Ratchet	7101070	**142.20**
175-200mm	0.01mm	±0.007mm	Ratchet	7101080	**155.60**
200-225mm	0.01mm	±0.008mm	Ratchet	7101090	**167.20**
225-250mm	0.01mm	±0.008mm	Ratchet	7101100	**180.50**
250-275mm	0.01mm	±0.009mm	Ratchet	7101110	**193.30**
275-300mm	0.01mm	±0.009mm	Ratchet	7101120	**206.70**
0-25mm	0.01mm	±0.004mm	Friction	7103014	**79.60**
25-50mm	0.01mm	±0.004mm	Friction	7103024	**84.80**

Outside Micrometers Sets- Metric

Features:
- Locking clamp
- Carbide faces
- Satin chrome finish



Range	Grad.	Notes	Code No.	Price $
0-75mm (3 pc set)	0.01mm	All Ratchet Stop	7101638	**239.70**
0-150mm (6 pc set)	0.01mm	All Ratchet Stop	7101668	**558.90**
0-300mm (12 pc set)	0.01mm	All Ratchet Stop	7101728	**1,567.60**
0-150mm (6 pc set)	0.001mm	All Ratchet Stop	7101666	**539.20**
0-300mm (12 pc set)	0.001mm	All Ratchet Stop	7101726	**1,401.00**

Outside Micrometers

- 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 x mm)	Graduation (in x mm)	Code No.	Price $
Inch			
0-1	.0001	200-570	**41.10**
1-2	.0001	200-572	**45.00**
2-3	.0001	200-574	**49.70**
3-4	.0001	200-576	**54.60**
4-5	.0001	200-577	**63.40**
5-6	.0001	200-579	**74.10**
6-7	.0001	200-082	**86.80**
7-8	.0001	200-084	**97.40**
8-9	.0001	200-086	**107.20**
9-10	.0001	200-088	**118.00**
10-11	.0001	200-090	**127.60**
11-12	.0001	200-092	**138.30**
Metric			
0-25	.01mm	201-002	**41.10**
25-50	.01mm	201-004	**45.00**
50-75	.01mm	201-006	**49.70**
75-100	.01mm	201-008	**54.60**
100-125	.01mm	201-010	**63.40**
125-150	.01mm	201-012	**74.10**
150-175	.01mm	201-013	**103.30**
175-200	.01mm	201-014	**118.70**
200-225	.01mm	201-015•	**89.00**
250-275	.01mm	201-017•	**106.00**

• Available only while supplies last

Outside Micrometer Sets

- Ratchet and lock nut
- Complete with standards (2" and up)
- Carbide faces
- Fitted wood case



Range (in x mm)	Graduation (in x mm)	Code No.	Price $
Inch			
0-3	.0001	200-578	**135.30**
0-4	.0001	200-094	**189.80**
0-6	.0001	200-580	**326.70**
6-12	.0001	200-096	**673.60**
0-12	.0001	200-098	**1,021.70**
Metric			
0-75mm	.01mm	201-020	**135.30**
0-150mm	.01mm	201-022	**326.70**

Mitutoyo

Outside Micrometers

- Carbide faces
- Positive locking clamp
- Ratchet stop for exact repetitive readings
- Baked enamel finished frame
- Clear graduations on satin chrome finish



Mitutoyo Model No.	Range (in./mm)	Grad (in./mm)	Sowa Code No.	Price $
101-114	1 - 2 (satin finish)	.0001	840-017	**175.00**
103-177	0 - 1	.001	840-029	**101.00**
103-128	1 - 2 (friction thimble)	.001	840-022	**116.00**
103-178	1 - 2	.001	840-030	**116.00**
103-179	2 - 3	.001	840-031	**144.00**
103-180	3 - 4	.001	840-032	**162.00**
103-181	4 - 5	.001	840-033	**173.00**
103-182	5 - 6	.001	840-034	**186.00**
103-183	6 - 7	.001	840-845	**220.00**
103-260	0 - 1	.0001	840-044	**109.00**
103-135	0 - 1 (friction thimble)	.0001	840-023	**128.00**
103-262	1 - 2	.0001	840-045	**147.00**
103-217	2 - 3	.0001	840-037	**169.00**
103-218	3 - 4	.0001	840-038	**184.00**
103-219	4 - 5	.0001	840-039	**201.00**
103-220	5 - 6	.0001	840-040	**217.00**
103-221	6 - 7	.0001	840-041	**242.00**
103-137	0 - 25mm	.01mm	840-025	**116.00**
103-138	25 - 50mm	.01mm	840-026	**140.00**
103-139-10	50 - 75mm	.01mm	840-027	**165.00**

Outside Micrometer Sets

- Carbide faces
- Positive locking clamp
- Ratchet stop for exact repetitive readings
- Baked enamel finished frame
- Clear graduations on satin chrome finish



Mitutoyo Model No.	Range (in./mm)	Grad. Type (in./mm)	Sowa Code No.	Price $
103-929	0 - 3	.001 / Ratchet	840-055	**470.00**
103-904-10	0 - 6	.001 / Ratchet	840-046	**1,198.00**
103-906	6 - 12	.001 / Ratchet	840-047	**1,980.00**
103-908-01	0 - 12	.0001 / Ratchet	840-049	**2,283.00**
103-922	0 - 3	.0001 / Friction/Ratchet	840-053	**437.00**
103-907-40	0 - 6	.0001 / Friction/Ratchet	848-080	**904.00**
103-909	6 - 12	.0001 / Friction/Ratchet	840-050	**2,100.00**
103-905-10	0 - 12	.001 / Ratchet	840-628	**3,120.00**
103-927-10	0 - 75 mm	.01 mm / Ratchet	840-054	**470.00**
103-913-31	0 - 150 mm	.01mm / Ratchet	840-051	**843.00**

Starrett

T444 Outside Micrometers

- No-glare satin chrome finish which resists rust
- Advanced sleeve design with staggered lines and distinct figures for precise and easy readability
- Balanced frame and thimble design to ensure easy handling and better readability
- Provides quick and easy adjustment
- Graduation: .0001”



Range	Starrett No.	Sowa Code No.	List $
0-1”	T444.1XRL-1	633-913	**132.00**
1-2”	T444.1XRL-2	633-901	**154.00**
2-3”	T444.1XRL-3	633-902	**170.50**
3-4”	T444.1XRL-4	633-961	**196.90**
4-5”	T444.1XRL-5	633-962	**213.40**
5-6”	T444.1XRL-6	633-963	**237.60**

ASIMETO

Digit Counter Outside Micrometers

Features:
- Mechanical counter for quick and error free reading
- Friction thimble
- Locking clamp
- Carbide faces



Range	Resolution	Accuracy	Code No.	Price $
0-1”	.0001”	±.0001”	7108013	**186.30**
1-2”	.0001”	±.0002”	7108023	**200.30**
2-3”	.0001”	±.0002”	7108033	**217.10**
3-4”	.0001”	±.0002”	7108043	**231.60**
4-5”	.0001”	±.0002”	7108053	**267.00**
5-6”	.0001”	±.0002”	7108063	**303.60**
Inch Sets				
Range	**Resolution**	**Notes**	**Code No.**	**Price $**
0-3 (3 pc set)	.0001”	with Standards	7108637	**449.80**
0-4 (4 pc set)	.0001”	with Standards	7108647	**625.10**
0-6 (6 pc set)	.0001”	with Standards	7108667	**1,077.70**

Digit Counter Outside Micrometers - Metric

Features:
- Mechanical counter for quick and error free reading
- Friction thimble
- Locking clamp
- Carbide faces



Range	Resolution	Accuracy	Code No.	Price $
0-25mm	0.001mm	±0.004mm	7108010	**131.80**
25-50mm	0.001mm	±0.004mm	7108020	**150.40**
50-75mm	0.001mm	±0.005mm	7108030	**164.90**
75-100mm	0.001mm	±0.005mm	7108040	**178.20**
100-120mm	0.001mm	±0.005mm	7108050	**214.80**
125-150mm	0.001mm	±0.005mm	7108060	**242.10**
Metric Sets				
Range	**Resolution**	**Notes**	**Code No.**	**Price $**
0-75mm (3 pc set)	0.001mm	with Standards	7108638	**432.40**
0-100mm (4 pc set)	0.001mm	with Standards	7108648	**625.10**
0-150mm (6 pc set)	0.001mm	with Standards	7108668	**1,031.30**

ASIMETO

Digital Interchangeable Anvil Micrometers

Features:
- Ratchet stop
- Locking clamp
- Carbide faces
- Satin chrome finish
- Sizes over 12” have a welded pipe frame
- Inch/Metric conversion
- Absolute or incremental measuring modes



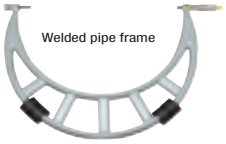


Range	Resolution	Accuracy	Notes	Code No.	Price $
Inch					
0-6”	.00005”	± 0.0002”	with 6 Anvils & 5 Standards	7115061	**680.80**
6-12”	.00005”	± 0.0003”	with 6 Anvils & 6 Standards	7115121	**774.80**
12-16”	.00005”	± 0.0004”	with 4 Anvils & 2 Standards	7115161	**836.90**
16-20”	.00005”	± 0.0005”	with 4 Anvils & 2 Standards	7115201	**906.50**
20-24”	.00005”	± 0.0006”	with 4 Anvils & 2 Standards	7115241	**1,006.40**
24-28”	.00005”	± 0.0006”	with 4 Anvils & 2 Standards	7115281	**1,156.10**
28-32”	.00005”	± 0.0007”	with 4 Anvils & 2 Standards	7115321	**1,296.00**

Interchangeable Anvil Micrometers

Features:
- Ratchet stop
- Locking clamp
- Carbide faces
- Satin chrome finish
- Sizes over 12” have a welded pipe frame





Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-6”	.001”	± 0.0002”	with 6 Anvils & 5 Standards	7111061	**474.80**
0-6”	.0001”	± 0.0002”	with 6 Anvils & 5 Standards	7111063	**474.80**
6-12”	.001”	± 0.0003”	with 6 Anvils & 6 Standards	7111121	**600.70**
6-12”	.0001”	± 0.0003”	with 6 Anvils & 6 Standards	7111123	**600.70**
12-16”	.001”	± 0.0004”	with 4 Anvils & 2 Standards	7111161	**800.90**
12-16”	.0001”	± 0.0004”	with 4 Anvils & 2 Standards	7111163	**800.90**
16-20”	.001”	± 0.0005”	with 4 Anvils & 2 Standards	7111201	**894.40**
16-20”	.0001”	± 0.0005”	with 4 Anvils & 2 Standards	7111203	**894.40**
20-24”	.001”	± 0.0006”	with 4 Anvils & 2 Standards	7111241	**1,013.90**
20-24”	.0001”	± 0.0006”	with 4 Anvils & 2 Standards	7111243	**1,013.90**
24-28”	.001”	± 0.0006”	with 4 Anvils & 2 Standards	7111281	**1,219.90**
24-28”	.0001”	± 0.0006”	with 4 Anvils & 2 Standards	7111283	**1,219.90**
28-32”	.001”	± 0.0007”	with 4 Anvils & 2 Standards	7111321	**1,406.20**
28-32”	.0001”	± 0.0007”	with 4 Anvils & 2 Standards	7111323	**1,406.20**
32-36”	.001”	± 0.0008”	with 4 Anvils & 2 Standards	7111361	**1,579.20**
32-36”	.0001”	± 0.0008”	with 4 Anvils & 2 Standards	7111363	**1,579.20**
36-40”	.001”	± 0.0008”	with 4 Anvils & 2 Standards	7111401	**1,874.60**
36-40”	.0001”	± 0.0008”	with 4 Anvils & 2 Standards	7111403	**1,874.60**
Metric					
0-150mm	0.01mm	± 0.006mm	with 6 Anvils & 5 Standards	7111060	**474.80**
150-300mm	0.01mm	± 0.009mm	with 6 Anvils & 6 Standards	7111120	**600.70**
300-400mm	0.01mm	± 0.011mm	with 4 Anvils & 2 Standards	7111160	**800.90**
400-500mm	0.01mm	± 0.013mm	with 4 Anvils & 2 Standards	7111200	**894.40**

Note: The individual anvils are matched as a set with the frame.
The accuracy cannot be guaranteed if used with a different frame.

Interchangeable Anvil Outside Micrometers

- Blue enamel finish
- Perforated frame
- Carbide tipped spindle and anvils
- Ratchet stop and lock nut
- Setting standards included
- Complete with fitted case

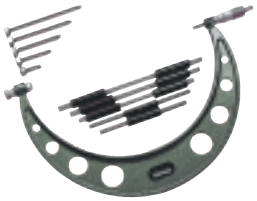


Range (in x mm)	Graduation (in x mm)	Code No.	Price $
Inch			
0-4	.001	200-025	**255.00**
0-6	.001	200-030	**324.70**
6-12	.001	200-035	**408.50**
12-16	.001	200-040	**542.50**
16-20	.001	200-045	**486.30**
Metric			
0-150 mm	.01 mm	200-050	**324.70**
150-300 mm	.01 mm	200-055	**408.50**
300-400 mm	.01 mm	200-060	**542.50**
400-500 mm	.01 mm	200-065	**614.20**

Mitutoyo

Interchangeable Anvil Micrometers

- .001 Graduation
- 6 anvils
- Quick change anvils
- Anvils are microlapped
- 0.250" dia. spindle is microlapped & carbide tipped
- Ratchet stop



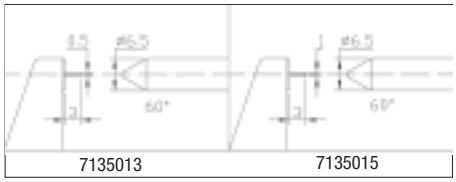
Mitutoyo Model No.	Range (in.)	Grad (in.)	Sowa Code No.	Price $
104-137	0 - 6	.001	840-058	**463.00**
104-138	6 - 12	.001	840-059	**755.00**
104-201	12 - 18	.001	840-062	**929.00**

ASIMETO

Digital Single Point Micrometers

Features:
- Protection level IP65
- For measuring the height of crimp contacts
- Carbide tipped measuring faces
- Gray painted steel frame
- Ratchet stop
- Inch/Metric conversion
- Absolute or incremental measuring modes





7135013 7135015

Range	Resolution	Accuracy	Code No.	Price $
0-1"/0-25mm	.00005"/0.001mm	±.0001"/0.002mm	7135013	**468.40**
0-1"/0-25mm	.00005"/0.001mm	±.0001"/0.002mm	7135015	**468.40**

ASIMETO

Digital Point Micrometers

Features:
- Pointed spindle and anvil for measuring the web thickness of drills, small grooves, and other hard to reach dimensions
- Ratchet stop
- Carbide measuring faces
- Inch/Metric conversion
- Absolute and incremental measuring modes
- Protection level IP65



Range	Resolution	Accuracy	Notes	Code No.	Price $
0-1"/0-25mm	.00005"	±.0001"	15° point	7126011	**448.70**
1-2"/25-50mm	.00005"	±.0002"	15° point	7126021	**480.00**
2-3"/50-75mm	.00005"	±.0002"	15° point	7126031	**511.90**
3-4"/75-100mm	.00005"	±.0002"	15° point	7126041	**543.80**
0-1"/0-25mm	.00005"	±.0001"	30° point	7126013	**448.70**
1-2"/25-50mm	.00005"	±.0002"	30° point	7126023	**480.00**
2-3"/50-75mm	.00005"	±.0002"	30° point	7126033	**511.90**
3-4"/75-100mm	.00005"	±.0002"	30° point	7126043	**543.80**

Point Micrometers

Features:
- Pointed spindle and anvil for measuring the web thickness of drills, small grooves, and other hard to reach dimensions
- Ratchet stop
- Carbide measuring faces



Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-1"	.001"	±.0001"	15° point	7122011	**169.50**
0-1"	.0001"	±.0001"	15° point	7122015	**169.50**
1-2"	.001"	±.0002"	15° point	7122021	**181.10**
1-2"	.0001"	±.0002"	15° point	7122025	**181.10**
2-3"	.0001"	±.0002"	15° point	7122035	**202.00**
3-4"	.0001"	±.0002"	15° point	7122045	**236.80**
0-1"	.001"	±.0001"	30° point	7122013	**169.50**
0-1"	.0001"	±.0001"	30° point	7122017	**169.50**
1-2"	.001"	±.0002"	30° point	7122023	**188.70**
1-2"	.0001"	±.0002"	30° point	7122027	**188.70**
2-3"	.0001"	±.0002"	30° point	7122037	**202.00**
3-4"	.0001"	±.0002"	30° point	7122047	**236.80**
Metric					
0-25mm	0.01mm	±0.004mm	15° point	7122010	**169.50**
25-50mm	0.01mm	±0.004mm	15° point	7122020	**181.10**
50-75mm	0.01mm	±0.005mm	15° point	7122030	**202.00**
75-100mm	0.01mm	±0.005mm	15° point	7122040	**236.80**
0-25mm	0.01mm	±0.004mm	30° point	7122012	**169.50**
25-50mm	0.01mm	±0.004mm	30° point	7122022	**181.10**
50-75mm	0.01mm	±0.005mm	30° point	7122032	**193.90**
75-100mm	0.01mm	±0.005mm	30° point	7122042	**227.00**

Point Micrometers

- Satin chrome finish on thimble
- Ratchet stop and lock nut
- Carbide tipped spindle and nut
- Complete with fitted case



Range (in.)	Graduation (in.)	Code No.	Price $
0-1	.0001	200-380	**119.90**
1-2	.0001	200-385	**129.80**

ASIMETO

Digital Disc Micrometers - Non-Rotating Spindle



Features:
- Resolution: .00005"/.001mm
- Non rotating spindle
- Ratchet Stop
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Automatic On/Off
- Sizes over 1" come with standard

Range	Accuracy	Notes	Code No.	Price $
0-1" / 0-25mm	±.0001"	Disc Diameter .79"	7145011	**506.70**
1-2" / 25-50mm	±.0002"	Disc Diameter .79" with Standard	7145021	**549.10**
2-3" / 50-75mm	±.0002"	Disc Diameter .79" with Standard	7145031	**592.00**
3-4" / 75-100mm	±.0002"	Disc Diameter .79" with Standard	7145041	**656.40**

Disc Micrometers



Features:
- Graduation: Inch: .0001"/Metric: 0.01mm
- Measures root tangent length of spur gears and helical gears
- .03"/0.7mm edge thickness to enter narrow recesses.
- Ratchet Stop
- Sizes over 1" come with standard

Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-1"	.0001"	±.0001"	Rotating Spindle	7141011	**184.60**
1-2"	.0001"	±.0002"	Rotating Spindle	7141021	**209.00**
2-3"	.0001"	±.0002"	Rotating Spindle	7141031	**233.90**
3-4"	.0001"	±.0002"	Rotating Spindle	7141041	**272.20**
0-1"	.0001"	±.0001"	Non-Rotating Spindle	7141013	**354.60**
1-2"	.0001"	±.0002"	Non-Rotating Spindle	7141023	**380.20**
2-3"	.0001"	±.0002"	Non-Rotating Spindle	7141033	**406.30**
3-4"	.0001"	±.0002"	Non-Rotating Spindle	7141043	**432.40**
Metric					
0-25mm	0.01mm	±.0.004mm	Rotating Spindle	7141010	**184.60**
25-50mm	0.01mm	±.0.004mm	Rotating Spindle	7141020	**209.00**
50-75mm	0.01mm	±.0.005mm	Rotating Spindle	7141030	**233.90**
75-100mm	0.01mm	±.0.005mm	Rotating Spindle	7141040	**272.20**
0-25mm	0.01mm	±.0.004mm	Non-Rotating Spindle	7141012	**354.60**
25-50mm	0.01mm	±.0.004mm	Non-Rotating Spindle	7141022	**380.20**
50-75mm	0.01mm	±.0.005mm	Non-Rotating Spindle	7141032	**406.30**
75-100mm	0.01mm	±.0.005mm	Non-Rotating Spindle	7141042	**432.40**

Mitutoyo

Digimatic Disc Micrometer



- With SPC Output
- Resolution .00005"/0.001mm

Mitutoyo Model No.	Range (in.)	Grad (in./mm)	Sowa Code No.	Price $
323-350	0 - 1	.001"/0.01mm	840-656	**599.00**

STM

Disc Micrometers



- Satin chrome finish on thimble and spindle
- Ratchet and lock nut
- Standards included
- Complete with fitted case

Range (in.)	Graduation (in.)	Disc Dia. (in.)	Code No.	Price $
Inch				
0-1	.001	.787	200-160•	**262.20**
1-2	.001	.787	200-165•	**282.70**
2-3	.001	.787	200-170•	**303.20**
3-4	.001	.787	200-175•	**323.60**
4-5	.001	.787	200-180•	**347.20**
Metric (mm)	**(mm)**	**(mm)**		
25-50 mm	.01 mm	20 mm	200-195•	**282.70**

• Available only while supplies last

ASIMETO

Digital Spline Micrometers



Features:
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Ratchet stop
- Carbide faces
- "A" anvil: Ø2mm x 5mm
- "B" anvil: Ø3mm x 10mm

Range	Resolution	Accuracy	Notes	Code No.	Price $
Inch Thimble					
0-1"/0-25mm	.00005"/0.001mm	±.0001"	"A" anvil	7118011	**428.30**
1-2"/25-50mm	.00005"/0.001mm	±.0002"	"A" anvil	7118021	**458.50**
0-1"/0-25mm	.00005"/0.001mm	±.0001"	"B" anvil	7118013	**428.30**
1-2"/25-50mm	.00005"/0.001mm	±.0002"	"B" anvil	7118023	**458.50**
Metric Thimble					
0-1"/0-25mm	.00005"/0.001mm	±.0001"	"A" anvil	7118010	**428.30**
1-2"/25-50mm	.00005"/0.001mm	±.0002"	"A" anvil	7118020	**458.50**

Spline Micrometers



Features:
- Ratchet stop
- Carbide faces
- "A" anvil: Ø2mm x 5mm
- "B" anvil: Ø3mm x 10mm

Range	Graduation	Accuracy	Notes	Code No.	Price $
Inch Thimble					
0-1"/0-25mm	.00005"/0.001mm	±.0001"	"A" anvil	7118611	**175.90**
1-2"/25-50mm	.00005"/0.001mm	±.0002"	"A" anvil	7118621	**188.70**

Spline Micrometers

- Ratchet stop and lock nut
- .0001"/.01mm graduation
- Complete with fitted case

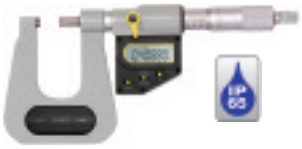


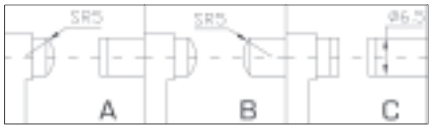
Range (in x mm)	Code No.	Price $
2–3	200-350	**139.60**
3–4	200-355	**156.20**
5–6	200-365	**195.50**
0–25 mm	200-370	**119.90**

ASIMETO

Digital Deep Throat Micrometers

Features:
- Digital Resolution: .00005"/0.001mm
- Thimble Graduation: .0001"/0.01mm
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Ratchet stop
- Carbide faces

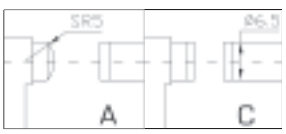




Range	Throat Depth	Accuracy	Anvils	Code No.	Price $
Inch Thimble					
0-1"/0-25mm	100mm	±.0002"/0.005mm	A	7157013	**495.70**
0-1"/0-25mm	150mm	±.0003"/0.006mm	B	7157315	**525.30**
1-2"/25-50mm	150mm	±.0003"/0.006mm	B	7157325	**547.30**
0-1"/0-25mm	150mm	±.0003"/0.006mm	C	7157515	**525.30**
0-1"/0-25mm	300mm	±.0003"/0.007mm	A	7157017	**585.60**

Deep Throat Micrometers

Features:
- Thimble Graduation: .0001"/0.01mm
- Ratchet stop
- Carbide faces





Range	Throat Depth	Accuracy	Anvils	Code No.	Price $
Inch					
1-2"	100mm	±.0002"	A	7150023	**234.50**
0-1"	150mm	±.0003"	A	7150015	**253.10**
1-2"	150mm	±.0003"	A	7150025	**266.40**
0-1"	300mm	±.0003"	A	7150017	**330.80**
Metric					
25-50mm	150mm	±0.006mm	A	7150024	**266.40**
0-25mm	150mm	±0.006mm	C	7150514	**253.10**

ASIMETO

Digital V-Anvil Micrometers

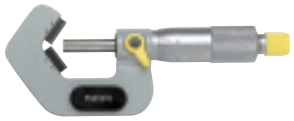
Features:
- Measures the outside diameter of cutting tools such taps, reamers and end mills with an odd number of flutes
- Carbide measuring faces
- Ratchet Stop
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Protection level IP65



Range	Resolution	Accuracy	Code No.	Price $
INCH				
For 3 Flutes				
0.4 - 0.6"	.0005"	±.0001"	7155011	**650.60**
0.2 - 0.8"	.0005"	±.0001"	7155021	**708.10**
0.8 - 1.4"	.0005"	±.0002"	7155031	**794.50**
For 5 Flutes				
0.2 - 1.0"	.0005"	±.0001"	7155015	**647.10**
1.0 - 1.8"	.0005"	±.0002"	7155025	**733.00**
METRIC				
For 3 Flutes				
1-15mm	0.001mm	±0.004mm	7155010	**633.80**
5-20mm	0.001mm	±0.004mm	7155020	**646.60**
20-35mm	0.001mm	±0.005mm	7155030	**708.60**
For 5 Flutes				
5-25mm	0.001mm	±0.004mm	7155014	**643.70**
25-45mm	0.001mm	±0.005mm	7155024	**734.80**

V-Anvil Micrometers

Features:
- Measures the outside diameter of cutting tools such taps, reamers and end mills with an odd number of flutes
- Carbide measuring faces
- Ratchet Stop



Range	Grad.	Accuracy	Code No.	Price $
For 3 Flutes				
0.4 - 0.6"	.001"	±.0001"	7151011	**398.20**
0.2 - 0.8"	.001"	±.0001"	7151021	**413.30**
0.8 - 1.4"	.001"	±.0002"	7151031	**488.10**
For 5 Flutes				
0.2 - 1.0"	.001"	±.0001"	7151015	**391.80**
1.0 - 1.8"	.001"	±.0002"	7151025	**520.00**

V-Anvil Micrometers

- Ratchet stop with lock nut
- .001" graduation
- Fitted case



Range (in.)	Code No.	Price $
60º 3 Flute		
.04-.600	200-265•	**297.00**
.02-.800	200-270•	**309.40**
1.4-2	200-280•	**454.60**
2-2.6	200-285•	**487.50**
2.6-3.2	200-290•	**527.30**
108º 5 Flute		
.200-1.0	200-295•	**306.10**
1-1.8	200-300•	**394.10**
1.8-2.6	200-305•	**454.60**
2.6-3.4	200-310•	**527.30**

• Available only while supplies last

ASIMETO

Digital Multi-Anvil Micrometers

Features:
- Graduation .0001" / 0.01mm
- Measures tube thickness, shoulder edge distance, rivet head height, with interchangeable anvils (flat anvil, rod anvil)
- Friction Thimble
- Inch/Metric conversion
- Absolute or incremental measuring modes



Range	Resolution	Accuracy	Notes	Code No.	Price $
Inch					
0-1"	0.00005"	±.0001"	with Flat and Rod Anvils	7125011	**718.50**
1-2"	0.00005"	±.0002"	with Flat and Rod Anvils & Standard	7125021	**738.20**
Metric					
0-25mm	0.001mm	±0.002mm	with Flat and Rod Anvils	7125010	**718.50**
25-50mm	0.001mm	±0.002mm	with Flat and Rod Anvils & Standard	7125020	**738.20**

Multi-Anvil Micrometers

Features:
- Graduation .0001" / 0.01mm
- Measures tube thickness, shoulder edge distance, rivet head height, with interchangeable anvils (flat anvil, rod anvil)
- Friction Thimble



Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-1"	0.0001"	±.0001"	with Flat and Rod Anvils	7121013	**272.20**
1-2"	0.0001"	±.0002"	with Flat and Rod Anvils & Standard	7121023	**312.30**
Metric					
0-25mm	0.01mm	±0.004mm	with Flat and Rod Anvils	7121010	**272.20**
25-50mm	0.01mm	±0.004mm	with Flat and Rod Anvils & Standard	7121020	**312.30**

STM

Mul-T-Anvil Micrometers

- Includes two interchangeable anvils – flat anvil and round anvil
- Carbide face on spindle
- Friction thimble
- Lock nut
- Satin-chrome finish
- Fitted case



Range (in x mm)	Graduation (in x mm)	Code No.	Price $
0-1	.0001	200-120•	**255.10**
0-25 mm	.01 mm	200-130•	**255.10**

Starrett

220 Series Mul-T-Anvil Micrometer

- Graduation: .001"
- Balanced frame and thimble design
- Ring-type knurled lock nut
- Interchangeable anvils rigidly held in vise type frame, and are quickly interchanged by a single lock screw adjustment
- Two hardened anvils furnished – round .120" diameter (3mm) and flat .125" (3mm) and .060" (1.5mm) thick – sizes approximate
- Accommodates special anvils up to 5/16" (8mm) thick
- Can be used as height gauge by removing vise jaw
- Satin chrome finish
- Rigid one-piece frame of drop forged steel
- Extremely hard and stable one-piece spindle
- Micro-lapped measuring faces



Range	Starrett No.	Sowa Code No.	List $
0-1"	220XFL-1	629-813	**336.60**

ASIMETO

Digital Universal Micrometers

Features:
- Protection level IP65
- With 7 pairs of interchangeable anvils for a wide range of applications
- Grey painted steel frame
- Ratchet stop
- Inch/Metric conversion
- Absolute or incremental measuring modes



Range	Resolution	Accuracy	Code No.	Price $
Inch Thimble				
0-1"/0-25mm	.00005"/0.001mm	±.0001"/0.004mm	7146011	**718.50**
1-2"/25-50mm	.00005"/0.001mm	±.0002"/0.004mm	7146021	**738.20**
Metric Thimble				
0-1"/0-25mm	.00005"/0.001mm	±.0001"/0.004mm	7146010	**718.50**
1-2"/25-50mm	.00005"/0.001mm	±.0002"/0.004mm	7146020	**738.20**

ASIMETO

Universal Micrometers

Features:
- With 7 pairs of interchangeable anvils for a wide range of applications
- Grey painted steel frame
- Ratchet stop



Range	Resolution	Accuracy	Code No.	Price $
Inch Thimble				
0-1"	.0001"	±.0001"	7142013	**542.10**
1-2"	.0001"	±.0002"	7142023	**566.50**
Metric Thimble				
0-25mm	0.01mm	0.004mm	7142010	**542.10**
25-50mm	0.01mm	0.004mm	7142020	**566.50**

ASIMETO

Digital Tube Micrometers

Features:
- Digital Resolution: .00005”/0.001mm
- Thimble Graduation: .0001”/0.01mm
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Ratchet stop
- Carbide faces





Range	Accuracy	Anvil	Code No.	Price $
0-1”/0-25mm	±.0001”/0.004mm	A	7113011	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	A	7113021	**498.60**
0-1”/0-25mm	±.0001”/0.004mm	B	7113111	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	B	7113121	**498.60**
0-1”/0-25mm	±.0001”/0.004mm	C	7113211	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	C	7113221	**498.60**
0-1”/0-25mm	±.0001”/0.004mm	D	7113311	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	D	7113321	**498.60**
0-1”/0-25mm	±.0001”/0.004mm	E	7113411	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	E	7113421	**498.60**
0-1”/0-25mm	±.0001”/0.004mm	F	7113511	**458.50**
1-2”/25-50mm	±.0002”/0.004mm	F	7113521	**498.60**

Tube Micrometers

Features:
- Graduation: .0001”/0.01mm
- Ratchet stop
- Carbide faces
- Gray painted steel frame





Range	Accuracy	Anvil	Code No.	Price $
0-1”	±.0001”	A	7114011	**120.20**
1-2”	±.0002”	A	7114021	**134.70**
0-1”	±.0001”	B	7114111	**120.20**
1-2”	±.0002”	B	7114121	**134.70**
0-1”	±.0001”	C	7114211	**120.20**
1-2”	±.0002”	C	7114221	**134.70**

STM

Tube Micrometers

- Ratchet stop
- Fitted case



Range (in x mm)	Anvil diameter (in x mm)	Graduation (in x mm)	Code No.	Price $
0-1	0.19”	.0001	200-320•	**74.70**
0–25 mm	18 mm	.01 mm	200-330•	**74.70**
0–25 mm	48 mm	.01 mm	200-335•	**74.70**

• Available only while supplies last

ASIMETO

Ball Anvil Digital Tube Micrometers

Features:
- Digital Resolution: .00005”/0.001mm
- Thimble Graduation: .0001”/0.01mm
- Automatic on/off to maximize battery life
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Ratchet stop
- Carbide faces
- “J” style: Flat faced spindle
- “K” style: Ball faced spindle



Range	Accuracy	Notes	Code No.	Price $
Inch Thimble				
0-1”/0-25mm	±.0001”/±0.002mm	J style	7147011	**416.70**
1-2”/25-50mm	±.0002”/±0.002mm	J style	7147021	**454.50**
2-3”/50-75mm	±.0002”/±0.003mm	J style	7147031	**497.40**
3-4”/75-100mm	±.0002”/±0.003mm	J style	7147041	**544.40**
0-1”/0-25mm	±.0001”/±0.002mm	K style	7147013	**416.70**
1-2”/25-50mm	±.0002”/±0.002mm	K style	7147023	**454.50**
Metric Thimble				
0-1”/0-25mm	±.0001”/±0.002mm	J style	7147010	**416.70**
1-2”/25-50mm	±.0002”/±0.002mm	J style	7147020	**454.50**
2-3”/50-75mm	±.0002”/±0.003mm	J style	7147030	**497.40**
3-4”/75-100mm	±.0002”/±0.003mm	J style	7147040	**544.40**
0-1”/0-25mm	±.0001”/±0.002mm	K style	7147012	**416.70**
1-2”/25-50mm	±.0002”/±0.002mm	K style	7147022	**454.50**

Ball Anvil Tube Micrometers

Features:
- Thimble Graduation: .0001”/0.01mm
- Ratchet stop
- Carbide faces
- “J” style: Flat faced spindle
- “K” style: Ball faced spindle



Range	Accuracy	Notes	Code No.	Price $
Inch Thimble				
0-1”	±.0001”	J style	7143011	**100.40**
1-2”	±.0002”	J style	7143021	**120.20**
2-3”	±.0002”	J style	7143031	**181.10**
0-1”	±.0001”	K style	7143013	**100.40**
1-2”	±.0002”	K style	7143023	**120.20**
2-3”	±.0002”	K style	7143033	**181.10**
Metric Thimble				
0-25mm	±0.004mm	J style	7143010	**100.40**
25-50mm	±0.004mm	J style	7143020	**120.20**
50-75mm	±0.005mm	J style	7143030	**181.10**
0-25mm	±0.004mm	K style	7143012	**100.40**
25-50mm	±0.004mm	K style	7143022	**120.20**
50-75mm	±0.005mm	K style	7143032	**181.10**

STM

Ball Micrometers

- Ball anvil and flat spindle
- Insulated frame
- Ratchet stop and lock nut
- Fitted case



Range (in x mm)	Graduation (in x mm)	Code No.	Price $
0-1	.0001	200-150	**59.10**
0-25 mm	.01mm	200-155	**59.10**

ASIMETO

Digital Blade Micrometers

Features:
- 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



Range	Resolution	Accuracy	Blade Dimensions DepthxLength	Code No.	Price $
Inch Thimble					
0-1" / 0-25mm	.00005" / 0.001mm	±.0001"	.030" x .250"	7117011	**517.10**
1-2" / 25-50mm	.00005" / 0.001mm	±.0002"	.030" x .250"	7117021	**549.10**
2-3" / 50-75mm	.00005" / 0.001mm	±.0002"	.030" x .250"	7117031	**581.60**
3-4" / 75-100mm	.00005" / 0.001mm	±.0002"	.030" x .250"	7117041	**624.50**
0-1" / 0-25mm	.00005" / 0.001mm	±.0001"	.016" x .118"	7117013	**517.10**
1-2" / 25-50mm	.00005" / 0.001mm	±.0002"	.016" x .118"	7117023	**549.10**
Metric Thimble					
0-25mm / 0-1"	.00005" / 0.001mm	±0.003mm	.030" x .250"	7117010	**517.10**
25-50mm / 1-2"	.00005" / 0.001mm	±0.003mm	.030" x .250"	7117020	**549.10**
50-75mm / 2-3"	.00005" / 0.001mm	±0.003mm	.030" x .250"	7117030	**581.60**
75-100mm / 3-4"	.00005" / 0.001mm	±0.004mm	.030" x .250"	7117040	**624.50**
0-25mm / 0-1"	.00005" / 0.001mm	±0.003mm	.016" x .118"	7117012	**517.10**
25-50mm / 1-2"	.00005" / 0.001mm	±0.003mm	.016" x .118"	7117022	**549.10**

Blade Micrometers

Features:
- For measuring the groove diameter of shafts, keyways, and other hard to reach portions
- Ratchet Stop
- Non-rotating spindle
- Carbide measuring faces



Range	Graduation	Accuracy	Blade Dimensions Depth x Length	Code No.	Price $
Inch					
0-1"	0.0001"	±.0001"	.030" x .250"	7112011	**370.90**
1-2"	0.0001"	±.0002"	.030" x .250"	7112021	**397.60**
2-3"	0.0001"	±.0002"	.030" x .250"	7112031	**424.90**
3-4"	0.0001"	±.0002"	.030" x .250"	7112041	**466.60**
0-1"	0.0001"	±.0001"	.016" x .118"	7112013	**370.90**
1-2"	0.0001"	±.0002"	.016" x .118"	7112023	**397.60**
Metric					
0-25mm	0.01mm	±0.004mm	.030" x .250"	7112010	**370.90**
25-50mm	0.01mm	±0.004mm	.030" x .250"	7112020	**397.60**
50-75mm	0.01mm	±0.005mm	.030" x .250"	7112030	**424.90**
75-100mm	0.01mm	±0.005mm	.030" x .250"	7112040	**466.60**
0-25mm	0.01mm	±0.004mm	.016" x .118"	7112012	**370.90**
25-50mm	0.01mm	±0.004mm	.016" x .118"	7112022	**397.60**

STM

Blade Micrometers

- Non-rotating spindle
- Positive locking clip
- Insulated frame
- Friction thimble
- Speeder on thimble
- Fitted case



Range (in x mm)	Graduation (in x mm)	Blade Thickness (in x mm)	Code No.	Price $
Inch				
0-1	.0001	.030	200-225	**304.20**
1-2	.0001	.030	200-230	**343.60**
2-3	.0001	.030	200-235	**382.80**
3-4	.0001	.030	200-240	**441.60**
Metric				
25-50 mm	.01 mm	.75 mm	200-250	**343.60**
50-75 mm	.01 mm	.75 mm	200-255	**382.80**
75-100 mm	.01 mm	.75 mm	200-260	**441.60**

ASIMETO

Wire Micrometers

Features:
- Chrome-plated steel feet frame
- Carbide tipped measuring faces
- For measuring the diameter of wire and small spheres
- Ratchet stop



Range	Graduation	Accuracy	Code No.	Price $
0 - .4"	.001	±.0001"	7161011	**186.90**
0 - .4"	.0001	±.0001"	7161013	**186.90**
0-10mm	0.01mm	±0.004mm	7161010	**186.90**

Hub Micrometers

Features:
- Carbide tipped measuring faces
- Measures the hub thickness and shoulders inside the bore
- Ratchet stop



Range	Graduation	Accuracy	Code No.	Price $
0-1"	.0001"	±.0001"	7160011	**185.80**
1-2"	.0001"	±.0002"	7160021	**213.00**
2-3"	.0001"	±.0002"	7160031	**240.30**

Can Seam Micrometers

Features:
- Painted steel frame
- Measures the width, height, and depth of can seams



Range	Graduation	Accuracy	Code No.	Price $
0 - 0.6"	.001"	±.0001"	7162011	**186.90**
0 - 0.6"	.0001"	±.0001"	7162017	**186.90**

ASIMETO

Digital Screw Thread Micrometers

Features:
- 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



Range (in.)	Inch Resolution	Accuracy	Range (mm)	Metric Resolution	Accuracy	Code No.	Price $
0-1"	.00005"	±.0001"	0-25	.001mm	±.004mm	7136011	**521.80**
1-2"	.00005"	±.0002"	25-50	.001mm	±.004mm	7136021	**551.40**
2-3"	.00005"	±.0002"	50-75	.001mm	±.005mm	7136031	**553.10**
3-4"	.00005"	±.0002"	75-100	.001mm	±.005mm	7136041	**592.60**
4-5"	.00005"	±.0002"	100-125	.001mm	±.006mm	7136051	**786.40**
5-6"	.00005"	±.0002"	125-150	.001mm	±.006mm	7136061	**848.50**

Screw Thread Micrometers

Features:
- For measuring various screw threads
- Friction Thimble
- Interchangeable tips are optional



Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-1"	.001"	±.0001"		7132011	**218.80**
0-1"	.0001"	±.0001"		7132013	**218.80**
1-2"	.001"	±.0002"	with Standard	7132021	**238.60**
1-2"	.0001"	±.0002"	with Standard	7132023	**238.60**
2-3"	.001"	±.0002"	with Standard	7132031	**274.60**
2-3"	.0001"	±.0002"	with Standard	7132033	**274.60**
3-4"	.001"	±.0002"	with Standard	7132041	**296.00**
3-4"	.0001"	±.0002"	with Standard	7132043	**296.00**
4-5"	.001"	±.0002"	with Standard	7132051	**335.50**
5-6"	.001"	±.0002"	with Standard	7132061	**375.00**
Metric					
0-25mm	0.01mm	±0.004mm		7132010	**218.80**
25-50mm	0.01mm	±0.004mm	with Standard	7132020	**238.60**

Anvils

Features:
- For screw 60º ISO



T.P.I.	Pitch (in./mm)	Notes	Code No.	Price $
64-48 (M1)	.016-.019"/0.4-0.5mm	1 pair	7130610	**35.50**
44-28 (M2)	.024-.035"/0.6-0.9mm	1 pair	7130620	**35.50**
24-14 (M3)	.04-.068"/1.0-1.75mm	1 pair	7130630	**35.50**
13-9 (M4)	.079-.118"/2.0-3.0mm	1 pair	7130640	**35.50**
8-5 (M5)	.138-.196"/3.5-5.0mm	1 pair	7130650	**35.50**
4.5-3.5 (M6)	.217-.275"/5.5-7.0mm	1 pair	7130660	**35.50**
64-3.5	.016-.275"/0.4-7.0mm	6 pc Set	7130600	**212.50**

STM

Screw Thread Micrometers

- For 60º thread
- .001" graduations
- Includes six anvils 64-48, 44-28, 24-14, 13-9, 8-5, 4.5-3.5



Range (in.)	Code No.	Price $
0-1	200-410	**346.80**
1-2	200-415	**363.60**
2-3	200-420	**393.10**
3-4	200-425	**410.70**
4-5	200-430	**443.90**
5-6	200-435	**476.20**
Replacement Anvil Set	200-412	**186.00**

ASIMETO

Snap Gauges

Features:
- Gray painted steel frame
- Carbide tipped measuring faces
- Dial gauge is not included
- 8mm diameter stem dial gauge
- Suitable for quickly measuring dimensions of mass-produced work pieces

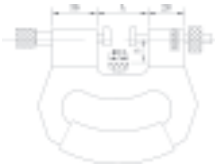


Range (in.)	Code No.	Price $
0-1"	7181011	**221.20**
0-2"	7181021	**279.20**
2-4"	7181041	**337.20**
4-6"	7181061	**390.60**
6-8"	7181081	**445.20**

Snap Gauges

Features:
- Gray painted steel frame
- Dial gauge is not included
- 8mm diameter stem dial gauge
- Suitable for quickly measuring dimensions of mass-produced work pieces
- The measuring anvils are designed with an angle to allow for easy insertion of the work piece
- Dimensions of measuring face: 14 x 11mm





Range	L	B	Code No.	Price $
0-1"	42mm	20mm	7182011	**520.60**
0-2"	69mm	32.5mm	7182021	**578.70**
2-3"	94mm	45mm	7182031	**646.60**
3-4"	119mm	57.7mm	7182041	**724.30**
4-5"	144mm	70mm	7182051	**792.20**
5-6"	169mm	82.5mm	7182061	**850.30**
6-7"	194mm	95mm	7182071	**909.40**
7-8"	219mm	107.5mm	7182081	**967.50**

ASIMETO

Indicating Micrometers

Features:
- Resolution:
  Indicator: .00005" / 0.001mm
  Scale: .0001: / 0.002mm
- Carbide tipped measuring faces
- Gray painted steel frame
- Indicator range: ±0.04mm
- Retractable anvil with an indicator for precision measurement of mass-produced parts



Range	Accuracy	Code No.	Price $
Inch			
0-1"	±.0001"	7152011	**598.40**
1-2"	±.0002"	7152021	**683.70**
2-3"	±.0002"	7152031	**770.70**
3-4"	±.0002"	7152041	**890.30**
Metric			
0-25mm	±0.002mm	7152010	**598.40**
25-50mm	±0.002mm	7152020	**683.70**

STM

Indicating Micrometers

- Tolerance hands can be set as desired
- Carbide faces
- Full .006" (±.003") scale
- Quick and easy zero adjustment
- 0–1" micrometer dial reads in .0005" increments
- Premium quality, can be used as a Go/NoGo gauge



Range (in.)	Graduation (in.)	Code No.	Price $
0-1	.0005	200-480•	**451.50**

• Available only while supplies last

ASIMETO

Thread Measuring Triangle Set

Features:
- Measures simulated thread pitch diameter to reference thread chart provided for all 60º threads
- Made of hardened steel



Set includes:	Code No.	Price $
2 thread triangles 2 rubber holding bands Protective hinged plastic case complete with Unified thread chart	7146800	**78.20**

ASIMETO

Micrometer Standards

Features:
- Used for zero point setting of outside micrometers.
- Heat insulating handle to prevent heat expansion due to body temperature
- Flat measuring face

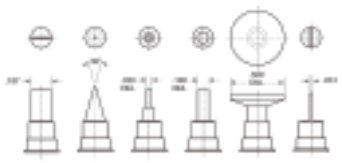


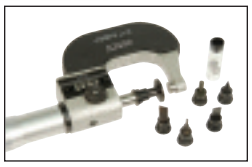
Size	Accuracy	Diameter	Code No.	Price $
1"	±0.00005"	.276"	7110011	**6.40**
2"	±0.0001"	.276"	7110021	**7.60**
3"	±0.0001"	.276"	7110031	**9.30**
4"	±0.0001"	.315"	7110041	**12.20**
5"	±0.00015"	.315"	7110051	**17.50**
6"	±0.00015"	.315"	7110061	**19.20**
7"	±0.00015"	.315"	7110071	**21.50**
8"	±0.00015"	.315"	7110081	**24.40**
9"	±0.00020"	.315"	7110091	**27.90**
10"	±0.00020"	.315"	7110101	**32.00**
11"	±0.00020"	.315"	7110111	**34.30**
12"	±0.00025"	.630"	7110121	**63.90**
13"	±0.00025"	.630"	7110131	**63.90**
14"	±0.00025"	.630"	7110141	**75.50**
15"	±0.00025"	.630"	7110151	**63.90**
16"	±0.00025"	.630"	7110161	**75.50**
17"	±0.00025"	.630"	7110171	**67.40**
18"	±0.00025"	.630"	7110181	**80.10**
19"	±0.00030"	.630"	7110191	**67.40**
20"	±0.00030"	.630"	7110201	**80.10**
21"	±0.00030"	.630"	7110211	**81.90**
23"	±0.00030"	.630"	7110221	**81.90**

Micrometer Anvil Attachments

Features:
- A must accessory for every micrometer
- Each anvil is 1/2" long & comes with reinforced holding boot
- Anvils are hardened steel with Black Oxide finish
- Fits .235" and .250" spindle diameters







Description	Notes	Code No.	Price $
Super Spline	.050" face	7146710	**31.30**
Spline	.100" face	7146720	**31.30**
Blade	.300" thick	7146730	**31.30**
Disc	.500" face	7146740	**37.50**
Knife	30 degrees	7146750	**31.30**
Comparator	30 degrees	7146760	**31.30**
Ball Attachment	.200"	7146770	**10.40**
Ball Attachment	5mm	7146772	**13.90**

ASIMETO

Flange Groove Micrometers

Features:
- Graduation: 001”/0.01mm
- Parallelism: .001”/0.01mm
- Non-rotating spindle with bi-directional ratchet stop
- Contact faces allow for the measurement of both internal and external grooves, widths, and flanks



Flange Dia.	Range Outside	Range Inside	Accuracy	Code No.	Price $
Without Measuring Force					
6.5mm	0-1”	.06-1.05”	±.001”	7163011	**547.30**
13mm	0-1”	.06-1.05”	±.001”	7163013	**547.30**
13mm	1-2”	1.05-2.05	±.001”	7163023	**630.30**
13mm	2-3”	2.05-3.05	±.001”	7163033	**724.30**
13mm	3-4”	3.05-4.05	±.001”	7163043	**828.80**
6.5mm	0-25mm	1.6-26.5mm	±0.01mm	7163010	**592.00**
13mm	0-25mm	1.6-26.5mm	±0.01mm	7163012	**592.00**
13mm	25-50mm	26.5-51.5mm	±0.01mm	7163022	**683.10**
Two-directional Measuring Force					
6.5mm	0-1”	.06-1.05”	±.001”	7163611	**547.30**
13mm	0-1”	.06-1.05”	±.001”	7163613	**547.30**
13mm	1-2”	1.05-2.05	±.001”	7163623	**630.30**
13mm	2-3”	2.05-3.05	±.001”	7163633	**724.30**
13mm	3-4”	3.05-4.05	±.001”	7163643	**828.80**

STM

Pocket Thickness Gauges

- Designed for carrying convenience
- Quick inspection of paper, leather, wire, plastic, sheet metal and similar materials
- Easy zero point adjustment bezel



Range (in./mm)	Graduation (in./mm)	Code No.	Price $
0-0.5	.0005	200-860	**80.50**
0-10 mm	.01 mm	200-865	**83.70**

Dial Thickness Gauges

- This gauge offers a quick and efficient means of inspection with the grip handle, thumb trigger and spring-loaded spindle



Range (mm)	Grad. (mm)	Capacity (mm)	Throat Depth (mm)	Anvil Dia. (mm)	Code No.	Price $
0-10	.01	21.3	26	10.0	200-920	**108.80**

ASIMETO

Digital Inside Micrometers

Features:
- Resolution: .00005”/0.001mm
- Carbide faces
- Ratchet Stop
- .2”-1.25-30mm & 1.0”-2.0”/25-50mm ranges are supplied with setting rings





Range	Resolution	Accuracy	Code No.	Price $
Inch Thimble				
.2”-1.2” / 5-30mm	.00005”/.001mm	±.0001”	7207011	**475.40**
1.0”-2.0” / 25-50mm	.00005”/.001mm	±.0002”	7207021	**495.70**
2.0”-3.0” / 50-75mm	.00005”/.001mm	±.0002”	7207031	**511.90**
3.0”-4.0” / 75-100mm	.00005”/.001mm	±.0002”	7207041	**540.90**
4.0”-5.0” / 100-125mm	.00005”/.001mm	±.0002”	7207051	**583.90**
5.0”-6.0” / 125-150mm	.00005”/.001mm	±.0002”	7207061	**614.60**
6.0”-7.0” / 150-175mm	.00005”/.001mm	±.0002”	7207071	**645.40**
7.0”-8.0” / 175-200mm	.00005”/.001mm	±.0002”	7207081	**685.40**
Metric Thimble				
.2”-1.2” / 5-30mm	.00005”/.001mm	±.007mm	7207010	**470.10**

Inside Micrometers

Features:
- Carbide measuring faces
- Caliper type jaws are made of high grade tool steel
- Graduation: Inch: .001”/ Metric: 0.01mm
- Ratchet stop





Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
.2”-1.18”	.001”	±.0001”	c/w ring gauge	7203011	**171.30**
1-2”	.001”	±.0002”	c/w ring gauge	7203021	**182.30**
2-3”	.001”	±.0002”		7203031	**205.50**
3-4”	.001”	±.0002”		7203041	**230.40**
Metric					
5-30mm	0.01mm	±0.004mm	c/w ring gauge	7203010	**171.30**
25-50mm	0.01mm	±0.004mm	c/w ring gauge	7203020	**182.30**
50-75mm	0.01mm	±0.005mm		7203030	**204.90**
75-100mm	0.01mm	±0.005mm		7203040	**230.40**

ASIMETO

Digital Two & Three Point Internal Micrometers

Features:
- Resolution: .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 .24” have two measuring points and models over 7mm or .275” have three measuring points



Range	Thimble Graduation	Accuracy	Setting Rings	L	A	Extension Rods	Code No.	Price $
0.08 - 0.1”	0.0001”	±0.00016”	.1”	12.5mm	-	-	7208061	**1,324.40**
0.1 - 0.12”	0.0001”	±0.00016”	.1”	12.5mm	-	-	7208071	**1,324.40**
0.12 - 0.16”	0.0001”	±0.00016”	.16”	22.5mm	-	-	7208081	**1,175.80**
0.16 - 0.2”	0.0001”	±0.00016”	16”	22.5mm	-	-	7208091	**1,175.80**
0.2 - 0.24”	0.0001”	±0.00016”	.24”	22.5mm	-	-	7208101	**1,175.80**
0.24 - 0.28”	0.0001”	±0.00016”	.24”	22.5mm	0.5mm	-	7208105	**1,175.80**
0.275 - 0.35”	0.0001”	±0.00016”	.275”	53.5mm	0.5mm	100mm	7208111	**901.30**
0.35 - 0.425”	0.0001”	±0.00016”	.35”	53.5mm	0.5mm	100mm	7208121	**901.30**
0.425 - 0.5”	0.0001”	±0.00016”	.5”	53.5mm	0.5mm	100mm	7208131	**901.90**
0.5 - 0.65”	0.0002”	±0.00016”	.65”	80mm	0.5mm	150mm	7208241	**959.90**
0.65 - 0.8”	0.0002”	±0.00016”	.65”	80mm	0.5mm	150mm	7208251	**959.90**
0.8 - 1.0”	0.0002”	±0.00016”	1”	90mm	0.5mm	150mm	7208261	**1,004.60**
1 - 1.2”	0.0002”	±0.00016”	1”	90mm	0.5mm	150mm	7208271	**1,004.60**
1.2 - 1.6”	0.0002”	±0.00016”	1.6”	97mm	0.5mm	150mm	7208281	**1,127.10**
1.6 - 2.0”	0.0002”	±0.0002”	1.6”	97mm	0.5mm	150mm	7208291	**1,127.10**
2.0 - 2.5”	0.0002”	±0.0002”	2.5”	114mm	0.5mm	150mm	7208301	**1,195.00**
2.5 - 3.0”	0.0002”	±0.0002”	2.5”	114mm	0.5mm	150mm	7208311	**1,262.90**
3.0 - 3.5”	0.0002”	±0.0002”	3.5”	114mm	0.5mm	150mm	7208321	**1,312.20**
3.5 - 4.0”	0.0002”	±0.0002”	3.5”	114mm	0.5mm	150mm	7208331	**1,370.80**
4.0 - 5.0”	0.0002”	±0.0002”	4.5”	145mm	0.5mm	150mm	7208341	**1,387.10**
5.0 - 6.0”	0.0002”	±0.0002”	5.5”	145mm	0.5mm	150mm	7208351	**1,593.10**
6.0 - 7.0”	0.0002”	±0.0002”	6.5”	145mm	0.5mm	150mm	7208361	**1,838.00**
7.0 - 8.0”	0.0002”	±0.0002”	7.5”	145mm	0.5mm	150mm	7208371	**2,142.70**
8.0 - 9.0”	0.0002”	±0.00028”	8.5”	145mm	0.5mm	150mm	7208381	**2,488.60**
9.0 - 10.0	0.0002”	±0.00028”	9.5”	145mm	0.5mm	150mm	7208391	**2,915.10**
10.0 - 11.0”	0.0002”	±0.00028”	10.5”	145mm	0.5mm	150mm	7208401	**3,429.30**
11.0 - 12.0”	0.0002”	±0.00028”	11.5”	145mm	0.5mm	150mm	7208411	**4,039.80**
Inch Sets								
.08 - .12” (2pc)	0.0001”	c/w 0.1” Setting Ring					7208619	**2,582.60**
.12 - .28” (4pc)	0.0001”	c/w 0.16”, 0.24” Setting Rings					7208629	**4,555.70**
0.275 - 0.5” (3pc)	0.0001”	c/w 0.275”,0.35”,0.5” Setting Rings & 4.0” Extension					7208639	**2,438.70**
0.5 - 0.8” (2pc)	0.0002”	c/w 0.65”Setting Ring & 6.0” Extension					7208649	**1,727.70**
0.8 - 2.0” (4pc)	0.0002”	c/w 1.0”,1.6” Setting Rings & 6.0” Extension					7208659	**3,642.90**
2.0 - 4.0” (4pc)	0.0002”	c/w 2.5”,3.5” Setting Rings & 6.0” Extension					7208669	**4,217.40**

Dimension .08 - .24”



Dimension .275” and over



ASIMETO

Two & Three Point Internal Micrometers

Features:
- Carbide tipped contact points
- Ratchet Stop
- Setting rings supplied
- Measuring contact points are designed to allow measurements near to the bottom of blind holes
- Models up to 6mm or .24" have two measuring points and models over 7mm or .275" have three measuring points

Dimension 2-6mm/.08 - .24"

Dimension 6mm/.275" and over



Range	Graduation	Accuracy	Setting Rings	L	A	Extension Rods	Code No.	Price $
0.08 - 0.1"	0.0001"	±0.00016"	.1"	12.5mm	-	-	7209061	**980.80**
0.1 - 0.12"	0.0001"	±0.00016"	.1"	12.5mm	-	-	7209071	**980.80**
0.12 - 0.16"	0.0001"	±0.00016"	.16"	22.5mm	-	-	7209081	**832.30**
0.16 - 0.2"	0.0001"	±0.00016"	16"	22.5mm	-	-	7209091	**832.30**
0.2 - 0.24"	0.0001"	±0.00016"	.24"	22.5mm	-	-	7209101	**832.30**
0.24 - 0.28"	0.0001"	±0.00016"	.24"	22.5mm	0.5mm	-	7209105	**832.30**
0.275 - 0.35"	0.0001"	±0.00016"	.275"	53.5mm	0.5mm	100mm	7209111	**579.20**
0.35 - 0.425"	0.0001"	±0.00016"	.35"	53.5mm	0.5mm	100mm	7209121	**579.20**
0.425 - 0.5"	0.0001"	±0.00016"	.5"	53.5mm	0.5mm	100mm	7209131	**579.80**
0.5 - 0.65"	0.0002"	±0.00016"	.65"	80mm	0.5mm	150mm	7209241	**434.10**
0.65 - 0.8"	0.0002"	±0.00016"	.65"	80mm	0.5mm	150mm	7209251	**434.10**
0.8 - 1.0"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7209261	**611.20**
1 - 1.2"	0.0002"	±0.00016"	1"	90mm	0.5mm	150mm	7209271	**611.20**
1.2 - 1.6"	0.0002"	±0.00016"	1.6"	97mm	0.5mm	150mm	7209281	**673.80**
1.6 - 2.0"	0.0002"	±0.0002"	1.6"	97mm	0.5mm	150mm	7209291	**776.60**
2.0 - 2.5"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7209301	**820.70**
2.5 - 3.0"	0.0002"	±0.0002"	2.5"	114mm	0.5mm	150mm	7209311	**878.70**
3.0 - 3.5"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7209321	**918.70**
3.5 - 4.0"	0.0002"	±0.0002"	3.5"	114mm	0.5mm	150mm	7209331	**961.10**
4.0 - 5.0"	0.0002"	±0.0002"	4.5"	145mm	0.5mm	150mm	7209341	**1,069.00**
5.0 - 6.0"	0.0002"	±0.0002"	5.5"	145mm	0.5mm	150mm	7209351	**1,274.50**
6.0 - 7.0"	0.0002"	±0.0002"	6.5"	145mm	0.5mm	150mm	7209361	**1,518.80**
7.0 - 8.0"	0.0002"	±0.0002"	7.5"	145mm	0.5mm	150mm	7209371	**1,825.20**
8.0 - 9.0"	0.0002"	±0.00028"	8.5"	145mm	0.5mm	150mm	7209381	**2,165.90**
9.0 - 10.0	0.0002"	±0.00028"	9.5"	145mm	0.5mm	150mm	7209391	**2,594.80**
10.0 - 11.0"	0.0002"	±0.00028"	10.5"	145mm	0.5mm	150mm	7209401	**3,112.40**
11.0 - 12.0"	0.0002"	±0.00028"	11.5"	145mm	0.5mm	150mm	7209411	**3,723.50**
Inch Sets								
.08 - .12" (2pc)	0.0001"	c/w 0.1" Setting Ring					7209619	**1,896.00**
.12 - .28" (4pc)	0.0001"	c/w 0.16", 0.24" Setting Rings					7209629	**3,186.70**
0.275 - 0.5" (3pc)	0.0001"	c/w 0.275",0.35",0.5" Setting Rings & 4.0" Extension					7209639	**1,579.70**
0.5 - 0.8" (2pc)	0.0002"	c/w 0.65"Setting Ring & 6.0" Extension					7209649	**794.50**
0.8 - 2.0" (4pc)	0.0002"	c/w 1.0",1.6" Setting Rings & 6.0" Extension					7209659	**2,266.30**
2.0 - 4.0" (4pc)	0.0002"	c/w 2.5",3.5" Setting Rings & 6.0" Extension					7209669	**2,990.60**

Metric

Range	Graduation	Accuracy	Setting Rings	L	A	Extension Rods	Code No.	Price $
6-8mm	0.001mm	±0.004mm	6mm	53.5mm	0.5mm	100mm	7209110	**579.20**
8-10mm	0.001mm	±0.004mm	8mm	53.5mm	0.5mm	100mm	7209120	**579.20**
10-12mm	0.001mm	±0.004mm	10mm	53.5mm	0.5mm	100mm	7209130	**579.80**
12-16mm	0.005mm	±0.004mm	16mm	80mm	0.5mm	150mm	7209240	**434.10**
16-20mm	0.005mm	±0.004mm	16mm	80mm	0.5mm	150mm	7209250	**434.10**
20-25mm	0.005mm	±0.004mm	25mm	90mm	0.5mm	150mm	7209260	**611.20**
25-30mm	0.005mm	±0.004mm	25mm	90mm	0.5mm	150mm	7209270	**611.20**
30-40mm	0.005mm	±0.004mm	40mm	97mm	0.5mm	150mm	7209280	**673.80**
40-50mm	0.005mm	±0.005mm	40mm	97mm	0.5mm	150mm	7209290	**776.60**
50-63mm	0.005mm	±0.005mm	62mm	114mm	0.5mm	150mm	7209300	**820.70**
62-75mm	0.005mm	±0.005mm	62mm	114mm	0.5mm	150mm	7209310	**878.70**
75-88mm	0.005mm	±0.005mm	87mm	114mm	0.5mm	150mm	7209320	**918.70**
87-100mm	0.005mm	±0.005mm	87mm	114mm	0.5mm	150mm	7209330	**961.10**
Metric Sets								
2-3mm (2pc)	0.001mm	c/w 2.5mm Setting Ring					7209618	**1,896.00**
3-6mm (3pc)	0.001mm	c/w 4mm, 5mm, 6mm Setting Rings					7209628	**2,395.10**
6-12mm (3pc)	0.001mm	c/w 6mm, 8mm, 10mm Setting Rings & 100mm Extension					7209638	**1,565.20**
12-20mm (2pc)	0.005mm	c/w 16mm Setting Ring & 150mm Extension					7209648	**828.80**
20-50mm (4pc)	0.005mm	c/w 25mm, 40mm Setting Rings & 150mm Extension					7209658	**2,266.30**
50-100mm (4pc)	0.005mm	c/w 62mm, 87mm Setting Rings & 150mm Extension					7209668	**2,990.60**

ASIMETO.

Tubular Inside Micrometers - Extension Type

Features:
- Offers a wide range of ID measurements by combining extension rods with the micrometer head.



Range	Rods (Dia. .50")	Notes	Code No.	Price $
Inch				
2-12"	.5", 1", 2", (2pcs), 4"	Includes .50" .001" Mic head	7240011	**319.80**
2-40"	.5", 1", 2", 4" (2pcs), 6", 8", 12"	Includes .50" .001" Mic head	7240021	**1,015.90**
0.5"		Replacement Mic Head .001"	7169551	**208.40**
Metric				
50-300	13, 25, 50 (2pcs), 100	Includes 13.0mm 0.01mm Mic head	7240010	**319.80**
50-1000	13, 25, 50, 100 (2pcs), 150, 200, 300	Includes 13.0mm 0.01mm, Mic head	7240020	**1,201.90**
13mm		Replacement Mic Head .01mm	7169550	**208.40**

ASIMETO.

Inside Micrometers - Interchangeable Rod Type

Features:
- Graduation:
  Inch: .001"
  Metric: 0.01mm
- Rods marked with its measuring range
- Satin chrome finish throughout
- All contact points hardened for extra long tool life

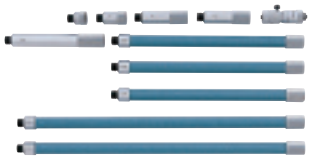


Range	Head Travel	Grad.	Spacing Collar	Rod Dia.	Notes	Code No.	Price $
Inch							
1-2"	.25"	.001"	.250"	.248"	1" Mic head & 2 Rods	7242021	**271.70**
2-8"	.50"	.001"	.500"	.248"	2" Mic head & 6 Rods	7242081	**296.80**
2-12"	.50"	.001"	.500"	.248"	2" Mic head & 10 Rods	7242121	**326.70**
8-20"	1.00"	.001"	1", 2"	.355"	8" Mic head & 3 Rods	7242201	**468.40**
8-40"	1.00"	.001"	1", 2"	.355"	8" Mic head & 8 Rods	7242401	**1,446.80**
Metric							
25-50	7.0mm	0.01mm	6.0mm	6.3mm	25mm Mic head & 2 Rods	7242020	**271.70**

Note: individual rods are matched with micrometer and should not be interchanged with other sets.

Mitutoyo

Tubular Inside Micrometers



Mitutoyo Model No.	Range (in.)	Grad (in.)	Sowa Code No.	Price $
137-212	2-12	.001"	844-684	**415.00**
137-214	2-40	.001"	840-984	**667.00**

Mitutoyo

Inside Micrometers - Rod Type



Mitutoyo Model No.	Range (in.)	Grad (in.)	Sowa Code No.	Price $
141-208	2 - 8	.001	840-071	**206.00**
141-233	2 - 12	.001	840-072	**254.00**
141-121	8 - 20	.001	841-523	**449.00**

Starrett

823 Series Tubular Inside Micrometers

- Graduation: .001"
- Extension rods made of steel tubing, light in weight, extremely rigid
- Rods are approximately 3/8" (9.5mm) diameter
- Rods are insulated, with the exception of 1/2" (13mm) and 1" (25mm) sizes
- Each rod marked with length
- Hardened and ground anvils on rods are adjustable for length
- Head anvil is hardened and ground
- Interchangeable anvils on both 1/2" (13mm) and 1" (25mm) heads
- Quick reading figures – every thousandth numbered on Inch reading tools
- Lock nut furnished on 1" (25mm) heads



Range	Description	Starrett No.	Sowa Code No.	List $
1 1/2-8"	With 5 Rods & Handle	823AZ	629-521	**386.10**
1 1/2-12"	With 8 Rods & Handle	823BZ	629-023	**471.90**
4-24"	With 7 Rods	823CZ	629-024	**595.10**
4-32"	With 8 Rods	823DZ	630-264	**657.80**

Starrett

124 Series Inside Micrometers

- .001" Graduation
- Rod diameters are approximately 1/4" (6mm)
- Rods are insulated
- Each rod marked with length
- Hardened and ground anvils on rods, adjustable for length
- Head anvil is hardened and ground
- Quick-reading figures – every thousandth numbered on Inch reading tools
- Furnished with case



Range	No. of Rods	Starrett No.	Sowa Code No.	List $
2-8"	6	124AZ	629-581	**320.10**
2-12"	10	124BZ	629-021	**390.50**

ASIMETO

Dual Measurement Inside Micrometers

Features:
- For all kinds of inside measurements
- Bi-directional graduation for easy reading in both directions
- Supplied with setting rings (Ø1.2" / Ø30mm dia)



Upper Range	Lower Range	Graduation	Accuracy	Code No.	Price $
.2 - 1.2"	1.2 - 2.2"	.001"	±.00024"	7206011	**347.70**
5-30mm	30-55mm	0.01mm	±0.008mm	7206010	**347.70**

STM

Inside Micrometers

- Satin chrome finish
- With ratchet stop
- Complete with fitted case



	Range (in./mm)	Graduation (in./mm)	Code No.	Price $
Inch				
	.2-1.2	.001	200-460	**122.10**
	1-2	.001	200-465	**132.20**
Metric				
	5-30 mm	.01 mm	200-470	**122.10**
	25-50 mm	.01 mm	200-475	**132.20**

ASIMETO

Digit Depth Micrometers

Features:
- Resolution: .001" / 0.01mm
- .157 Dia. interchangeable rod lengths can be adjusted after wear on the measuring tip
- Ratchet Stop
- Satin Chrome finish throughout



Range	Thimble Grad.	Accuracy	Base Length	Notes	Code No.	Price $
Inch						
0-4"	.0001"	±0.0002"	2.5"	With Int. Rods: 4pcs	7202041	**302.40**
0-6"	.0001"	±0.0002"	2.5"	With Int. Rods: 6pcs	7202061	**401.10**
0-4"	.0001"	±0.0002"	4.0"	With Int. Rods: 4pcs	7202043	**317.50**
0-6"	.0001"	±0.0002"	4.0"	With Int. Rods: 6pcs	7202063	**401.10**
Metric						
0-150mm	0.01mm	±0.005mm	101.6mm	With Int. Rods: 6pcs	7202062	**401.10**

ASIMETO

Digital Depth Micrometers

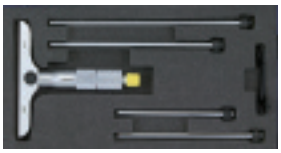
Features:
- Resolution: .00005" / 0.001mm
- .157 Dia. interchangeable rod lengths can be adjusted after wear on the measuring tip
- Ratchet Stop
- Satin Chrome finish throughout
- Protection level IP65
- Absolute and incremental measuring modes
- Auto On/Off
- Inch/Metric conversion



Range	Thimble Grad.	Accuracy	Base Length	Notes	Code No.	Price $
Inch						
0-4"	.0001"	±0.0002"	2.5"	With Int. Rods: 4pcs	7205041	**552.00**
0-6"	.0001"	±0.0002"	2.5"	With Int. Rods: 6pcs	7205061	**639.60**
0-4"	.0001"	±0.0002"	4.0"	With Int. Rods: 4pcs	7205043	**566.50**
0-6"	.0001"	±0.0002"	4.0"	With Int. Rods: 6pcs	7205063	**639.60**
Metric						
0-100mm	0.01mm	±0.005mm	63mm	With Int. Rods: 4pcs	7205040	**566.50**
0-150mm	0.01mm	±0.005mm	63mm	With Int. Rods: 6pcs	7205060	**639.60**
0-100mm	0.01mm	±0.005mm	101.6mm	With Int. Rods: 4pcs	7205042	**566.50**
0-150mm	0.01mm	±0.005mm	101.6mm	With Int. Rods: 6pcs	7205062	**639.60**

Depth Micrometers

Features:
- .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 $
Inch						
0-4"	.001"	+0.0002"	2.5"	With Int. Rods: 4pcs	7201041	**272.30**
0-4"	.0001"	+0.0002"	2.5"	With Int. Rods: 4pcs	7201045	**272.30**
0-6"	.001"	+0.0002"	2.5"	With Int. Rods: 6pcs	7201061	**352.70**
0-6"	.0001"	+0.0002"	2.5"	With Int. Rods: 6pcs	7201065	**352.70**
0-12"	.001"	+0.00028"	2.5"	With Int. Rods: 12pcs	7201121	**573.40**
0-12"	.0001"	+0.00028"	2.5"	With Int. Rods: 12pcs	7201125	**573.40**
0-4"	.0001"	+0.0002"	4.0"	With Int. Rods: 4pcs	7201049	**272.30**
0-6"	.001"	+0.0002"	4.0"	With Int. Rods: 6pcs	7201063	**352.70**
0-6"	.0001"	+0.0002"	4.0"	With Int. Rods: 6pcs	7201069	**352.70**
0-12"	.001"	+0.00028"	4.0"	With Int. Rods: 12pcs	7201123	**573.40**
0-12"	.0001"	+0.00028"	4.0"	With Int. Rods: 12pcs	7201129	**573.40**
Metric						
0-50mm	0.01mm	+0.004mm	63.5mm	With Int. Rods: 2pcs	7201020	**222.90**
0-100mm	0.01mm	+0.005mm	63.5mm	With Int. Rods: 4pcs	7201040	**272.30**
0-150mm	0.01mm	+0.005mm	63.5mm	With Int. Rods: 6pcs	7201060	**352.70**
0-100mm	0.01mm	+0.005mm	101.6mm	With Int. Rods: 4pcs	7201042	**272.30**
0-150mm	0.01mm	+0.005mm	101.6mm	With Int. Rods: 6pcs	7201062	**352.70**

Half-Base Depth Micrometers

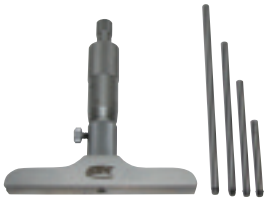
Features:
- .157 Dia. interchangeable rod lengths can be adjusted after wear on the measuring tip
- Ratchet Stop
- Satin Chrome finish throughout



Range	Thimble Grad.	Accuracy	Base Length	Notes	Code No.	Price $
Inch						
0-4"	.0001"	±0.0002"	57mm	With Int. Rods: 4pcs	7201047	**347.70**
0-6"	.0001"	±0.0002"	57mm	With Int. Rods: 6pcs	7201067	**448.10**

Depth Micrometers

- Base surface hardened and ground
- Satin chrome finish
- .001" graduations
- Complete with fitted case
- Available only while supplies last



Range (in/mm)	Graduation (in/mm)	Base (in/mm)	Code No.	Price $
Inch				
0-4	.001	2-1/2	200-550	**142.50**
0-4	.001	4	200-552	**142.50**
0-6	.001	2-1/2	200-557	**183.50**
0-6	.001	4	200-555	**183.50**
Metric				
0-100 mm	.01 mm	64 mm	200-440	**220.30**
0-100 mm	.01 mm	100 mm	200-445	**220.30**
0-150 mm	.01 mm	64 mm	200-450	**264.20**

Depth Micrometers





Mitutoyo Model No.	Range (in.)	Grad (in.)	Base (in.)	No. of Rods	Sowa Code No.	Price $
129-127	0 - 4	.001	2-1/2	4	840-066	**210.00**
129-132	0 - 6	.001	4	6	840-069	**284.00**
129-150	0 - 12	.001	4	12	841-092	**446.00**

445 Series Depth Micrometers

- Ratchet Stop, Lock Nut, Carbide Faces, in fitted case
- Graduation: .001" • Base: 3" • Rod Diameter: 5/32
- Combination ratchet and speeder for uniform pressure and quicker adjustment
- Ring-type lock nut
- Satin chrome finish
- Measuring rods are adjustable



Range	No. of Rods	Starrett No.	Sowa Code No.	List $
0-3"	3	445AZ-3RL	630-665	**313.50**
0-6"	6	445AZ-6RL	629-027	**378.40**

Digital Micrometer Head

Features:
- IP65 Protection
- On/Off Sensor
- Ratchet Stop
- Extra large LCD readout
- Carbide Face
- Inch/Metric conversion



Range	Resolution	Accuracy	Code No.	Price $
0-1" / 0-25mm	.00005" / 0.001mm	±.0001"	7165011	**337.20**

Micrometer Heads

Features:
- Graduation: Inch: .001"/Metric: 0.01mm
- Accuracy: Inch: + .0001"/Metric: + 0.02mm
- Satin Chrome finish



Range	Grad.	Accuracy	Notes	Code No.	Price $
Inch					
0-.5"	.001"	+.0001"	.197" dia. face / without spindle lock / without clamp nut	7169051	**80.10**
0-.5"	.001"	+.0001"	.197" dia. face / with spindle lock / with clamp nut	7169053	**94.60**
0-.5"	.001"	+.0001"	.197" dia. face / without spindle lock / Spherical Face type, without clamp nut	7169055	**80.10**
0-.5"	.001"	+.0001"	.197" dia. face / with spindle lock / with clamp nut / Spherical face	7169057	**90.60**
0-.5"	.001"	+.0001"	.250" dia. Carbide face / with spindle lock / with clamp nut	7169351	**94.60**
0-.5"	.001"	+.0001"	.250" dia. Carbide face, Spherical face type / without spindle lock / without clamp nut	7169353	**80.10**
0-1"	.001"	+.0001"	.250" dia. Carbide face, Spherical face type / without spindle lock / with clamp nut	7169011	**83.00**
Metric					
0-13	0.01	+.0.02	5mm face / without spindle lock / without clamp nut	7169050	**80.10**
0-13	0.01	+.0.02	5mm face / with spindle lock / with clamp nut	7169052	**94.60**

CALIPERS

IP67 Coolant Proof Digital Calipers	F24
Digital Calipers	F24-25
Dial Calipers	F26
Vernier Calipers	F27
Long Jaw & Heavy Duty Vernier Calipers	F28
Forester Calipers	F28
Adjustable Measuring Jaw Calipers	F29
Digital Snap Gauges	F29
Inside Groove Calipers	F29
Digital Gauge With Single Wide Measuring Face	F29
Digital Gear Tooth Calipers	F29
Universal Depth Gauges	F29
Internal & External Caliper Gauges	F30
Digital Scales	F30
Thickness Gauges	F31
Centreline Gauge Caliper Attachments	F31
Depth Base Attachments	F31
Caliper Extender Attachments	F31
Universal Caliper Accessory Kit	F32
Groove Measurement Caliper Jaws	F32



ASIMETO

IP67 Coolant Proof Digital Calipers

Features:
- Resolution: .0005" / 0.01mm
- 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	.0005" / 0.01mm	±.001"	7305062	**242.10**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7305082	**320.40**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"	7305122	**399.30**

IP67 Coolant Proof Digital Calipers - Sylvac

Features:
- Conforms to IP67 rating
- Inch/Metric conversion
- Auto power On/Off
- Sylvac system



Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	.0005" / 0.01mm	±.001"/0.02mm	7301060	**344.10**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"/0.03mm	7301080	**566.90**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"/0.03mm	7301120	**745.50**

Starrett

798 Series Coolant Proof Digimatic Calipers



- Large, easy to read LCD display
- IP 67 level of protection against coolant, water, dirt and dust
- Hardened stainless steel measuring surface for long life
- Resolution is .0005" (0.01mm)
- Output data to Starrett SPC Plus hardware and software and to PCs

Range	Starrett No.	Sowa Code No.	List $
0-6" / 150mm	798B-6/150	632-747	**311.30**
0-8" / 200mm	798B-8/200	632-800	**377.30**
0-12" / 300mm	798B-12/300	633-046	**559.90**

STM

Coolant Proof Digital Calipers

Features:
- Coolant resistant
- Inside, outside, step and depth measurements
- Inch/Metric conversion
- Auto on, auto shutoff
- .0005"/.01mm resolution
- Zero button



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-6 x 150	.0005 x 0.01	200-945	**255.10**
0-8 X 200	.0005 x 0.01	200-950	**359.00**

Mitutoyo

Coolant Proof Digimatic Calipers

IP-67 Series
- IP-67 Dust / Water Protection
- Resolution: .0005"/0.01mm
- Accuracy: +/- .001"
- Single Battery Operation
- 3 Year Battery Life



Mitutoyo Model No.	Measuring Range	Sowa Code No.	Price $
500-752-20	0 - 6"/ 0 - 150mm	843-223	**245.00**
500-753-20	0 - 8"/ 0 - 200mm	843-555	**338.00**

ASIMETO

Digital Calipers

Features:
- Large LCD readout
- Inch/Metric conversion



Range	Resolution	Accuracy	Code No.	Price $
With Thumb Wheel				
0-6" / 0-150mm	.0005" / 0.01mm	±.001"	7307065	**107.40**
0-6" / 0-150mm	.0005" / 0.01mm	±.001"	7307061•	**95.80**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7307085	**155.00**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7307081•	**156.70**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"	7307125	**217.10**

• Available only while quantities last.

Digital Calipers

Features:
- Inside, outside, step and depth measurements
- Inch/Metric conversion
- Auto on, auto shutoff
- .0005"/.01mm resolution
- Zero button



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-4 x 100	.0005 x 0.01	200-642	**77.20**
0-6 x 150	.0005 x 0.01	200-645	**62.60**
0-8 X 200	.0005 x 0.01	200-646	**114.00**
0-12 x 300	.0005 x 0.01	200-647	**176.30**
0-24 x 600	.0005 x 0.01	200-648**	**593.80**
0-40 x 1000	.0005 x 0.01	200-649**	**1,038.30**
0-6 x 150*	.0005 x 0.01	200-545	**89.00**

*Wooden Case **no depth gauge

Large Display Digital Calipers

Features:
- Large face for easy reading
- Inside, outside, step and depth measurements
- Inch/Metric conversion
- Auto on, auto shutoff
- .0005"/.01mm resolution
- Zero button



Range (in x mm)	Resolution (in x mm)	Code No.	Price $
0-6 x 150	.0005 x 0.01	200-540	**62.60**
0-8 X 200	.0005 x 0.01	200-541	**114.00**
0-12 x 300	.0005 x 0.01	200-542	**176.30**

Absolute Digital Calipers

Features:
- Inch/Metric conversion
- The ZERO/ABS changes the measurement mode from absolute to incremental



Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	.0005" / 0.01mm	±.001"	7307563	**137.60**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7307583	**179.40**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"	7307623	**256.00**

ABSOLUTE Digimatic Calipers

- Both AN/LED Display and Imprinted/INC Scale
- Smaller models offer a convenient thumb wheel
- Stainless steel construction
- Linear scale embedded in epoxy
- Inside, Outside, Depth and Step measurements
- Repeatability: 0.005"
- Display: LCD 5-Digit
- Response speed: 1m (40")/Sec
- Absolute Encoder Technology always remembers it's position



Mitutoyo Model No.	Measuring Range	Sowa Code No.	Price $
500-196-30	0 - 6"/0 - 150mm	848-467*	**188.00**
500-197-30	0 - 8" / 0 - 200 mm / .0005	840-586*	**271.00**
500-193	0 - 12" / 0 - 300 mm / .0005	840-448*	**511.00**
500-505-10	0 -18" / 0 - 450 mm / .0005	840-190	**983.00**
500-506-10	0 - 24" / 0 - 600 mm / .0005	840-191	**1,087.00**
500-507-10	0 - 40" / 0 - 1,000 mm / .0005	840-449	**2,088.00**
500-171-30	0 - 6" w/ spc output.	840-188	**221.00**
500-172-30	0-8" w/ spc output	840-189	**291.00**

* without SPC

799 Series Electronic Calipers

- Inch/millimeter conversion reads .0005" or 0.01mm
- Last measuring position retained when shut off
- Resolution is .0005" (0.01mm)



6", 8" & 12" Calipers Only
- Large easy-to-read LCD, .32" high characters
- Integrated depth rod

Extended Range 24" & 40" Calipers
- Preset and hold feature
- Minimum and maximum limits set
- I.D. jaw dimension is 0.800"/20.32mm
- LCD characters are .50" high



Range	Starrett No.	Sowa Code No.	List $
0-6" / 150mm	EC799A-6/150	634-002	**196.90**
0-8" / 200mm	EC799A-8/200	632-081	**278.30**
0-12" / 300mm	EC799A-12/300	632-465	**415.80**
0-24" / 600mm	799AZ-24/600	632-466	**938.30**
0-40" / 1000mm	799AZ-40/1000	632-467	**1,882.10**

3 in 1 Digital Caliper

Features:
- Decimal, Metric, and Fractional display capability
- Extra large LCD
- Inch/Metric conversion



Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	.0005" / 0.01mm / 1/128"	±.001"	7307066•	**101.60**

• Available only while quantities last.

ASIMETO

Dial Calipers - Stainless Steel

Features:
- Hardened Stainless Steel



Range	Graduation	Range per Rev	Accuracy	Code No.	Price $
Inch					
0-4"	.001"	.200"	±.001"	7303041•	**65.60**
0-6"	.001"	.100"	±.001"	7303061	**93.50**
0-8"	.001"	.100"	±.0015"	7303081	**126.60**
0-12"	.001"	.100"	±.0015"	7303121	**240.90**
Metric					
0-150mm	.01mm	1.0mm	±0.02mm	7303060	**103.40**
0-200mm	.01mm	1.0mm	±0.03mm	7303080	**136.40**
0-300mm	.01mm	1.0mm	±0.04mm	7303120	**269.90**
0-150mm	.02mm	1.0mm	±0.02mm	7303062	**93.50**
0-200mm	.02mm	1.0mm	±0.03mm	7303082	**126.60**
0-300mm	.02mm	1.0mm	±0.04mm	7303122	**240.90**

• Available only while quantities last.

Dial Calipers - Diecast Aluminum

Features:
- 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
- Thumbwheel



Range	Grad.	Range per Rev	Accuracy	Code No.	Price $
Inch					
0-6"	.001"	.100"	±.001"	7304065	**111.50**
0-8"	.001"	.100"	±.0015"	7304085	**146.30**
0-12"	.001"	.100"	±.0015"	7304125	**250.80**
Metric					
0-150mm	.01mm	1.0mm	±0.02mm	7304064	**119.00**
0-200mm	.01mm	1.0mm	±0.03mm	7304084	**153.80**
0-300mm	.01mm	1.0mm	±0.04mm	7304124	**265.30**
0-150mm	.02mm	1.0mm	±0.02mm	7304066	**111.50**
0-200mm	.02mm	1.0mm	±0.03mm	7304086	**146.30**
0-300mm	.02mm	1.0mm	±0.04mm	7304126	**250.80**

Mitutoyo

Dial Calipers

- Extra rigid (3-4mm thick) main beam
- Extra large dial face
- Hardened stainless steel
- 4-way measurements
- Easy-read point re-adjustment with adjuster supplies



Mitutoyo Model No.	Range (in.)	Per Rev (in.)	Sowa Code No.	Price $
505-742	0 - 6	.100	850-043	**148.00**
505-675-51	0 - 6	.100	844-407	**145.00**
505-717	0 - 6	.200	840-192	**144.00**
505-743	0 - 8	.100	850-028	**212.00**
505-690*	0 - 8	.100	840-451	**242.00**
505-719	0 - 8	.200	840-193	**206.00**
505-746	0 - 12	.100	840-199	**346.00**
505-720	0 - 12	.200	840-194	**313.00**

* Extra smooth movement

STM

Dial Calipers

Features:
- Covered rack
- Accurate to .001 per 6"
- Made of Stainless Steel
- Clamp for repetitive setting
- Deluxe case
- .100" Revolution



	Range (in.)	Graduation (in.)	Code No.	Price $
Inch				
	0-4	.001	200-562	**69.20**
	0-6	.001	200-582	**69.20**
	0-8	.001	200-584	**103.20**
	0-12	.001	200-586	**139.90**
Metric	**(mm)**	**(mm)**		
	150	.02	200-583	**69.20**
	200	.02	200-585	**103.20**
	300	.02	200-587	**139.90**

Dial Caliper - Inch/Metric Combination

- 6"/150mm
- Dial graduated in both inch (black dial) and metric (red dial)
- Outside dial–Inch
  Inside dial–Metric
- Separate hands for inch and metric measurements
- Made of hardened stainless steel
- Complete with fitted case



Range	Dial Reading Grad.	Dial Reading Range/Rev.	Description	Code No.	Price $
6" / 150mm	.001" / .02mm	.100" / 2mm	Inch-Black, Metric-Red	200-900	**100.40**

Starrett

120 Series Dial Calipers

- Sharp, clear dial graduations of .001" or 0.02mm – .100" or 2mm in one revolution
- Sharp, black graduations on satin finished bar, every .100" or 1mm
- Knife-edge contacts for inside and outside measurements
- Thumb-operated fine adjustment roll
- Positive split-gear anti-backlash control
- Rack teeth point down to shed foreign matter more easily

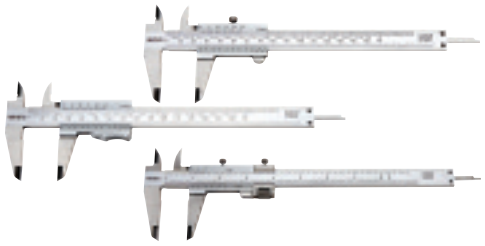


Range	Graduation	Starrett No.	Sowa Code No.	List $
0-6"	.001"	120A-6	629-034	**246.40**
0-9"	.001"	120A-9	629-036	**392.70**
0-12"	.001"	120-12	630-877	**454.30**

ASIMETO

Vernier Calipers

Features:
- 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						
0-6"	0-6"	.001"	1/128"	±.001"	7341061	**71.40**
0-150mm	0-6"	.05mm	1/128"	±0.06mm	7341060	**71.40**
0-200mm	0-8"	.05mm	1/128"	±0.07mm	7341080	**91.20**
0-300mm	0-12"	.05mm	1/128"	±0.08mm	7341120	**156.70**
0-150mm	0-6"	.02mm	.001"	±0.03mm	7341064	**71.40**
0-200mm	0-8"	.02mm	.001"	±0.03mm	7341084	**91.20**
0-300mm	0-12"	.02mm	.001"	±0.04mm	7341124	**156.70**
Thumb Clamp						
0-6"	0-6"	.001"	1/128"	±.001"	7351061	**72.60**
0-8"	0-8"	.001"	1/128"	±.0015"	7351081	**92.90**
0-150mm	0-6"	0.02mm	.001"	±0.03mm	7351064	**72.60**
0-200mm	0-8"	0.02mm	.001"	±0.03mm	7351084	**92.90**
Fine Adjustment						
0-11"	0-11"	.001"	1/128"	±.0015"	7361111	**157.30**
0-130mm	0-5"	0.02mm	.001"	±0.03mm	7361056	**79.60**
0-180mm	0-7"	0.02mm	.001"	±0.03mm	7361076	**99.90**
0-280mm	0-11"	0.02mm	.001"	±0.04mm	7361116	**164.30**

STM

Vernier Calipers

- With thumb lock
- Satin chrome finish
- Made of fully hardened stainless steel throughout
- Has a depth scale which can be read directly on verniers



- Jaws designed for outside, inside, and step measurement
- Micro-fine black graduation on a satin chrome finish for easy reading
- All measuring surfaces are ground and lapped for extreme accuracy

Range (in x mm)	Graduation (in x mm)	Code No.	Price $
0-6 x 150	1/1000 x 1/20	200-210	**51.10**
0-8 x 200	1/1000 x 1/20	200-215	**60.40**

Vernier Calipers With Fine Adjustment

Precision Stainless Steel Vernier Calipers
- Satin chrome finish
- Extra long vernier to insure accuracy
- Made of fully hardened stainless steel throughout



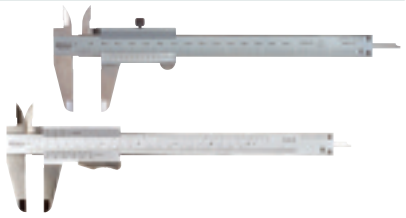
- Jaws designed for outside, inside, and thread measurement
- All measurements can be read directly from vernier scale 1/1000" x 1/20 mm
- Raised sliding surfaces prevent defacement and wear of graduations: clear black engravings

Range (in x mm)	Graduation (in x mm)	Code No.	Price $
0-6 x 150	1/1000 x 1/20	200-600	**41.80**
0-8 X 200	1/1000 x 1/20	200-605	**57.80**
0-12 x 300	1/1000 x 1/20	200-610	**107.50**

Mitutoyo

Precision Vernier Calipers

- Graduations photo engraved
- Hardened stainless steel throughout
- Satin chrome finish
- All measuring surfaces are ground and capped



Mitutoyo Model No.	Range (in./mm)	Vernier Reading Upper Scale	Vernier Reading Lower Scale	Sowa Code No.	Price $
Plain Type					
530-312	0 - 6"/ 0 - 150 mm	.001"	0.02mm	840-225	**108.00**
530-118	0 - 8" / 0 - 200 mm	.001"	0.02mm	840-224	**134.00**
530-115	0 - 12" / 0 - 300 mm	1/128	0.05mm	840-222	**285.00**
Thumb Clamp					
531-128	0 - 6"/ 0 - 150 mm	.001"	0.02mm	841-207	**116.00**
531-129	0 - 8" / 0 - 200 mm	.001"	0.02mm	841-858	**137.00**

Starrett

125 Series Vernier Calipers

- High quality basic vernier caliper
- Graduation: .001"/0.02mm



Range	Starrett No.	Sowa Code No.	List $
0-6"/150mm	125MEA-6/150	631-977	**129.80**
0-8"/200mm	125MEA-8/200	631-978	**152.90**
0-12"/300mm	125MEA-12/300	631-979	**275.00**

ASIMETO

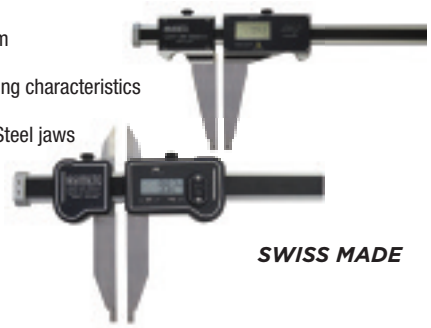
Heavy Duty Digital Calipers



Features:
- Resolution: .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 $
0-24"/0-600mm	150mm	±0.05mm	7315240	**828.20**
0-40"/0-1000mm	150mm	±0.10mm	7315406	**1,269.30**

Heavy Duty Digital Calipers - Sylvac System



Features:
- Resolution: .0005" / 0.01mm
- Lightweight design
- Optimum guidance and sliding characteristics due to double vee guides
- Precision ground Stainless Steel jaws
- Inch/Metric conversion

SWISS MADE

Range	Accuracy	Jaw Length	Internal Jaw	Notes	Code No.	Price $
With Upper Jaws						
0-12"/300mm	±0.04mm	90mm	10mm	-	7312120	**890.90**
0-20"/500mm	±0.05mm	90mm	10mm	-	7312200	**1,484.80**
0-32"/800mm	±0.06mm	90mm	10mm	-	7312320	**2,078.80**
w/o Upper Jaws						
0-40"/1000mm	±0.06mm	150mm	20mm	Sylvac Electronics	7312402	**3,641.50**

STM

Heavy Duty Extra Long Vernier Calipers



- Satin chrome finish
- Adjustable vernier plates
- Longer jaws permit greater accessibility
- Accuracy meets U.S. Federal specifications
- Easy to read clear crisp black engraved graduations
- Made of hardened stainless steel throughout, ground and lapped for accuracy

Range (in x mm)	Graduation (in x mm)	Jaw Depth (in.)	Code No.	Price $
0-12 x 300	1/1000 x 1/50	3	200-588	**108.80**
0-18 x 450	1/1000 x 1/50	3-1/2	200-590	**193.90**
0-24 x 600	1/1000 x 1/50	4	200-592	**198.40**
0-40 x 1000	1/1000 x 1/50	5-1/2	200-594	**519.60**
0-60 x 1500	1/1000 x 1/50	6-1/2	200-596	**1,180.70**
0-80 x 2000	1/1000 x 1/50	7-3/4	200-598	**1,676.50**

ASIMETO

Heavy Duty Vernier Calipers



Features:
- Graduation: Lower Scale: .001" Upper Scale: 0.02mm
- Nib style jaws and fine adjustment

Range Lower	Range Upper	Graduation Lower	Graduation Upper	Accuracy	Jaw Depth	Code No.	Price $
0-12"	0-300mm	.001"	0.02mm	±.0015"	2.95"	7311121	**246.70**
0-18"	0-450mm	.001"	0.02mm	±.002"	3.94"	7311181	**398.70**
0-24"	0-600mm	.001"	0.02mm	±.002"	3.94"	7311241	**586.80**
0-40"	0-1000mm	.001"	0.02mm	±.003"	5.51"	7311401	**1,155.50**
0-60"	0-1500mm	.001"	0.02mm	±.004"	7.09"	7311601	**2,475.80**

Heavy Duty Vernier Calipers w/ Upper Knife-Edge



Features:
- With upper knife edge for external diameter measurement
- Defined with fine adjustment
- Stainless Steel
- Internal measurement jaws are rounded, with an internal measuring capacity of 20mm

Range Lower	Range Upper	Graduation Lower	Graduation Upper	Accuracy	Jaw Length	Code No.	Price $
0-12"	0-300mm	.001"	0.02mm	±.0015"	56+100mm	7302121	**304.20**
0-20"	0-500mm	.001"	0.02mm	±.0020"	67+150mm	7302201	**719.10**
0-32"	0-800mm	.001"	0.02mm	±.0020"	67+150mm	7302321	**1,252.40**
0-40"	0-1000mm	.001"	0.02mm	±.0030"	67+150mm	7302401	**1,552.50**

Long Jaw Vernier Calipers



Features:
- Upper Scale: .001" Lower Scale: 0.02mm
- Fine adjustment carriage
- Long jaws for measuring hard to reach places.
- Jaws have round faces for accurate ID measurement.

Range Upper	Range Lower	Graduation Upper	Graduation Lower	Accuracy	Jaw Depth	Code No.	Price $
0-300mm	0-12"	0.02mm	.001"	±.0015"	90mm	7311123	**282.10**
0-500mm	0-20"	0.02mm	.001"	±.0020"	200mm	7311203	**655.80**
0-1000mm	0-40"	0.02mm	.001"	±.0030"	200mm	7311403	**1,536.20**
0-12"	0-300mm	.001"	0.02mm	±0.04mm	3.55"	7311124	**282.10**
0-20"	0-500mm	.001"	0.02mm	±0.06mm	7.87"	7311204	**655.80**
0-30"	0-750mm	.001"	0.02mm	±0.08mm	7.87"	7311304	**982.60**
0-40"	0-1000mm	.001"	0.02mm	±0.10mm	7.87"	7311404	**1,536.20**

Forester Calipers



Features:
- Made of aluminum with plastic handle

Range	Graduation	Jaw Length	Code No.	Price $
0-500mm	5mm	255mm	7322910	**189.70**
0-800mm	5mm	410mm	7322920	**245.90**
0-1000mm	5mm	410mm	7322930	**293.10**

ASIMETO

Digital Caliper With Adjustable Measuring Jaw

Features:
- Resolution: 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	±.0015"/0.04mm	7317060	**269.90**
0-8"/200mm	120mm	±.0015"/0.04mm	7317080	**369.70**
0-12"/300mm	300mm	±.0020"/0.05mm	7317120	**480.00**

Digital Snap Gauges

Features:
- Inch/Metric conversion





Range	Resolution	Accuracy	Code No.	Price $
Horizontal				
0-.5" / 0-12mm	.0005" / 0.01mm	±.0015"/.03mm	7325300	**252.50**
0-1" / 0-25mm	.0005" / 0.01mm	±.0015"/.04mm	7325320	**333.70**
Vertical				
0-.6" / 0-15mm	.0005" / 0.01mm	±.0015"/.03mm	7325500	**232.20**
0-1" / 0-25mm	.0005" / 0.01mm	±.0015"/.04mm	7325520	**283.30**

Digital Calipers For Inside Grooves

Features:
- Measures internal grooves, bores, and other details
- Inch/Metric conversion
- Zero setting at any position for incremental measurement



Range	Resolution	Accuracy	Code No.	Price $
0.8-6"/20-150mm	.0005"/0.01mm	±.001"/0.04mm	7315067	**244.40**
1.6-8"/40-200mm	.0005"/0.01mm	±0015"/0.04mm	7315087	**385.40**
2-12"/50-300mm	.0005"/0.01mm	±.002"/0.05mm	7315127	**502.60**

Digital Gauge w/ Single Wide Measuring Face

Features:
- Zero setting at any position
- Easy operation and normally used for the measurement of small work pieces
- Inch/Metric conversion



Range	Resolution	Accuracy	Code No.	Price $
0-1.2"/0-30mm	.0005"/0.01mm	±.0015"/0.03mm	7325360	**232.20**

ASIMETO

Digital Gear Tooth Calipers

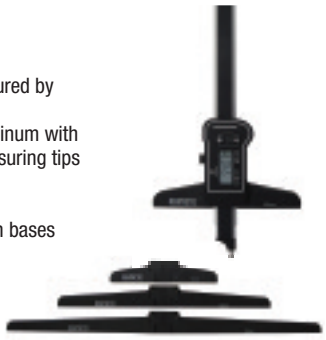
Features:
- Zero-setting at any position
- Inch/Metric conversion
- Measures the chordal gear tooth thickness at the chordal addendum (pitch circle)

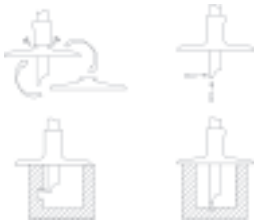


Range	Resolution	Accuracy	Code No.	Price $
1-25mm	.0005" / 0.01mm	±.03mm	7328060	**485.20**
5-50mm	.0005" / 0.01mm	±.03mm	7328062	**630.30**

Digital Universal Depth Gauges

Features:
- Lightweight design
- Easy to read display
- Optimum sliding characteristics are ensured by double vee guides
- Measurement head of hard-coated aluminum with two tapped holes at 90º to take the measuring tips
- Inch/Metric conversion
- LR44 1.5V battery
- Complete with 150mm, 300mm, 450mm bases included





Range	Resolution	Accuracy	Code No.	Price $
0-12"/300mm	.0005"/0.01mm	±0.04mm	7312126	**1,311.80**
0-20"/500mm	.0005"/0.01mm	±0.05mm	7312206	**1,755.90**
0-32"/800mm	.0005"/0.01mm	±0.06mm	7312326	**2,199.90**

Measuring Gauges

Features:
- Stainless Steel



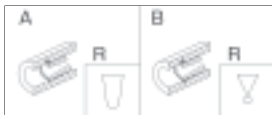
Range	Graduation	Accuracy	Code No.	Price $
0-200mm	0.1mm	±0.2mm	7322810	**47.10**
0-250mm	0.1mm	±0.3mm	7322820	**51.10**
0-300mm	0.1mm	±0.3mm	7322830	**56.30**

ASIMETO

Digital Internal Caliper Gauges

Features:
- Resolution: .0002”
- Designed to measure internal grooves, and other intricate detailed internal characteristics
- Provides comparison readings and must be set to the nominal dimension using either a micrometer or setting rings
- Display housing can be rotated ±170º



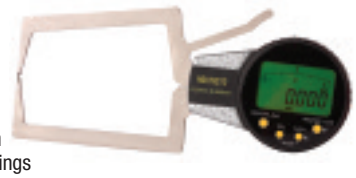


Range	Arm Length	Tip Length	Accuracy	Tip	Code No.	Price $
.4 - .8”	25mm	3.0mm	±.0008”	B	7400123	**470.10**
.8 - 1.2”	30mm	6.5mm	±.0008”	B	7400133	**470.10**
.4 - 1.2”	55mm	3.5mm	±.00012”	B	7400223	**514.80**
.8 - 1.6”	80mm	6.5mm	±.00012”	B	7400233	**514.80**
1.2 - 2.0”	80mm	8.5mm	±.00012”	B	7400243	**514.80**
1.6 - 2.4”	80mm	8.5mm	±.00012”	B	7400253	**534.00**

ASIMETO

Digital External Caliper Gauges

Features:
- Resolution: .0002”
- Designed to measure hard to access external work piece characteristics
- Provides comparison readings and must be set to the nominal dimension using either a micrometer or setting rings
- Display housing can be rotated ±170º





Range	Arm Length	Tip Length	Accuracy	Tip	Code No.	Price $
0 - .8”	35mm	1.5mm	±.00012”	A	7404211	**412.70**
.4 - 1.2”	55mm	3.5mm	±.00012”	A	7404221	**451.60**
.8 - 1.6”	80mm	6.5mm	±.00012”	A	7404231	**451.60**
0 - .8”	35mm	1.5mm	±.00012”	B	7404213	**470.10**
.4 - 1.2”	55mm	3.5mm	±.00012”	B	7404223	**514.80**
.8 - 1.6”	80mm	6.5mm	±.00012”	B	7404233	**514.80**

Dial Internal Caliper Gauges

Features:
- Resolution: .0005”/0.01mm
- Designed to measure internal grooves, and other intricate detailed internal characteristics
- Provides comparison readings and must be set to the nominal dimension using either a micrometer or setting rings





Range	Arm Length	Tip Length	Accuracy	Tip	Code No.	Price $
Inch						
.2 - .6”	20mm	1.5mm	±.0008”	A	7403111	**341.30**
.4 - 1.2”	55mm	3.5mm	±.00012”	B	7403223	**459.70**
.8 - 1.6”	80mm	6.5mm	±.00012”	B	7403233	**459.70**
1.2 - 2.0”	80mm	8.5mm	±.00012”	B	7403243	**459.70**
1.6 - 2.4”	80mm	8.5mm	±.00012”	B	7403253	**477.10**
Metric						
5-15mm	20mm	1.5mm	±0.02mm	A	7403110	**341.30**
10-20mm	25mm	3.0mm	±0.02mm	B	7403122	**418.50**
20-30mm	30mm	6.5mm	±0.02mm	B	7403132	**418.50**
30-40mm	30mm	9.0mm	±0.02mm	B	7403142	**418.50**
40-50mm	30mm	9.0mm	±0.02mm	B	7403152	**418.50**

Digital Scales - Vertical

Features:
- Inch/Metric conversion
- Absolute or incremental measuring modes
- Units are supplied with the necessary mounting brackets required for most popular installations



Range	Resolution	Accuracy	Code No.	Price $
6”/150mm	.0005”/0.01mm	±.0015”/0.03mm	7326060	**182.90**
8”/200mm	.0005”/0.01mm	±.0015”/0.03mm	7326080	**213.60**
12”/300mm	.0005”/0.01mm	±.0015”/0.04mm	7326120	**269.30**

STM

Digital Scale Unit



Range (in.)	Accuracy (in.)	Code No.	Price $
0-150 mm/0-6	0-150 ±0.03	201-050	**86.00**
0-200 mm/0-8	0-200 ±0.03	201-055	**109.70**
0-300 mm/0-12	200-300 ±0.04	201-056	**169.10**

Mitutoyo

Digimatic Scale

- No rack, no pinion, no glass scale. Digimatic Scale is safely embedded in the hardened stainless steel blade.
- All units come with two mounting brackets, each located at either end of the scale.
- Battery life approximately 2 years



Mitutoyo Model No.	Range (in./mm)	Resolution (in./mm)	Output	Sowa Code No.	Price $
572-211-20	6”/150mm	.0005”/0.01mm	YES	847-859	**298.00**

ASIMETO

Thickness Gauges

Features:
- Designed for the measurement of paper, film, wire, sheet metal, jewelry, leather and other materials
- Flat anvils



Digital

Range	Resolution	Accuracy	Throat Depth	Code No.	Price $
0-0.4”/0-10mm	.0005”/0.01mm	±.001”/0.015mm	30mm	7495010	**239.20**
0-0.4”/0-10mm	.0005”/0.01mm	±.001”/0.015mm	120mm	7495020	**327.40**
0-0.4”/0-10mm	.00005”/0.001mm	±.0005”/0.01mm	30mm	7495013	**369.70**
0-0.4”/0-10mm	.00005”/0.001mm	±.0005”/0.01mm	120mm	7495023	**458.50**



Dial

Range	Resolution	Accuracy	Throat Depth	Code No.	Price $
0-0.4”	.0001”	±.0001”	30mm	7491011	**160.80**
0-0.4”	.0001”	±.0001”	120mm	7491021	**249.00**
0-10mm	0.01mm	±0.015mm	30mm	7491010	**160.80**
0-10mm	0.01mm	±0.015mm	120mm	7491020	**253.70**

Centreline Gauges

Features:
- Measures centreline distances
- Easily attaches to Dial, vernier, and Digital Calipers
- 60º conical points
- Hardened steel with Black Oxide finish
- Attaches with set screws
- Supplied in High Impact Tubes with hex wrench



Calipers	Minimum Measuring	Dia.	O.A.L.	Slot Width	Code No.	Price $
4”, 6”, 8”	3/8”	.375”	2-5/16”	.127”	7300130	**56.30**
12”	1/2”	.500”	2.762”	.144”	7300140	**83.80**

Depth Base Attachments For Calipers

Features:
- Transforms your Dial, vernier, or Digital Caliper into a depth measurement device, without the expense of standalone gauges
- Fits all brands of calipers
- Precision ground
- Screw locking clamp

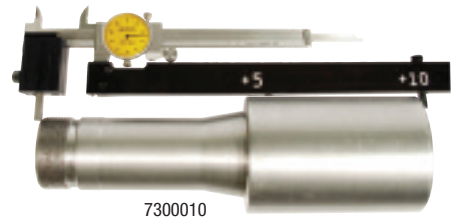


Base Length	Calipers	Material	Code No.	Price $
3”	4-6”	Cold Rolled Steel	7327653	**98.20**
4”	4-6”	Cold Rolled Steel	7327654	**98.00**
5”	12”	Cold Rolled Steel	7327655	**137.50**

ASIMETO

Caliper Extender Attachments

Features:
- Allows both inside and outside measurements of up to 51” with your 6” Dial, Vernier, or Digital Caliper. These extender kits allow you to perform measuring operations without the expense of purchasing a stand alone caliper, which could cost thousands of dollars. For the occasional measuring situation, these kits provide the answer at a reasonable cost
- Extension bars are made from high grade Aluminum, and black anodized with white numerals for clarity and protection.
- All mounting hardware and calibration rods are included
- Complete instructions accompany this easy to use kit. Choose the model that fits the range of measurements you need.
- Caliper not included



7300010



7300011



7300014



7300015

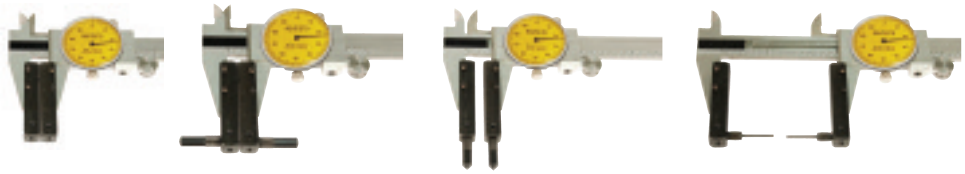
Description	Tolerance	Code No.	Price $
26” Extension	±.003”	7300010	**365.90**
36” Extension	±.003”	7300020	**512.20**
51” Extension	±.004”	7300030	**585.30**
1/2” Projection Pins (pair)	-	7300011	**82.00**
1” Projection Pins (pair)	-	7300012	**89.20**
1-1/2” Projection Pins (pair)	-	7300013	**89.20**
Centreline Gauge Pins	-	7300014	**146.30**
Layout Kit	-	7300015	**159.70**

ASIMETO

Universal Caliper Accessory Kit

Features:
- The original caliper jaw attachment accessory
- The square bodies attach to the jaws of any 4", 6", and 8" caliper. Threaded holes are located in the front, both sides, and the bottom of the bodies, allowing the use of the points on any side
- Measures slots, grooves, shoulders, holes, pockets, and takes ID and OD measurements
- Steel with Black Oxide finish





Kit Contents	Quantity	Notes	Kit Code No.	Price $
Universal Caliper Bodies	1 pair	3/8" square x 2" length, Slot for caliper jaws is .147 wide. 4-40 holes for set screws fasten the body to the caliper jaw	7300110	**86.40**
Flat Points	1 pair	3/16" diameter x .810" length, 4-48 threads		
Cone Points	1 pair	3/16" diameter x .810" length, 4-48 threads		
Stem Points	1 pair	3/16" body diameter, .084 stem diameter x .820" length, 4-48 threads		
Ball Points	1 pair	3/16" diameter x .810" length, 4-48 threads		

Groove Measurement Caliper Jaws

Features:
- Fits on any 6" Dial, Vernier, or Digital Caliper
- Enables the measurement of hard to reach work piece characteristics such as internal grooves
- Measuring range of .200" to 6.000"
- Designed with an alignment pin ensuring correct alignment of the measuring surfaces
- Supplied in a fitted plastic case







Min. Measure	Feet Width	Max Depth	Groove Depth	Code No.	Price $
.200"	.015"	.400"	.050"	7300210	**125.70**
.300"	.015"	.625"	.070"	7300220	**125.70**
.600"	.025"	1.000"	.200"	7300230	**125.70**
.725"	.040"	1.250"	.255"	7300240	**147.60**
External Measure	.024"	3.000"	.375"	7300250	**153.10**
Set					
5 Pair Set	Includes all jaws listed above			7300205	**601.20**









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ASIMETO

Digital Indicators

Features:
- 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 $
Inch				
0-0.5" 0-12.5mm	.00005" 0.001mm	±0.0003" ±0.007mm	7405955	**290.20**
0-0.5" / 0-12.5mm	.0005" / 0.01mm	±.0008" / ±0.02mm	7405951	**159.10**
0-1" / 0-25mm	.0005" / 0.01mm	±.0012" / ±0.03mm	7405011	**168.90**
0-1" / 0-25mm	.00005" / 0.001mm	±.0002" / ±0.005mm	7405015	**329.70**
0-2" / 0-50mm	.0005" / 0.01mm	±.0012" / ±0.02mm	7405021	**439.40**
0-2" / 0-50mm	.00005" / 0.001mm	±.0002" ±0.005mm	7405025	**555.40**
Metric				
0-0.5" / 0-12.5mm	.0005" / 0.01mm	±.0008" / ±0.02mm	7405950	**159.10**
0-1" / 0-25mm	.0005" / 0.01mm	±.0012" / ±0.03mm	7405010	**168.90**
0-1" / 0-25mm	.00005" / 0.001mm	±.0002" / ±0.005mm	7405014	**329.70**

Digital Indicators With Analog Display

Features:
- Tolerance measurement feature
- Inch/Metric conversion



Range	Resolution	Accuracy	Notes	Code No.	Price $
0-0.25" / 0-6.35mm	.00005" / 0.002mm	±.0003" / ±0.006mm	Flat Back (attached) and Lug Back supplied	7406251	**229.90**
0-.5" / 0-12.5mm	.00005" / 0.002mm	±.0003" / ±0.008mm	Flat Back (attached) and Lug Back supplied	7406051	**229.90**
0-1" / 0-25mm	.00005" / 0.002mm	±.0006" / ±0.015mm	Flat Back (attached) and Lug Back supplied	7406011	**261.20**

ASIMETO

IP67 Digital Indicators - Sylvac System

Dial One Series

Features:
- Robust construction.
- Water and coolant resistant.
- Protection rating IP67 according to IEC 60529 (for protected versions), even connected.
- Origin-set/Preset
- Data output
- Measuring direction conversion
- Inch/Metric conversion
- Ø8mm stem diameter for metric models Ø3/8" stem diameter for inch models
- Sylvac System



Range	Resolution	Accuracy	Code No.	Price $
0-5"x0.12.5mm	.0005"x0.01mm	±.0008"x±0.02mm	7409951	**934.60**
0-1"x0-25mm	.0005"x0.01mm	±.0002"x±0.005mm	7409011	**1,039.90**
0-2"x0-50mm	.0005"x0.01mm	±.0012"x±0.02mm	7409021	**1,645.40**
0-.5"x0-12.5mm	.00005"x0.001mm	±.0002"x±0.006mm	7409955	**1,171.50**
0-1"x0-25mm	.00005"x0.001mm	±.0002"x±0.006mm	7409015	**1,296.60**
0-2"x0-50mm	.00005"x0.001mm	±.0003"x±0.008mm	7409025	**1,888.90**

IP67 Digital Indicators - Sylvac System

Dial Work Series

Features:
- Robust construction.
- Water and coolant resistant.
- Protection rating IP67 according to IEC 60529 (for protected versions), even connected.
- Aluminum case rotating display over 270°
- New technology with configurable menus
- Origin-set/Preset
- Measuring direction conversion
- MAX/MIN/DELTA function
- TOL, Factor
- Data output
- Automatic wake-up and sleeping mode (S.I.S system), absolute System
- Inch/Metric conversion
- Hold function
- Ø8mm stem diameter for metric models Ø3/8" stem diameter for inch models
- Sylvac System



Range	Resolution	Accuracy	Code No.	Price $
0-5"x0.12.5mm	.0005"x0.01mm	±.0008"x±0.02mm	7408011	**1,434.80**
0-1"x0-25mm	.00005"x0.001mm	±.0002"x±0.005mm	7408015	**1,651.90**

Mitutoyo

Digimatic Indicators ID-N/B

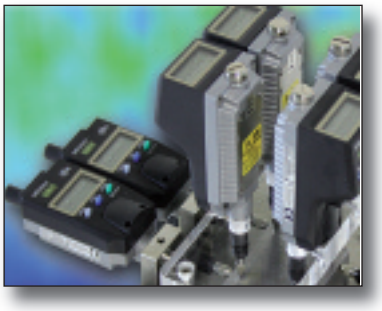
- Proven ABSOLUTE sensor.
- Rated to IP66 water- and dust-proofing standard and oil resistance improved.
- Slim body design is advantageous for multi-point measurements.
- Improvement in workability with the LCD readout-rotation function.
- Back plunger design (ID-B).
- Built-in tolerance judgment function.
- Switchable resolution.
- Waterproof data output connector.
- Built-in hold/preset function



Slim type ID-N



Back plunger type ID-B



Mitutoyo Model No.	Range (in./mm)	Resolution (in./mm)	Sowa Code No.	Price $
543-571 ID-N	.500"/12.7 mm	.0008"/.02 mm	846-425	**433.00**
543-576 ID-N	.500"/12.7 mm	.00012"/.003 mm	846-426	**600.00**
543-581 ID-B	.220"/5.6 mm	.0005"/.01 mm	846-424	**478.00**
543-586 ID-B	.220"/5.6mm	.00005"/.001 mm	846-185	**646.00**

IDC Digimatic Indicators

- 2-3/8 dial face
- ABS sensor
- Absolute linear encoder track or pin
- 3/8 stem diameter



With ABSOLUTE ENCODER

Mitutoyo Model No.	Type	Range (in./mm)	Resolution (in./mm)	Sowa Code No.	Price $
543-252B	Flat Back	0-.5"/0-12.7mm	.00005"/0.001mm	840-495	**457.00**
543-392B	Flat Back	0-.5"/0-12.7mm	.00005"/0.001mm	840-616	**510.00**
543-262	Lug Back*	0-.5"/0-12.7mm	.00005"/0.001mm	842-932	**601.00**
543-263	Lug Back*	0-.5"/0-12.7mm	.0001"/0.001mm	842-477	**601.00**
543-472B	Flat Back	0-1.00"/0-25mm	.00005"/0.001mm	846-486	**759.00**
543-683	Lug Back	0-.5"/0-12.7mm	.0005"/0.01mm	841-419	**213.00**
543-683B	Flat Back	0-.5"/0-12.7mm	.0005"/0.01mm	841-493B	**213.00**

*Peak Hold Feature

Starrett

3600 Series Electronic Indicator

- Large, easy-to-read LCD
- Range: .500" or 12.7mm
- Resolution: .0005" or .01mm
- Lug-on-centre back + additional flat back



Range	Resolution	Starrett No.	Sowa Code No.	List $
.500"/12.7mm	.0005"/ 0.01mm	3600-5	632-014	**212.30**

ASIMETO

Ultra Precision Dial Gauges

Features

- Made in Germany, high precision dial gauge commonly used in the automotive industry for checking fixtures.
- Limited dial gauge movement eliminates error caused by multiple rotations of the dial gauge that may be missed by the operator
- Effective shockproof system for gauge protection
- Pinions and shafts are jeweled to increase gauge longevity
- Easy zeroing of the dial to the gauge master
- Safety cap prevents unintentional movement
- Stem and spindle made of stainless steel and provide measurement sensitivity
- Tolerance markers are provided for easy reading interpretation
- Repeatability: .000025"/0.0005mm
- Stem diameter: 3/8 or 8mm



Range	Resolution	Accuracy	Code No.	Price $
.004"	.00005"	.00006"	7422211	**513.10**
0.1mm	0.001mm	0.0012mm	7422212	**513.10**

AGD1 Dial Indicators

Features:

- Graduation: Inch: .001" Metric: 0.01mm
- Dial face dia. 1.65"
- Jeweled bearings
- Lug Back



Range	Dial Reading	Range per Rev	Stem Dia.	Code No.	Price $
Inch					
0 - .25"	0-100	.1"	3/8	7401061	**91.70**
0 - .25"	0-50-0	.1"	3/8	7401063	**91.70**
0 - .25"	0-25-0	.05"	3/8	7401065	**91.70**
Metric					
0-5mm	0-100	1mm	3/8	7401051	**91.70**
0-5mm	0-50-0	1mm	3/8	7401053	**91.70**
0-5mm	0-100	1mm	8mm	7401050	**91.70**

ASIMETO

AGD2 Dial Indicators

Features:
- Dial face dia. 2.20"
- Lug Back
- Easy to read dial face



Range	Grad.	Dial Reading	Range per Rev.	Stem Dia.	Code No.	Price $
Inch						
0-.05"	.0001"	0-5-0	.01"	3/8	7402013	**140.50**
0-.05"	.0001"	10-0	.01"	3/8	7402011	**140.50**
0-.25"	.0005"	0-25-0	.05"	3/8	7402065	**69.70**
0-.5"	.0005"	0-50	.05"	3/8	7402125	**69.70**
0-1"	.0005"	0-50	.05"	3/8	7402265	**70.90**
0-.25"	.001"	0-100	.1"	3/8	7402061	**69.70**
0-.25"	.001"	0-50-0	.1"	3/8	7402063	**69.70**
0-.5"	.001"	0-100	.1"	3/8	7402121	**69.70**
0-.5"	.001"	0-50-0	.1"	3/8	7402123	**69.70**
0-1"	.001"	0-100	.1"	3/8	7402261	**70.90**
0-1"	.001"	0-50-0	.1"	3/8	7402263	**70.90**
0-2"	.001"	0-100	.1"	3/8	7402511	**162.00**
Metric						
0-3mm	.01mm	0-100	1mm	3/8	7402031	**81.30**
0-3mm	.01mm	0-50-0	1mm	3/8	7402033	**81.30**
0-5mm	.01mm	0-100	1mm	3/8	7402051	**81.30**
0-5mm	.01mm	0-50-0	1mm	3/8	7402053	**81.30**
0-10mm	.01mm	0-100	1mm	3/8	7402101	**81.30**
0-10mm	.01mm	0-50-0	1mm	3/8	7402103	**81.30**
0-20mm	.01mm	0-50-0	1mm	3/8	7402201	**143.40**
0-25mm	.01mm	0-50-0	1mm	3/8	7402253	**143.40**
0-1mm	.001mm	0-200	0.2mm	8mm	7402010	**145.10**
0-1mm	.001mm	0-100-0	0.2mm	8mm	7402012	**145.10**
0-10mm	.01mm	0-100	1mm	8mm	7402100	**81.30**
0-10mm	.01mm	0-50-0	1mm	8mm	7402102	**81.30**
0-20mm	.01mm	0-100	1mm	8mm	7402202	**142.80**
Shock Proof						
0-5mm	.01mm	0-100	1mm	8mm	7402054	**106.30**
0-10mm	.01mm	0-100	1mm	8mm	7402108	**106.30**
0-20mm	.01mm	0-100	1mm	8mm	7402208	**163.70**
IP54 Water Proof						
0-0.4"	.001"	0-100	0.1"	3/8"	7402267	**116.70**
0-0.4"	.0005"	0-50	0.05"	3/8"	7402269	**116.70**

STM

Coolant Proof Dial Indicator

- Water Resistant
- Reverse counter
- Stainless steel components
- Rotating bezel with clamp
- Lugback (1/4" hole)
- Interchangeable point
- Conforms to AGD 2 standards



Travel Range (in.)	Dial Reading (in.)	Grad. (in.)	Dial Colour	Code No.	Price $
0-.4	0-50	.0005	White	200-075	**94.80**

Dial Indicators

- Reverse counter
- Stainless steel components
- Rotating bezel with clamp
- Lugback (1/4" hole)
- Interchangeable point
- Conforms to AGD 2 standards



Travel Range (in.)	Dial Reading (in.)	Grad. (in.)	Dial Colour	Code No.	Price $
1/4	0-100	.001	White	200-745	**31.40**
1/2	0-100	.001	White	200-718	**31.40**
1	0-100	.001	White	200-720	**31.40**
1	0-50	.0005	White	200-755	**36.20**
2	0-100	.001	White	200-725	**71.00**
1	0-100	.001	White	200-010*	**39.80**
Magnetic Back					
For AGD2 series				200-722	**19.30**
Bezel & Crystal Assembly					
For 200-720				200-721	**6.60**

* Teclock Style

Dial Indicators - Teclock

- Reverse counter
- Stainless steel components
- Rotating bezel with clamp
- Lugback (1/4" hole)
- Interchangeable point
- Conforms to AGD 2 standards

TECLOCK



A1-921

Model No.	Grad. (in.)	Range (in.)	Reading	Dial Dia. (in.)	Stem, Dia (in.)	Code No.	Price $
AI-911-Teclock Style	.001	.50	0-100	2-11⁄64	3⁄8	215-005	**74.10**
AI-921-Teclock	.001	1.00	0-100	2-11⁄64	3⁄8	215-010 •	**97.90**

• Available only while quantities last.

Mitutoyo

Dial Indicators

- Jewelled bearings
- Reversible contact point is adjustable within 220º
- Fully adjustable bevel/dial face, 1.27" easy to read



Series #1- 1-5/8" dia. dial face
Series #2- 2-1/4" dia. dial face

Mitutoyo Model No.	Range (in./mm)	Grad (in./mm)	Reading	Sowa Code No.	Price $
1044S	5mm	0.01mm	0-100	841-286	**121.00**
1410S	.250"	.001"	0-100	841-696	**120.00**
1411S	.250"	.001"	0-50-0	844-527	**103.00**
2046S	10mm	0.01mm	0-100	840-249	**112.00**
2047S-01	10mm	0.01mm	0-50-0	842-938	**96.00**
2056S-01	25mm	0.01mm	0-100	841-984	**138.00**
2414S	.500"	.001"	0-100	840-417	**126.00**
2416S	1.00"	.001"	0-100	840-254	**126.00**
2416S-10	1.00"	.001"	0-100	840-255	**142.00**
2424S-19	2.00"	.001"	0-100	840-256	**215.00**
2804S-10	.050"	.0001"	0-10	840-258	**198.00**
2923S-10	.050"	.0001"	0-5-0	840-260	**192.00**
2923SB-10	.050"	.0001"	0-5-0	843-450	**192.00**
2971	0.5mm	0.01mm	25-0-25	843-498	**105.00**

"S" = flat crystal & flat back
"-10" = jewelled bearings "-01" = metric ind. with ANSI specs

Starrett

196 Series Dial Indicators

- Inch Reading
- Graduation: .001"
- Dial reading: 0-100
- Shank Diameter 1/4"
- Accurate, reliable, and simple to operate
- Rugged with few moving parts
- Smooth in operation



Range	Supplied With	Starrett No.	Sowa Code No.	List $
.200"	3 Contact Pts & Adapter, 4 attachments* in Case	196A1Z	628-864	**305.80**
.200"	3 Contact Pts & Adapter Only	196B1	629-144	**176.00**

*Attachments include clamp, tool post holder, snug and hole attachment

25 Series Dial Indicators

- Lug-on-centre back
- Graduation: .001"
- Range: .250"
- Shockless hardened steel gear train and jewel bearings
- Contact point is interchangeable
- Easy-to-read dial style



Range per Rev.	Dial Reading	Starrett No.	Sowa Code No.	List $
.100"	0-50-0	25-141J	629-457	**187.00**

ASIMETO

Dial Comparator

Features:
- Dial reading 50-0-50
- High Accuracy
- Jeweled and shock proof
- Water and dust resistant design
- With 8mm stem diameter





Range	Resolution	Accuracy	Code No.	Price $
±0.05mm	0.001mm	±0.0012mm	7422210	**484.60**

Back Plunger Type Dial Indicators

Features:
- Graduation .001" / 0.01mm
- Easy to read dial face with dial revolution counter
- Back plunger type dial indicators are designed to be used in fixtures and other applications that the dial reading is best viewed from an axis parallel to that of the indicator measuring axis



Range	Accuracy	Range/Rev.	Dial Dia.	Stem Dia.	Dial Reading	Code No.	Price $
1"	±.001"	1"	1.6"	Ø3/8"	0-100	7422111	**98.70**

Holding Bars

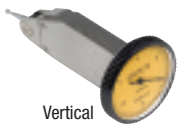


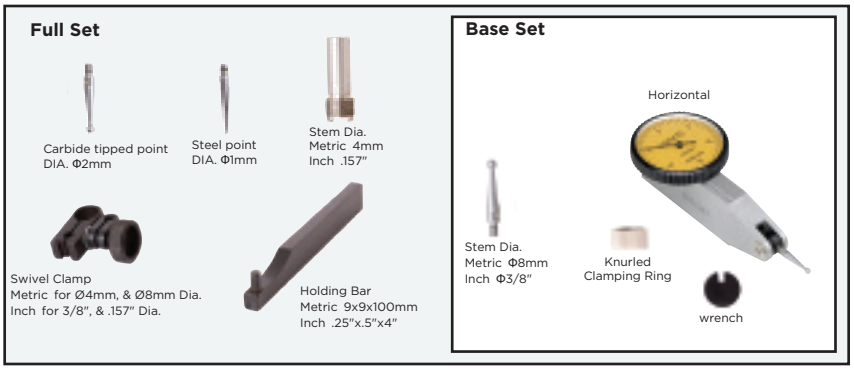
Shank Dia.	Length	Code No.	Price $
1/4 x 1/2	2"	7500211	**27.90**
1/4 x 1/2	4"	7500213	**27.90**
9mm x 9mm	50mm	7500210	**27.90**
9mm x 9mm	100mm	7500212	**27.90**
10mm x 12mm	50mm	7500214	**27.90**
10mm x 12mm	100mm	7500216	**27.90**

ASIMETO

Test Indicators

Features:
- Jeweled bearings
- Inch units come with 3/8 & 8mm dovetail stems
- Metric unit comes with 6mm & 8mm dovetail stems
- Easy to read yellow face
- 32mm and 40mm face diameters available





Grad.	Range	Dial Reading	Accuracy	Type	Code No.	Price $
Inch						
.0001"	.008"	0-4-0	±.0001"	Horizontal	7501783	**151.50**
.0001"	.008"	0-4-0	±.0001"	Vertical	7501785	**174.70**
.0005"	.03"	0-15-0	±.0005"	Horizontal	7501733	**119.60**
.0005"	.03"	0-15-0	±.0005"	Vertical	7501735	**119.60**
Inch Sets						
.0001"	.008"	0-4-0	±.0001"	Horizontal	7501787	**181.10**
.0005"	.03"	0-15-0	±.0005"	Horizontal	7501738	**188.10**
Metric - 32mm Face						
0.002mm	0.2mm	0-100-0	±0.004mm	Horizontal	7501020	**155.60**
0.01mm	0.5mm	0-25-0	±0.01mm	Horizontal	7501050	**120.20**
0.01mm	0.8mm	0-40-0	±0.01mm	Horizontal	7501080	**101.00**
0.01mm	1.0mm	0-50-0	±0.01mm	Horizontal	7501100	**119.00**
0.01mm	0.8mm	0-40-0	±0.013mm	Vertical	7501084	**123.70**
Metric - 40mm Face						
0.002mm	0.2mm	0-100-0	±0.004mm	Horizontal	7502020	**133.50**
0.01mm	0.5mm	0-25-0	±0.01mm	Horizontal	7502050	**120.20**
0.01mm	0.8mm	0-40-0	±0.01mm	Horizontal	7502080	**101.00**
Metric Sets						
0.002mm	0.2mm	0-100-0	±0.004mm	Horizontal	7501029	**163.70**
0.01mm	0.5mm	0-25-0	±0.01mm	Horizontal	7501059	**150.40**
0.01mm	0.8mm	0-40-0	±0.01mm	Horizontal	7501087	**131.20**
0.01mm	1.0mm	0-50-0	±0.01mm	Horizontal	7501109	**167.80**

Digital Test Indicator

Features:
- Inch/Metric conversion
- With Ø8mm and Ø4mm dovetail stems
- Positive and negative measurement
- Tolerance setting
- With Ruby tipped contact point



Range	Resolution	Accuracy	Code No.	Price $
.02" / 0.5mm	0.000"1 / 0.001mm	.0005" / 0.009mm	7505010	**466.60**

STM

Test Indicators and Sets

- White face
- Available in bezel or dial
- Contact point adjustable through 230°
- Fully jeweled movement
- Extremely light contact pressure
- Clear, easy to read 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	.0005	.030	0-15-0	.700	200-730	**78.00**
1.250	.0001	.008	0-4-0	.650	200-800	**115.00**
Inch Sets						
1.250	.0005	.030	0-15-0	.700	200-805	**129.90**
1.250	.0001	.008	0-4-0	.650	200-810	**174.30**

Mitutoyo

Quick Set / True Test Indicators

Basic Model Includes:
- Horizontal type, series 513
- .078" carbide contact point
- 3/8 dove tail and nut

Complete Model Includes:
- All basic accessories
- .039 and .118 contact points
- Swivel clamp for 5/32 and 3/8 dove tail
- 5/32 dove tail arm



Mitutoyo Model No.	Range (in./mm)	Grad (in./mm)	Sowa Code No.	Price $
Basic Model				
513-402	.030"	.0005"	840-211	**131.00**
513-403	.008"	.0001"	840-212	**163.00**
Complete Model				
513-402T	.030"	.0005"	840-215	**186.00**
513-403T	.008"	.0001"	840-216	**238.00**
513-405T	0.2mm	0.002mm	840-476	**229.00**
513-406T	.030"/0.7mm (dual)	.0005"/0.01mm	840-217	**204.00**
513-412T (long point)	.030"	.0005"	840-478	**250.00**
513-443T (TRUE TEST)	.016"	.0001"	840-907	**302.00**

Pocket Test Indicators

- Jewelled bearings
- Reversable contact point is adjustable within 220°
- Fully adjustable bevel/dial face, 1.27" easy to read



Mitutoyo Model No.	Range (in./mm)	Grad (in./mm)	Reading	Sowa Code No.	Price $
513-518T (set)	.040"	.001"	0-20-0	840-208	**176.00**
513-518 (ind)	.040"	.001"	0-20-0	840-473	**155.00**
513-515 (ind)	1.00mm	0.01mm	0-50-0	842-594	**183.00**

ASIMETO

Centering Indicators

Features:
- Operating speed not to exceed 800 rpm
- Range: Internal: 5/32" - 12"
  External: Up to 12"
- Includes: 6 pc feeler set, center locating feeler



Dial Range	Graduation	Accuracy	Stem Dia.	Code No.	Price $
0-.15"	.0005"	±.0002"	0.375"	7469008	**291.40**

Parts

Description	Length	Capacity	Code No.	Price $
6 pc Feeler Set			7469011	**25.00**
ID Feeler	2"/50mm	4"/100mm	7469012	**4.70**
ID Feeler	4"/100mm	8"/200mm	7469013	**4.70**
ID Feeler	6"/150mm	12"/300mm	7469014	**4.70**
OD Feeler	2"/50mm	4"/100mm	7469015	**4.70**
OD Feeler	4"/100mm	8"/200mm	7469016	**4.70**
OD Feeler	6"/150mm	12"/300mm	7469017	**4.70**
Center Locating Feeler			7469018	**15.10**
Feeling Rod			7469019	**5.30**

Starrett

711 Series Dial Test Indicators

- Graduation: .001" • Dial Reading 0-15-0
- Steel contact points length: 5/32" (4mm)
- Steel contact points ball diameters: .035" (0.9mm), .062" (1.6mm), .120" (3mm)
- Ideal for precise measurements in machining, layout, and inspection work
- Smooth, jeweled lever action
- Positive reversing switch
- Hard chrome-plated ratchet contact point
- Swiveling tubular body
- Easy reading dials, half-shaded yellow for clarity



Range	Contact Length (in./mm)	Steel Contact Points Ball Dia. (in./mm)	Starrett No.	Sowa Code No.	List $
.030"	5/32"/4mm	3pc: .035"/0.9mm .062"/1.6mm .120"/3mm	711GCSZ	629-140	**316.80**

708 Series Dial Test Indicators

- With Attachments: Attachments include dovetail body clamp, tool post holder, swivel post snug with dovetail indicator clamp, and snug and rod unit
- Large 1 3/8" (35mm) dial diameter
- Carbide contact points 13/16 x .078" dia
- Precision gear driven design with accurate, smooth, jeweled movement
- Furnished in case



Range	Grad.	Dial Reading	Starrett No.	Sowa Code No.	List $
.010"	.0001"	0-5-0	708ACZ	629-138	**448.80**
.030"	.0005"	0-15-0	709ACZ	629-139	**370.70**

ASIMETO

Extended Range Dial Test Indicators

Features:
- Jeweled bearing design and resistant to magnetic fields
- Stem diameter: Inch: 3/8", Metric: 8mm
- Carbide contact point swivels 210º



Range	Graduation	Dial Reading	Accuracy	Type	Code No.	Price $
Inch						
.060"	.001"	0-15-0	±.0012"	Horizontal w/ 30mm dial	7503061	**201.40**
.060"	.0005"	0-15-0	±0012"	Horizontal w/ 30mm dial	7503561	**213.00**
.060"	.0005"	0-15-0	±0012"	Horizontal w/ 38mm dial	7504561	**220.60**
.060"	.001"	0-15-0	±.0012"	Vertical w/ 30mm dial	7503063	**209.00**
.060"	.0005"	0-15-0	±0012"	Vertical w/ 30mm dial	7503563	**224.10**
.060"	.0005"	0-15-0	±0012"	Vertical w/ 38mm dial	7504563	**228.70**
Metric						
1.6mm	0.01mm	0-40-0	±0.02mm	Horizontal w/ 38mm dial	7504560	**259.50**

Extended Range Dial Test Indicator Sets #1

Features:
- Double the range of most indicators
- Jeweled movement

Standard Accessories:
- Calibration certificate, instruction manual, Warranty car, 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), .08", .12" (Tungsten Carbide) x 5/8" long



Range	Graduation	Accuracy	Dial Dia.	Indicator	Code No.	Price $
.060"	.0005"	±.0012"	38mm	Horizontal (7504561)	7504811	**274.60**
.060"	.0005"	±.0012"	30mm	Horizontal (7503561)	7504813	**267.00**
.060"	.001"	±.0012"	30mm	Horizontal (7503061)	7504815	**256.00**

Extended Range Dial Test Indicator Sets #2

Features:
- Double the range of most indicators
- Jeweled movement

Standard Accessories:
- Calibration certificate, instruction manual, Warranty car, 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), .08", .12" (Tungsten Carbide) x 5/8" long



Range	Graduation	Accuracy	Dial Dia.	Indicator	Code No.	Price $
.060"	.0005"	±.0012"	38mm	Horizontal (7504561)	7504821	**268.70**

ASIMETO

Float N Lock Positioners

Features:
- It's an excellent dial indicator holder.
- All metal parts used.
- Precision angled bearings interface and lock the ball precisely with a small turn of the locking knob. Excellent rigidity factor.
- Self-compensating, no need to disassemble to re-establish tension (as with other designs).
- Right angle notch (for 90° positioning) can be swung to any point 360° and then locked.



Description	Code No.	Price $
Mounting Bottom Holes 3/8"-16	7605700	**90.20**
Magnetic Base (90 lb. Pull) 3-1/4" x .435" High	7605710	**106.60**

Zero Set Holder

Features:
- The ZeroSet fits all dovetail equipped Indicators, and is used for checking Set-Ups.
- Checks the alignment of the centers of round materials in relation to the, cutting head.
- Speeds set up operations enormously.
- Equipped with a spindle post with 1/4", 3/8", and 1/2" diameters, and has an effective measuring range of 3/8" thru 9".
- Test indicator is not included and is optional.





Description	Code No.	Price $
Zero Set Holder	7500150	**457.20**

Zero Set Universal Attachment

Features:
- For use with any dovetail test indicator allowing a multitude of positioning possibilities in either direction
- Angles up to 90 degrees on either side.
- Allows for an infinite range of measurements over an extensive area.
- Test indicator is not included and is optional.







Description	Code No.	Price $
Zero Set Universal Attachment	7500160	**213.20**

ASIMETO

Double-Jointed Dovetail Holder

Features:
- Brass Setting Nut allows orientation of the indicator in a full 360 degrees, with secure clamping.
- It also allows a fine adjustment for the indicator of .060 up and down.
- 3/8" diameter body for secure clamping
- 4-1/2" overall reach
- Fits all dovetail equipped Indicators





Shank Dia.	Overall Length	Code No.	Price $
3/8"	4-3/4"	7500270	**118.00**

Spring-Loaded Tension Clamps

Features:
- A complete range of sizes for all applications
- Used for setting up and fixturing all types of instruments
- Available with clamping ranges from 5/32" to 1/2"
- Overall length for all sizes is 1-3/4"
- Steel with Black Oxide finish
- New Stainless Steel sizes also available







Clamp Hole	End Hole	Steel Code No.	Price $	Stainless Steel Code No.	Price $
5/16"	5/32"	7500300	**25.30**	7500400	**79.30**
5/16"	1/4"	7500301	**22.20**	7500401	**79.30**
3/8"	1/4"	7500302	**25.30**	7500402	**87.60**
1/4"	1/4"	7500303	**25.30**	7500403	**79.30**
5/16"	5/16"	7500304	**22.20**	7500404	**87.60**
3/8"	5/16"	7500305	**25.30**	7500405	**87.60**
3/8"	3/8"	7500306	**33.70**	7500406	**87.60**
1/2"	3/8"	7500307	**40.10**	7500407	**87.60**
1/2"	5/16	7500308	**92.20**	7500408	**87.60**

Clamps With Dovetails

Features:
- For any Indicator equipped with rods or dovetails.
- Used to fixture Indicators on Surface Gauge, Gauge Stands, Magnetic Bases, Height Gauge, Transfer Stands, and many others.
- Steel with Black Oxide finish.


7500361


7500360


7500363


7500364

Mounting Hole	Code No.	Price $
3/8" and 7/32"	7500360	**54.70**
3/8" and 1/4"	7500361	**54.70**
7/32" and 5/32"	7500363	**60.20**
1/4" and 1/8"plus adjustable hole up to 1/4"	7500364	**43.80**

ASIMETO

Inside/Outside Diameter Groove Gauges

Features:
- A quick way to inspect steps, counterbores, keyways and face O-ring grooves
- Available in 0-6" and 6-12" ranges
- Black Anodized Aluminum





Range	Code No.	Price $
0" - 6"	7500370	**82.00**
6" - 12"	7500380	**98.40**

Dial Indicator Depth Bases

Features:
- Ground flat and parallel on both top and bottom surfaces.
- Set screw in bases holds Indicator in place.
- Black Oxide plated.





Base Length	Dia. of Hole	Code No.	Price $
65mm	3/8"	7500391	**45.30**
100mm	3/8"	7500393	**57.30**

Universal Dovetail Indicator Holder

Features:
- 1/4" shank diameter with 3" reach.
- This spring loaded holder locks in any of (4) 90 degree quadrants, and allows many variable angles of holding.
- Brass contact will not scar Indicator.
- Fits all dovetail equipped Indicators.
- Stainless Steel





Description	Code No.	Price $
Universal Dovetail Indicator Holder	7500410	**31.20**

ASIMETO

Axial Support Bracket

Features:
- Used for mounting Indicators with dovetails or rods.
- 3/8" diameter body for secure clamping, with 5-1/2" overall reach.
- Bends in many directions





Shank Dia.	Overall Length	Code No.	Price $
3/8"	5-1/4"	7500260	**62.80**

Swivel Clamp



Description	Code No.	Price $
For 8mm & 6mm Dia. Dovetail Stem	7500252	**36.00**

STM

Dial Test Indicator Holder

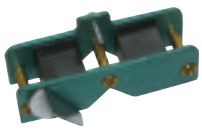
- Adapts immediately for fast and positive indicating
- Suitable for all popular indicators with 5/32" shank or dovetail
- Reach from 0-12" diameter
- 1-7/8" capacity



Description	Code No.	Price $
Dial test indicator holder	200-815	**28.60**

Magnetic Base Indicator Holder

Here is a rugged holder for indicators for use as lathe stops, etc. Lug back indicators (not furnished) are mounted directly on unit with bolt and nut provided to give powerful compact unit. Base has a powerful, lifetime guaranteed magnetic grip which assures you of accurate work.



Description	Code No.	Price $
Magnetic base indicator holder	200-885	**15.80**

ASIMETO

Centering Holders

- Allows large diameter cylinder or holes to be centered



Description	Code No.	Price $
8mm Dia. Stem	7500350	**38.40**
.25" Dia. Stem	7500351	**38.40**

STM

Half Round Combination Holder

- Two-point adjustment
- 1/4" shank
- For dovetail and 5/32" stem indicators



Description	Code No.	Price $
Half round combination holder	200-816	**16.60**

ASIMETO

Dovetail Stem Sets



Knurled Clamping Ring

Size	Code No.	Price $
3/8"	7500311	**7.00**
5/32"	7500313	**7.00**
8mm	7500310	**7.00**
6mm	7500312	**7.00**

STM

Super Mag

- A universal magnetic base that will save time and improve accuracy
- Strong magnet holding power
- Zinc die cast housing
- 5 different locations for mounting accessories:
  – 3 positions 1/4-20 for lug mounts, 1 tapped hole 10-32, 1 reamed hole 3/8"
- Size 4-1/2" x 1" x 1-1/4"



Description	Code No.	Price $
Super Mag	200-880	**15.80**

ASIMETO

Contact Points

- Carbide or Steel Ball



Ball Dia.	Tip Length	Ind. Range/ Resolution	Code No.	Price $
Carbide Ball				
Ø2mm	21.45mm	1mm/0.01mm	7500122	**11.10**
Ø3mm	21.95mm	1mm/0.01mm	7500132	**11.10**
Ø2mm	14.7mm	0.2mm/0.002mm	7500722	**11.10**
Ø2mm	21.8mm	0.4mm/0.002mm	7500822	**11.10**
Steel Ball				
Ø1mm	20.95mm	1mm/0.01mm	7500111	**4.10**
Ø1mm	15.9mm	0.03"/0.0005"	7500611	**4.10**
Ø1mm	21.3mm	1.6mm/0.01mm	7500811	**4.10**
Ø3mm	22.3mm	0.06"/0.0005"	7500831	**4.10**

Ball Indicator Points

Features:
- Precision contact points for use on standard travel dial indicators.
- Fit all AGD Group 1, 2, 3 and 4 indicators.



Ball Dia.	Length	Body Dia.	Thread	Code No.	Price $
Carbide					
2mm	1/4"	.187	4-48	7477001	**46.40**
2mm	3/4"	.187	4-48	7477021	**46.40**
2mm	1"	.187	4-48	7477031	**46.40**
3mm	1/4"	.187	4-48	7477041	**44.40**
3mm	1/2"	.187	4-48	7477051	**46.10**
3mm	3/4"	.187	4-48	7477061	**47.80**
4mm	1/4"	.187	4-48	7477081	**46.10**
4mm	3/4"	.187	4-48	7477101	**50.80**
3mm	1/4"	.187	M2.5	7477040	**44.40**
3mm	1/2"	.187	M2.5	7477050	**46.10**
3mm	3/4"	.187	M2.5	7477060	**47.80**
4mm	1/4"	.187	M2.5	7477080	**46.10**
4mm	1/2"	.187	M2.5	7477090	**47.80**
4mm	3/4"	.187	M2.5	7477100	**50.80**
Stainless Steel					
7/32"	7/32"	5/8"	4-48	7477163	**11.00**
7/32"	7/32"	13/16"	4-48	7477173	**5.20**
7/32"	7/32"	7/8"	4-48	7477183	**10.70**
3/16"	3/16"	1"	4-48	7477193	**5.20**
Ruby Ball					
3mm	1/4"	.187	4-48	7477161	**49.60**
3mm	3/4"	.187	4-48	7477181	**54.70**
3mm	1"	.187	4-48	7477191	**57.30**
4mm	1/4"	.187	4-48	7477201	**54.70**
4mm	1/2	.187	4-48	7477211	**56.50**
4mm	3/4"	.187	4-48	7477221	**58.30**
3mm	1/4"	.187	M2.5	7477160	**49.60**
3mm	1/2"	.187	M2.5	7477170	**53.00**
3mm	3/4"	.187	M2.5	7477180	**54.70**
3mm	1"	.187	M2.5	7477190	**57.30**
4mm	1/4"	.187	M2.5	7477200	**54.70**
4mm	1/2	.187	M2.5	7477210	**56.50**
4mm	3/4"	.187	M2.5	7477220	**58.30**

ASIMETO

Flat & Cone Indicator Points

Features:
- Each point is carefully manufactured of Stainless steel.
- 4-48 Threads for use in AGD 1, 2, 3, 4 indicators.

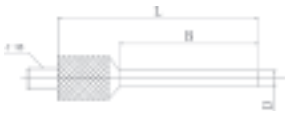


Body Dia.	Length	Code No.	Price $
Flat			
5/16"	.175	7477033	**3.10**
7/32"	.175	7477043	**3.10**
7/32"	1/4"	7477053	**4.40**
7/32"	3/8"	7477063	**4.40**
7/32"	1/2"	7477073	**5.00**
7/32"	5/8"	7477083	**5.00**
7/32"	3/4"	7477093	**6.60**
7/32"	7/8"	7477103	**6.60**
7/32"	1-1/4"	7477123	**8.70**
Cone			
7/32"	1/2"	7477203	**7.00**
7/32"	7/8"	7477233	**10.70**
7/32"	1"	7477243	**6.40**

Flat Carbide Needle Indicator Points

- 4-48 Thread





D	B	L	Code No.	Price $
.015	.120	.400	7477015	**100.90**
.031	.120	.400	7477025	**106.30**
.031	.500	.780	7477035	**124.60**
.062	.500	.800	7477045	**87.30**
.062	1.00	1.300	7477055	**87.30**
.078	1.00	1.300	7477065	**87.30**

Stem Indicator Points

Features:
- Each point is carefully manufactured of Stainless steel.
- 4-48 Threads for use in AGD 1, 2, 3, 4 indicators.
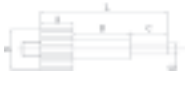


Bent Stem
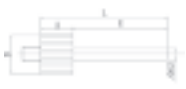


Double Stem



Single Stem





Type	D	A	E	L	C	B	Code No.	Price $
Bent Stem	7/32"	5/16"	1/16"	7/16"			7477017	**7.00**
Double Stem	7/32"	1/4"	0.023	.960	.1	.585	7477037	**13.20**
Double Stem	7/32"	1/4"	0.023	.960	.235	.47	7477047	**11.00**
Single Stem	3/16"	3/16"	1-5/32"	1-5/32			7477057	**10.30**

ASIMETO

Ball Tip Dial Indicator Point

Features:
- Grade 25 chrome alloy steel balls.
- Use only as an indicator point and not for sizing or, gauging applications where side pressure would be present.
- 4-48 Thread







Ball Dia.	Stem Length	Major Stem Dia.	Minor Stem Dia.	Code No.	Price $
0.0310"	0.600"	0.156"	0.025"	7477019	**27.80**
0.0460"	0.71"	0.156"	0.040"	7477029	**27.80**
0.0620"	0.71"	0.156"	0.058"	7477039	**27.80**
0.0780"	0.83"	0.156"	0.058"	7477049	**27.80**
0.0938"	0.83"	0.156"	0.100"	7477059	**24.30**
0.1250"	0.80"	0.156"	0.100"	7477069	**24.30**
0.1562"	0.80"	0.156"	0.100"	7477079	**26.10**
0.1562"	0.80"	0.156"	0.156"	7477089	**26.10**
0.1870"	0.375"	0.156"	0.218"	7477099	**26.10**
0.2188"	0.375"	0.156"	0.218"	7477109	**26.10**
0.2500"	0.250"	0.218"	0.218"	7477119	**27.60**
0.2812"	0.250"	0.218"	0.218"	7477129	**27.60**
0.3125"	0.250"	0.218"	0.218"	7477139	**27.80**
0.3438"	0.250"	0.218"	0.218"	7477149	**28.70**
0.3750"	0.250"	0.218"	0.218"	7477159	**29.00**
0.4060"	0.250"	0.218"	0.218"	7477169	**29.20**
0.4370"	0.250"	0.218"	0.218"	7477189	**34.70**
0.4680"	0.250"	0.218"	0.218"	7477199	**32.80**
0.5000"	0.250"	0.218"	0.218"	7477209	**32.80**
0.5310"	0.250"	0.218"	0.218"	7477219	**33.60**
0.5625"	0.250"	0.312"	0.312"	7477229	**33.90**
0.6250"	0.250"	0.312"	0.312"	7477249	**35.50**
0.7500"	0.250"	0.312"	0.312"	7477299	**35.50**
0.8750"	0.250"	0.500"	0.500"	7477329	**32.80**
1.0000"	0.250"	0.500"	0.500"	7477349	**32.80**

Contact Point Adapter

Features:
- Point is 7/32" diameter, 1/2" length
- Steel, soft and Black Oxide plated
- Metric to English Conversion point



Description	Code No.	Price $
4-48 Internal Threads to M2.5 External Threads	7477381	**11.80**

Straight Metric Indicator Stem Bushing

Features:
- Accepts 8mm stem, converts to 3/8" diameter stem.
- Straight bushing, no head.
- .500" length.
- Brass, Nickel Plated.



Description	Code No.	Price $
Straight Metric Indicator Stem Bushing	7500320	**2.40**

ASIMETO

6pc Dial Indicator Contact Point Set

Features:
- A top quality contact assortment for the professionally equipped dial indicator. Includes the following contacts, secured in a machined ring suitable for workbench or flat storage.
- Thread: 4-48.



Set Contents	QTY	Set Code No.	Price $
.220" Convex Point	1	7477068	**65.50**
.323" Convex Point	1		
.394" Convex Point	1		
.323" Flat Points	1		
.394" Flat Points	1		
.984" Taper Point	1		

10pc Dial Indicator Contact Point Set

Features:
- A top quality contact assortment for the professionally equipped dial indicator. Includes the following contacts, secured in a machined ring suitable for workbench or flat storage.
- Thread: 4-48.



Set Contents	QTY	Set Code No.	Price $
3/8" CNC Qualified Roller Bearing	1	7477108	**255.60**
1/2" CNC Qualified Roller Bearing	1		
3MM Ruby Tip x 1/2" long	1		
Flat Steel Point 7/32" diameter X 1/4" long	1		
Flat Steel Point 7/32" diameter X 1/2" long	1		
Flat Steel Point 7/32" diameter X 3/4" long	1		
Flat Steel Point 7/32" diameter X 1-1/4" long	1		
Flat Contact 1/4" wide	1		
Flat Contact 1/2" wide	1		
.060 Steel Ball Tip, 5/16" long	1		

STM

Select-A-Point Kit

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	200-820	**13.50**

ASIMETO

11pc Dial Indicator Contact Point Set

Features:
- The most popular Indicator points, including Flat, Ball, Cone, and Stems.
- Fits all AGD 1,2,3 and 4 style drop indicators.
- All points have 4-48 Thread and are Steel with Black Oxide Plating.



Set Contents	QTY	Set Code No.	Price $
Flat Point 7/32" Dia X .250 Long	1	7477118	**19.20**
Flat Point 7/32" Dia X .380 Long	1		
Flat Point 7/32" Dia X .500 Long	1		
Flat Point 7/32" Dia X .625 Long	1		
Flat Point 7/32" Dia X .875 Long	1		
Flat Point 7/32" Dia X 1.250 Long	1		
Ball Point 7/32" Dia X .225 Long	1		
Ball Point 7/32" Dia X .625 Long	1		
Cone Point 7/32" Dia X .750 Long	1		
Cone Point 7/32" Dia X .625 Long	1		
Bent Stem Point 1/16" Dia X .312 Long	1		

14pc Dial Indicator Contact Point Set

Features:
- A top quality contact assortment for the professionally equipped dial indicator. Includes the following contacts, secured in a machined ring suitable for workbench or flat storage.
- Thread: 4-48.



Set Contents	QTY	Set Code No.	Price $
3/8" Ground Flat Bottom Contact, 3/8" Long	1	7477148	**250.70**
1/2" Ground Flat Bottom Contact, 3/8" Long	1		
1/2" Button Contact, Steel Black Oxide	1		
3/8" Button Contact, Steel Black Oxide	1		
1/2" Long 90 Degree Cone Point Contact, Steel Black Oxide	1		
1/16" Ball Contact, 1/4" Long, Steel Black Oxide	1		
5/8" Long Tapered Contact, Steel Black Oxide	1		
Button Contact, 13/64" Dia X 5/32" Long, Steel Black Oxide	1		
Shock Abosorbing Contact Point	1		
9/32" Long Cone Point, Steel Hard, Black Oxide	1		
1" Long Polished Radius Point, Steel Hard Black Oxide	1		
3/4" Long Polished Radius Point, Steel Black Oxide	1		
1/2" Long Polished Radius Point, Steel Black Oxide	1		
1/4" Long Polished Radius Point, Steel Black Oxide	1		

ASIMETO

22pc Dial Indicator Contact Point Set

Features:
- The most popular Indicator points, including Flat, Ball, Cone, and Stems.
- Fits all AGD 1,2,3 and 4 style drop indicators.
- All points have 4-48 Thread and are Steel with Black Oxide Plating.



Set Contents	QTY	Set Code No.	Price $
Flat Point 7/32" Dia X .175 Long	1	7477228	**32.80**
Flat Point 7/32" Dia X .250 Long	1		
Flat Point 7/32" Dia X .380 Long	1		
Flat Point 7/32" Dia X .500 Long	1		
Flat Point 7/32" Dia X .625 Long	1		
Flat Point 7/32" Dia X .750 Long	1		
Flat Point 7/32" Dia X .875 Long	1		
Flat Point 7/32" Dia X .895 Long	1		
Flat Point 7/32" Dia X 1.250 Long	1		
Ball Point 7/32" Dia X .225 Long	1		
Ball Point 7/32" Dia X .395 Long	1		
Ball Point 7/32" Dia X .625 Long	1		
Ball Point 7/32" Dia X .875 Long	1		
Ball Point 7/32" Dia X .825 Long	1		
Cone Point 7/32" Dia X .875 Long	1		
Cone Point 7/32" Dia X .750 Long	1		
Cone Point 7/32" Dia X .625 Long	1		
Cone Point 7/32" Dia X .500 Long	1		
Bent Stem Point 1/16" Dia X .312 Long	1		
Double Stem Point 1/16" Dia X .935 Long	1		
Stem Point 1/16" Dia X 1.350 Long	1		
Double Stem Point 1/16" Dia X .955 Long	1		

ASIMETO

Dial Indicator Extension Rods & Sets

Features:
- Use to gain extra length.
- 7/32" diameter points.
- Stainless Steel.



Length	Thread	Code No.	Price $
1/2"	4-48	7477107	**9.40**
3/4"	4-48	7477117	**9.40**
1"	4-48	7477127	**9.40**
1-1/4"	4-48	7477137	**9.80**
1-1/2"	4-48	7477147	**10.50**
1-3/4"	4-48	7477157	**10.50**
2"	4-48	7477167	**10.50**
2-1/2"	4-48	7477177	**15.40**
3"	4-48	7477187	**15.70**
4"	4-48	7477197	**18.70**
6"	4-48	7477207	**27.40**
1/2"	M2.5x0.45	7477106	**9.40**
3/4"	M2.5x0.45	7477116	**9.40**
1"	M2.5x0.45	7477126	**9.40**
1-1/4"	M2.5x0.45	7477136	**9.80**
1-1/2"	M2.5x0.45	7477146	**10.50**
1-3/4"	M2.5x0.45	7477156	**10.50**
2"	M2.5x0.45	7477166	**10.50**
2-1/2"	M2.5x0.45	7477176	**15.40**
3"	M2.5x0.45	7477186	**15.70**
4"	M2.5x0.45	7477196	**18.70**
6"	M2.5x0.45	7477206	**27.40**
Sets			
1", 2", 3" in each set	4-48	7477038	**34.70**
	M2.5x0.45	7477048	**34.70**

ASIMETO

Asimeto Replacement Tips for Alternate Test Indicators

Replacement Tips for INTERAPID Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Steel Ball				
.031"	11/16"	M1.7 x 0.35	7478253	**15.40**
.060"	11/16"	M1.7 x 0.35	7478263	**15.40**
.080"	11/16"	M1.7 x 0.35	7478273	**15.40**
.031"	13/16"	M1.7 x 0.35	7478313	**15.40**
.060"	13/16"	M1.7 x 0.35	7478323	**15.40**
.080"	13/16"	M1.7 x 0.35	7478333	**15.40**
Carbide Ball				
.015"	11/16"	M1.7 x 0.35	7478373	**54.60**
.031"	11/16"	M1.7 x 0.35	7478383	**18.50**
.060"	11/16"	M1.7 x 0.35	7478393	**18.50**
.080"	11/16"	M1.7 x 0.35	7478403	**18.50**
.093"	11/16"	M1.7 x 0.35	7478413	**18.50**
.031"	13/16"	M1.7 x 0.35	7478463	**18.50**
.060"	13/16"	M1.7 x 0.35	7478473	**18.50**
.080"	13/16"	M1.7 x 0.35	7478483	**18.50**
.031"	1.450"	M1.7 x 0.35	7478523	**19.50**
.080"	1.450"	M1.7 x 0.35	7478533	**19.50**
.015"	1-3/4"	M1.7 x 0.35	7478563	**54.60**
.031"	1-3/4"	M1.7 x 0.35	7478573	**19.50**
.080"	1-3/4"	M1.7 x 0.35	7478583	**32.80**
.080"	2-3/4"	M1.7 x 0.35	7478613	**26.40**
.100"	2-3/4"	M1.7 x 0.35	7478623	**26.40**
Ruby Ball				
2mm	11/16"	M1.7 x 0.35	7478633	**54.70**
2mm	13/16"	M1.7 x 0.35	7478643	**54.70**
2mm	1-3/4"	M1.7 x 0.35	7478653	**54.70**

Replacement Tips for TECLOCK Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Steel Ball				
.038"	3/4"	M1.7 x 0.35	7478040	**15.40**
.125"	3/4"	M1.7 x 0.35	7478060	**16.50**
.038"	1-1/2"	M1.7 x 0.35	7478070	**16.50**
Ruby Ball				
2mm	3/4"	M1.7 x 0.35	7478110	**54.70**
2mm	1-1/2"	M1.7 x 0.35	7478120	**54.70**

Replacement Tips for FOWLER Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Carbide Ball				
.040"	.780	M1.6 x 0.35	7478081	**32.80**
.080"	.780	M1.6 x 0.35	7478091	**32.80**

Replacement Tips for PEACOCK Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Carbide Ball				
.038"	3/4"	M1.7 x 0.35	7478631	**15.40**
.078"	3/4"	M1.7 x 0.35	7478641	**15.40**
.038"	1-3/4"	M1.7 x 0.35	7478661	**15.40**
.078"	1-3/4"	M1.7 x 0.35	7478671	**15.40**
.125"	1-3/4"	M1.7 x 0.35	7478681	**15.40**

Replacement Tips for MITUTOYO Test Indicators

Ball Dia.	Tip Length	Thread	Code No.	Price $
Steel Ball				
.040"	.700	M1.7 x 0.35	7478122	**15.40**
.080"	.700	M1.7 x 0.35	7478132	**15.40**
.120"	.700	M1.7 x 0.35	7478142	**15.40**
.040"	1	M1.7 x 0.35	7478402	**15.40**
.080"	1	M1.7 x 0.35	7478412	**15.40**
.120"	1	M1.7 x 0.35	7478422	**15.40**
.040"	1.500	M1.7 x 0.35	7478472	**15.40**
.080"	1.500	M1.7 x 0.35	7478482	**15.40**
.120"	1.500	M1.7 x 0.35	7478492	**15.40**
Carbide Ball				
.040"	.500	M1.7 x 0.35	7478152	**32.80**
.080"	.700	M1.7 x 0.35	7478322	**18.50**
.080"	1	M1.7 x 0.35	7478572	**32.80**

Replacement Tips for STARRETT Test Indicators

- Metric tips fit model numbers: 708, 708M, 709, 709M Series
- Inch tips fit model numbers: 811, 811M Series

Ball Dia.	Tip Length	Starrett Code No.	Code No.	Price $
Steel Ball				
.032"	5/8"	PT23062	7478441	**15.40**
.078"	5/8"	PT22315	7478461	**15.40**
.032"	1-5/16"	PT23064	7478481	**15.40**
.078"	1-5/16"	PT23011	7478501	**15.40**
Carbide Ball				
1mm	13/16"	PT23942	7478401	**32.80**
2mm	13/16"	PT23914	7478411	**32.80**

Replacement Tips for COMPAC Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Carbide Ball				
.080"	.720"	M1.6 x 0.35	7478410	**18.50**
.080"	1.44"	M1.6 x 0.35	7478430	**19.50**

Tips for BROWN & SHARPE Test Indicators



Ball Dia.	Tip Length	Thread	Code No.	Price $
Steel Ball				
.040"	1/2"	M1.4 x 0.3	7478200	**16.50**
.080"	1/2"	M1.4 x 0.3	7478210	**16.50**
.120"	1/2"	M1.4 x 0.3	7478220	**16.50**
.080"	1-7/16"	M1.4 x 0.3	7478230	**16.50**
Carbide Ball				
.015"	1/2"	M1.4 x 0.3	7478240	**54.60**
.040"	1/2"	M1.4 x 0.3	7478250	**32.80**
.080"	1/2"	M1.4 x 0.3	7478260	**18.50**
.120"	1/2"	M1.4 x 0.3	7478270	**32.80**
.080"	11/16"	M1.4 x 0.3	7478280	**32.80**
.015"	1-7/16"	M1.4 x 0.3	7478290	**54.60**
.040"	1-7/16"	M1.4 x 0.3	7478300	**19.50**
.080"	1-7/16"	M1.4 x 0.3	7478310	**19.50**
.120"	1-7/16"	M1.4 x 0.3	7478320	**19.50**
Ruby Ball				
2mm	1/2"	M1.4 x 0.3	7478330	**54.70**
2mm	1-7/16	M1.4 x 0.3	7478340	**54.90**

ASIMETO

CMM Styli - M2 Thread



Ball Dia.	Length	Renishaw Functional Equivalent	Carbide Probes	SPI	Q Mark	Code No.	Price $
1mm Ruby	10mm		265-1R	12-620-1	TM2-1010	7478016	**81.20**
3mm Ruby	10mm	PS1R A/5000/3604		14-988-0	TM2-3010	7478046	**57.10**
6mm Ruby	10mm	PS14R A/5000/4156	265-6R	12-625-0	TM2-6010	7478056	**104.40**
1mm Ruby	20mm	PS23R A/5000/7808	266-1R	12-621-9	TM2-1020-07	7478076	**81.20**
2mm Ruby	20mm	PS2D a/5000/3603	266-2R	12-622-7	TM2-2020	7478096	**84.40**
3mm Ruby	20mm	PS16R A/5000/4160	266-3R	12-623-5	TM2-4020	7478106	**81.20**
4mm Ruby	20mm	PS17R A/5000/4161	266-4R	12-624-3	Tm2-4020	7478116	**78.80**
1.5mm Ruby	40mm					7478136	**133.50**
3mm Ruby	40mm					7478146	**141.70**

CMM Styli - M3 Thread

Ball Dia.	Length	Renishaw Functional Equivalent	Carbide Probes	Q Mark	Code No.	Price $
1mm Ruby	10mm				7478206	**75.00**
1mm Ruby	20mm	PS1-9R A/5000/3551	261-1R	TM3-1020	7478236	**109.00**
3mm Ruby	20mm	PS1-11R A/5000/3553	261-3R	TM3-3020	7478256	**114.50**

CMM Extensions - M2 Thread

- Stainless Steel



Length	Diameter	Renishaw Functional Equivalent	Carbide Probes	SPI	Q Mark	Code No.	Price $
10mm	3mm	SE4 M/5000/3647	265-E10	12-631-8	VM2-10	7478616	**24.30**
20mm	3mm	SE5 M/5000/3648	265-E20	12-632-6	VM2-20	7478626	**25.60**
30mm	3mm	SE6 M/5000/4162	265-E30	12-633-4	VM2-30	7478636	**35.50**
40mm	3mm	SE18 M/5000/7779	266-E40	14-983-1	VM2-40	7478656	**56.70**
60mm	3mm			14-984-9		7478666	**60.30**

Cylinder Styli



Thread	Cylinder Dia.	Styli Length	Base Dia.(C)	Code No.	Price $
M2 x 0.4	3mm	13mm	3mm	7478506	**41.70**

CMM Styli Universal Wrench



Description	Code No.	Price $
CMM Styli Universal Wrench	7478556	**21.00**

ASIMETO

CMM Star Styli Six Pcs Set



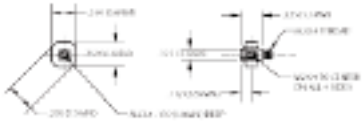


Set Contains	QTY	Description	Set Code No.	Price $
CMM Crosshead	1	6.6mm x 6.6mm x 5.7mm, M2 X 0.4	7478536	**403.00**
Ruby Ball Probe	1	2mm x 17.2mm		
Ruby Ball Probe	4	2mm x 6.6mm		

CMM Crossheads







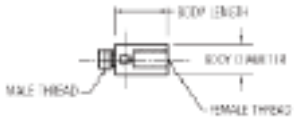


Description	Code No.	Price $
CMM Crosshead	7478586	**65.50**
CMM Crosshead with 3mm Shank	7478566	**119.90**

CMM Adaptor Tips

- Converts your probe head to a different thread size, allowing multiple uses of CMM Styli or accessories.





Male Length	Female Length	Body Dia.	Body Length	Renishaw Functional Equivalent	Carbide Probes	Fowler	Q Mark	Code No.	Price $
M3 x 0.5	M2 x 0.4	4mm	5mm	SA3 M/5000/4163	261-AD5	14-986-4	RM3-M2	7478906	**46.40**
M2 x 0.4	M3 x 0.5	4mm	10mm	SA2 M/5000/4164	265-AD7	14-979-9	RM2-M3	7478916	**47.60**
M4 x 0.7	M2 x 0.4	6.3mm	5mm	SA5 M/5000/6622	399	14-980-7		7478926	**53.40**
M2 x 0.4	M4 x 0.7	6.3mm	15mm			14-981-5	RM4-M2	7478936	**70.90**

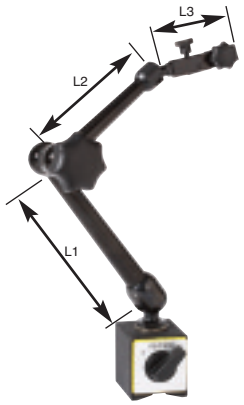
Articulating Arm Magnetic Bases

- 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 work piece or machine table when the rotary knob is in the on position
- Slot: 6.5mm
- Working Angle 150°



Magnetic Power	Magnetic Base (L x W x H)	Height	Code No.	Price $
30 kg	36 x 30 x 35mm	195mm	7602011	**77.20**
80 kg	60 x 50 x 55mm	350mm	7602021	**88.30**
80 kg	60 x 50 x 55mm	440mm	7602031	**121.90**
130 kg	117 x 50 x 55mm	690mm	7602051	**422.50**
80 kg	60 x 50 x 55mm	390mm	7602310	**98.10**

Dimensional Data



Model	L1	L2	L3
Type I	65mm	55mm	60mm
Type II	110mm	110mm	60mm
Type III	150mm	140mm	60mm
Type IV	345mm	230mm	60mm

ASIMETO

Hydraulic Magnetic Base

- 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 work piece or machine table when the rotary knob is in the on position
- Working Angle 150º



Magnetic Power	Magnetic Base (L x W x H)	Height	Code No.	Price $
80 kg	60 x 50 x 55mm	385mm	7603010	**162.50**
100 kg	73 x 50 x 55mm	685mm	7603020	**224.10**

Permanent Magnetic Base

- 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	**42.40**

Forced Locking Magnetic Base

- 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
- New design, Holding more solid and reliable, more stable performance, higher accuracy
- The precision surfaces and the bottom V are securely fastened to the ferrous work piece or machine table, when the rotary knob is in the on position



Magnetic Power	Magnetic Base (L x W x H)	Main Stem	Sub Pole	Code No.	Price $
80 kg	60 x 50 x 55mm	Ø12 x 180mm	Ø10 x 160mm	7604010	**70.30**
100 kg	117 x 50 x 55mm	Ø18 X 350mm	Ø16 x 200mm	7604040	**142.80**

ASIMETO

Standard Magnetic Bases

Features:
- For Indicators with 3/8 stems and or Lug backs with 1/4 hole dia.
- On/Off switch
- 132 lbf Magnetic pull



Model	Pull Action	Code No.	Price $
With 6" Rod and Universal clamp	132 lbf	7601011	**39.50**
With 6" Adjustable Rod / Fine Adjustment	132 lbf	7601021	**39.50**

STM

STM Magnetic Bases







	Standard Model BA-1 Code No.	Price $	Fine Adj. Model BA-1F Code No.	Price $	Flex Stem Model BA-1X Code No.	Price $
Made In Taiwan						
	225-001	**100.00**	225-002	**128.80**	225-003	**146.90**
Made In China						
	225-705	**26.90**	225-700	**27.80**	-	-

Universal Magnetic Indicator Holder

- 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	200-825	**25.50**

Single Action Dial Gauge Holder

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 gage holder	200-875	**63.30**

Magnetic Stands

- On/Off switch
- 6" Rod and Universal Clamp





Mitutoyo Model No.	Pull Action	Type	Sowa Code No.	Price $
7010SN	132 lb	standard	840-261	**104.00**
7011SN	132 lb	fine adjustment	840-262	**117.00**
7033B	132 lb	universal mag stand	847-852	**239.00**

Holders With Fine Adjustment On Top

New Fine adjustment on top with universal clamp.

- Holds 6mm, 3/8", dovetail and lug back
- Unique central locking mechanism with spring loaded bearing.
- Dial gauge holder is 3 dimensional.
- Powerful on/off magnetic base.
- Instant fixation in any position.
- Fast and easy to set up gauges into required position.
- Black finished arms



Model	Arm Length and Diameter Bottom Arm Length(mm)	Top Arm Length(mm)	Code No.	Price $
NF61003	56	51	165-498	**157.30**
DG61003	110	101	165-500	**198.90**
MG61003	133	113	165-502	**249.80**
MA61003	326	242	165-425	**407.00**

Holders With Fine Adjustment On Base

Unique single direction Fine adjustment at base.

- Powerful on/off magnetic base.
- Holds 3/8" and dovetail.
- Unique central locking mechanism with spring loaded bearing.
- Five axis holder.
- Instant fixation in any position.
- Easy to set up into required position.
- Black finished arms



Model	Arm Length and Diameter Bottom Arm Length(mm)	Top Arm Length(mm)	Code No.	Price $
NF10433	56	51	165-504	**171.10**
DG10533	110	101	165-506	**212.80**
MG10533	133	113	165-508	**251.10**

PH Holders With Fine Adjustment At Base

- Single direction Fine adjustment at base.
- Powerful on/off magnetic base.
- Universal Swivel Clamp for all dial & test indicators.
- Holds 6mm, 3/8", dovetail and lug back
- Strong arm lock by using the unique 3-point system.
- Easy to set up gauges into required system.
- Black finished arms



Model	Arm Length and Diameter Post Dia. x Length(mm)	Arm Dia. x Length(mm)	Code No.	Price $
PH3100	10 x 120	8 x 110	165-471	**64.80**
PH2040	14 x 203	12 x 185	165-365	**79.40**

Noga Economy Magnetic Base - PH6400

- Solid arm locked by using Noga unique 3-point clamping system.
- Universal swivel clamp for 3/8", 8mm, 6mm, dovetail and back lug.
- Improved fine adjustment on the magnet base.
- Powerful 176LBF on/off magnetic base.
- Post - 14mmX200mm Arm - 12mmX190mm



Model	Code No.	Price $
PH6400	165-472	**120.40**

NOGA

Noga Standard Holder - DG1033



- 11" Reach
- Noga central locking mechanism with NOGA designed spring loaded bearing.
- Powerful On/Off magnetic base (80Kg/f).
- Dial gauge holder is 3 dimensional

Model	Arm Length and Diameter Bottom Arm Length(mm)	Top Arm Length(mm)	Code No.	Price $
DG1033	110	101	165-350	**212.80**

Noga Heavy Duty Holder - MG1033



- Has fine adjustment
- NOGA central locking mechanism with spring loaded bearing.
- Powerful magnetic base 80 Kg/f.

Model	Arm Length and Diameter Bottom Arm Length(mm)	Top Arm Length(mm)	Code No.	Price $
MG1033	133	113	165-355	**263.60**

Five Axis Holder - NF1024



- Unique, 5 axis, 3 dimensional holder.
- Patented 360 degree fine adjustment at the base.
- Central locking mechanism.
- On/Off magnetic base 17 Kg/f.

Model	Code No.	Price $
NF1024	165-360	**197.70**

Noga Centerflex - NF1018



• Centerflex, holds indicators with dovetails and 3/8" dia. stems. Test Indicator holder arm with 5/16" dia. and 1-9/16" long stem. Most useful for centering holes on milling machines.

Model	Code No.	Price $
NF1018	165-420	**115.70**

F/A Top Attachment - FA1500



- Holds indicators with 3/8", 6mm, 8mm stems and dovetails
- M6 thread
- Fine Adjustment

Model	Code No.	Price $
FA1500	165-421	**55.60**

ASIMETO

Dial Gauge Stands

- Both column and metal stage are hardened and precision lapped
- With Ø8mm H7 clamping hole
- Measuring Range 100mm



7670010



7670110

Size	Flatness	Pillar	Verticality	Code No.	Price $
Ø50mm	0.002mm	207 x Ø35mm	0.03mm	7670010	**315.80**
60 x 68MM	0.002mm	207 x Ø35mm	0.03mm	7670110	**384.80**
98 x 115mm	0.005mm	235 x Ø35mm	0.05mm	7670120	**578.10**

Precision Granite Stands

- With adjustable arm
- Granite measuring surface and base
- With Ø8mm H7 clamping hole
- Measuring Range 250mm
- Verticality 0.03mm



7670220

Size	Flatness	Pillar	Code No.	Price $
Screw Column				
200 x 150 x 50	0.002mm	300 x Ø30mm	7670220	**533.40**
300 x 200 x 50	0.002mm	300 x Ø30mm	7670230	**747.00**

STM

Surface Gauges

- Base and scriber hardened
- Bottom grooved for cylindrical work
- Front recessed for depressing spindle below base level
- Has fine adjustment
- Base has 2 retractable gauge pins to set against edge of a surface plate



Description.	Code No.	Price $
4" and 7" spindles (1 of each)	200-840	**44.90**
9" and 12" spindles (1 of each)	200-845	**39.10**
12" and 18" spindles (1 of each)	200-850	**48.60**

Universal Surface Gauges

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	231-246	**56.80**
3-1/8 x 2-1/2	12" with extra 9" spindle	7	SG/9-12	231-248	**82.20**

ASIMETO

Digital Interchangeable Rod Type Depth Gauges

Features:
- The total measuring range is accomplished with threaded depth rods in 1" or 20mm intervals
- 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	.0005"/0.01mm	±.001"/0.02mm	63x17mm	7475040	**326.80**
0-4"/100mm	.0005"/0.01mm	±.001"/0.02mm	101.5x17mm	7475042	**326.80**

Digital Depth Calipers

Features:
- Extra large LCD readout
- Inch/Metric conversion
- Precision ground measuring surfaces



Range	Resolution	Accuracy	Code No.	Price $
0-6" / 0-150mm	.0005" / 0.01mm	±.001"	7327067	**150.90**
0-6" / 0-150mm	.0005" / 0.01mm	±.001"	7327060•	**126.00**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7327087	**177.10**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"	7327080•	**153.30**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"	7327127	**251.30**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"	7327120•	**251.30**

• Available only while quantities last.

Digital Depth Calipers With Single Hook

Features:
- 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	.0005" / 0.01mm	±.001"/.02mm	7322067	**160.80**
0-6" / 0-150mm	.0005" / 0.01mm	±.001"/.02mm	7322065•	**137.00**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"/.03mm	7322087	**188.70**
0-8" / 0-200mm	.0005" / 0.01mm	±.0015"/.03mm	7322085•	**164.30**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"/.04mm	7322127	**263.50**
0-12" / 0-300mm	.0005" / 0.01mm	±.0015"/.04mm	7322125•	**239.70**

• Available only while quantities last.

ASIMETO

Dial Interchangeable Rod Type Depth Gauges

Features:
- The total measuring range is accomplished with threaded depth rods in 1" or 20mm intervals
- 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"	.001"	±.002"	2.5"x.63"	7473041	**240.90**
0-4"	.001"	±.002"	4"x.63"	7473043	**240.90**

Digital Depth Calipers With Double Hook

Features:
- Hooked measuring surfaces are used for measurement of internal or external grooves and other intricate workpiece characteristics
- All measuring surfaces are hardened



Range	Resolution	Accuracy	Code No.	Price $
0-6"/0-150mm	.0005"/0.01mm	±.001"/0.02mm	7323067	**178.80**
0-6"/0-150mm	.0005"/0.01mm	±.001"/0.02mm	7323065•	**154.40**
0-8"/0-200mm	.0005"/0.01mm	±.0015"/0.03mm	7323087	**206.10**
0-8"/0-200mm	.0005"/0.01mm	±.0015"/0.03mm	7323085•	**177.10**
0-12"/0-300mm	.0005"/0.01mm	±.0015"/0.04mm	7323127	**303.00**
0-12"/0-300mm	.0005"/0.01mm	±.0015"/0.04mm	7323125•	**278.60**

• Available only while quantities last.

Vernier Depth Calipers

Features:
- Precision ground measuring surfaces



Range	Graduation	Accuracy	Code No.	Price $
Inch				
0-6"	.001"	±.001"	7321061	**62.70**
0-8"	.001"	±.0015"	7321081	**67.40**
Metric				
0-150mm	0.05mm	±0.05mm	7321060	**61.60**
0-200mm	0.05mm	±0.05mm	7321080	**67.40**

Vernier Depth Calipers With Double Hook

Features:
- Hooked measuring surfaces are used for measurement of internal or external grooves and other intricate workpiece characteristics
- All measuring surfaces are hardened



Range	Graduation	Accuracy	Code No.	Price $
0-150mm	0.05mm	±0.05mm	7321062	**64.50**
0-200mm	0.05mm	±0.05mm	7321082	**69.10**
0-300mm	0.05mm	±0.08mm	7321122	**82.50**

ASIMETO

Digital Tire Depth Gauge

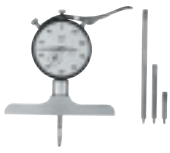


Features:
- The origin point is retained throughout the life of the battery
- Inch/Metric conversion
- Spherical end anvil

Range	Resolution	Accuracy	Base Length	Code No.	Price $
0-1.2"/0-30mm	.0005"/0.01mm	±.0015"/0.03mm	60mm	7321010	**110.90**

Mitutoyo

Dial Depth Gauge



Mitutoyo Model No.	Range (in.)	Dial Resolution (in.)	Spindle Stroke (in.)	Sowa Code No.	Price $
7218S	0 - 8	.001	1.0	840-525	**338.00**

STM

Dial Bore Gauge Sets



Furnished with interchangeable anvils and necessary accessories to perform close tolerance I.D. measurements. The smallest range measurement is .24", the largest is 16". The AGD Series 2 Dial Indicator furnished in each kit is a rugged top-quality unit.
- .0005" graduations
- Complete with fitted case

Range (in.)	Bore Depth (in.)	No. Anvils	Code No.	Price $
0.24–0.4	1.56	9	200-650	**231.60**
0.4–0.7	2.4	9	200-651	**222.10**
0.7–1.4	4	8	200-652	**175.00**
1.4–2.0	6	6	200-653	**170.10**
2.0–6.0	6	11	200-654	**175.00**
6.4–10.0	16	6	200-655	**231.60**
10.0–16.0	16	6	200-656	**250.50**

Mitutoyo

Dial / Digital Bore Gauges



- Interchangeable anvils
- Carbide ball contact point for durability
- Optional extension rods can be attached
- A digimatic indicator can be attached in place of the dial gauge

Mitutoyo Model No.	Capacity (in.)	Grad (in.)	Sowa Code No.	Price $
511-741	.7 - 1.4	.0005	840-460	**427.00**
511-742	1.4 - 2.5	.0005	846-411	**427.00**
511-743	2.0 - 6.0	.0005	840-202	**473.00**
511-751	.7 - 1.4	.0001	840-203	**422.00**
511-752	1.4 - 2.5	.0001	847-567	**481.00**
511-753	2.0 - 6.0	.0001	847-344	**450.00**
Digital	**Range**	**Resolution**		
511-521	1.8-4"/45-100mm	.00005"/.001mm	843-940	**1,450.00**

ASIMETO

Digital Bore Gauges



Features:
- Resolution: .00005"
- Dynamic carbide contact point
- .24-.4" range is with fixed anvils
- .4-.7" range is with plate guide and fixed anvils
- .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 $
.24-.4"	9	-	-	2"	7485111	**525.80**
.4-.7"	9	1	-	4"	7485121	**506.70**
.7-1.4"	10	2	-	4"	7485211	**506.70**
1.4-2.4"	6	3	-	6"	7485221	**487.00**
2-6"	11	3	1	6"	7485311	**506.70**
6-10"	6	5	1	16"	7485321	**554.90**
10-16"	6	5	2	16"	7485331	**615.20**

Dial Bore Gauges

Features:
- Graduation: .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						
.24"-.4"	9 pcs	-	-	2"	7483111	**391.20**
.4"-.7"	9 pcs	1	-	4"	7483121	**370.30**
.7"-1.5"	10 pcs	2	-	6"	7483211	**339.00**
1.4"-2.4"	6 pcs	4	-	6"	7483221	**328.50**
2.0"-6.0"	11 pcs	4	1	6"	7483311	**328.50**
6.0"-10.0"	6 pcs	6	1	10"	7483321	**363.90**
10.0"-16.0"	6 pcs	6	2	16"	7483331	**400.50**
Metric						
10-18mm	9 pcs	1	-	100mm	7484120	**263.50**
18-35mm	9 pcs	2	-	150mm	7484210	**217.70**
35-50mm	6 pcs	4	-	150mm	7484220	**213.00**
50-160mm	11 pcs	4	1	150mm	7484310	**220.60**

Note: For .0005" Graduation Purchase Code # 7402065 Dial Indicator

Set

Range	Graduation	Individual Holders	Indicator	Code No.	Price $
18-160mm	0.001mm	18-35, 35-50, 50-160mm	7402012 (1 x .001mm)	7483638	**958.80**
18-160mm	0.001mm	18-35, 35-50, 50-160mm	7402032 (3 x 0.01mm)	7484638	**581.60**

Dial Bore Gauge Extensions

- Increases the depth that measurements can be taken with the standard type dial bore gauge

Range	Grad.	Dial Travel	19.7" Code No.	Price	39.4" Code No.	Price $
1.4"-2.4"	.0005"	.25"	7483223	**524.10**	7483225	**604.80**
2.0"-6.0"	.0005"	.25"	7483313	**524.10**	7483315	**651.20**
6.0"-10.0"	.0005"	.25"	7483323	**612.30**	7483325	**729.00**
10.0"-16.0"	.0005"	.25"	7483333	**599.00**	7483335	**713.30**

Mitutoyo

ABSOLUTE Digimatic Snap Bore Gauges

- TiN coated contact points
- Large LCD digits for error-free reading
- 330° rotatable display unit for easy reading at any angle
- GO/NO-GO judgment function
- ABSOLUTE linear encoder eliminates over-speed errors
- With SPC output
- Can measure deep holes by attaching optional extension rod
- Supplied in fitted wooden case



Mitutoyo Model No.	Range (in./mm)	Setting Rings Included	Sowa Code No.	Price $
568-965	.275" - .5"/ 6.985 - 12.7mm	.35" dia. .425" dia.	847-863	**6,012.00**
568-966	.5" - 1"/ 12.7 - 25.4mm	.65" dia. .8" dia.	847-864	**6,276.00**
568-967	1" - 2"/ 25.4 - 50.8mm	1.2" dia. 1.6" dia.	847-865	**6,552.00**
568-968	2" - 3"/ 50.8 - 76.2mm	2.5" dia. 3.5" dia.	847-866	**4,692.00**
568-969	3" - 4"/ 76.2 - 101.6mm	2.5" dia. 3.5" dia.	847-867	**5,208.00**

ASIMETO

Single Beam Digital Height Gauges With Hand Wheel

Features:
- 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	.0005" / 0.01mm	±.0015"/.04mm	7626120	**652.40**
0-18" / 0-450mm	.0005" / 0.01mm	±.0015"/.04mm	7626180	**868.20**
0-24" / 0-600mm	.0005" / 0.01mm	±.0020"/.05mm	7626240	**1,000.60**

Digital Height Gauges

Features:
- 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	.0005"/0.01mm	±.0015"	7625120	**552.50**
0-24"/0-600mm	.0005"/0.01mm	±.0020"	7625240	**834.60**

ASIMETO

Double Beam Digital Height Gauges w/ Hand Wheel

Features:
- 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	.001" / 0.01mm	±.0015"/.04mm	7627120	**697.60**
0-18" / 0-450mm	.001" / 0.01mm	±.0015"/.04mm	7627180	**895.50**
0-24" / 0-600mm	.001" / 0.01mm	±.0020"/.05mm	7627240	**1,099.20**

STM

Twin Column Digital Height Gauges

- Rigid twin column structure
- 6 digit LCD display and minus sign
- Functions include: Zero setting, inch/mm conversion, data hold, plus/minus processing
- Large size feed wheel
- Lock-on measuring slider
- Battery furnished
- Carbide tipped scriber
- Resolution .001"/0.01mm



Range (in x mm)	Accuracy	Code No.	Price $
12/300 mm	±0.04mm	200-675	**624.90**
18/450 mm	±0.05mm	200-680	**803.00**
24/600 mm	±0.05mm	200-690	**850.10**
Replacement Battery		200-644	**6.60**

Mitutoyo

Twin Column Digimatic Height Gauges

- Inch/metric conversion
- Resolution .0005"/0.01mm
- Carbide tipped scriber
- Double — column structure ensures high measuring accuracy
- Large LCD Display



Mitutoyo Model No.	Range (in./mm)	SPC	Accuracy	Sowa Code No.	Price $
192-630-10	12/300	NO	±.001	842-050	**1,486.00**
192-631-10	18/450	NO	±.002	842-174	**2,532.00**
192-632-10	24/600	NO	±.002	842-172	**2,589.00**
192-671-10	18/450	YES	±.0015	842-213	**2,520.00**
192-672-10	24/600	YES	±.0015	841-282	**3,312.00**

Mitutoyo

Digimatic Height Gauges

- New design ergonomic base
- New lever clamp secures main unit against beam
- Large LCD display
- Absolute Encoder Technology always remembers it's position
- SPC output capability



Mitutoyo Model No.	Range (in./mm)	SPC	Resolution (in./mm)	Sowa Code No.	Price $
570-312	12/300	YES	.0005"/0.01mm	841-069	**757.00**
570-314	24/600	YES	.0005"/0.01mm	844-528	**1,358.00**

ASIMETO

Double Beam Digit Counter Height Gauges

Features:
- Graduation: Inch: .001"/Metric: 0.01mm
- Dial & 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 $
Inch					
0-12"	.001"	.1" (Dual Reading)	±.0015"	7623121	**477.10**
0-18"	.001"	.1" (Dual Reading)	±.002"	7623181	**728.40**
0-24"	.001"	.1" (Dual Reading)	±.002"	7623241	**805.00**
0-40"	.001"	.1" (Dual Reading)	±.003"	7623401	**4,337.00**
Metric					
0-300mm	.01mm	1.0mm (Dual Reading)	±0.04mm	7623120	**488.10**
0-450mm	.01mm	1.0mm (Dual Reading)	±0.04mm	7623180	**737.10**
0-600mm	.01mm	1.0mm (Dual Reading)	±0.07mm	7623240	**831.70**
0-1000mm	.01mm	1.0mm (Dual Reading)	±0.07mm	7623400	**4,377.60**

Vernier Height Gauges

Features:
- 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	±.0015"	7621120	**464.30**
0-24"/0-600mm	1/128"/0.05mm	±.002"	7621240	**549.10**

STM

Twin Column Height Gauges

- 0.01" dual reading digit counter
- Double digit counter can be zero-set at any height within range by depressing zero reset button
- Chrome plated double beams
- Carbide tipped scriber
- With fine adjusting wheel and lock



Range (in.)	Graduation (in.)	Code No.	Price $
12	0.0005	200-707	**412.90**
18	0.0005	200-708	**648.00**
20	0.0005	200-709	**708.50**
24	0.0005	200-711	**708.50**

Dial Height Gauges

- With fine adjustment and lock
- .001" graduations
- Has a carbide tipped scriber
- Made of Stainless Steel
- Shock proof
- Right hand type for easy use
- Complete with case



Range (in.)	Face	Code No.	Price $
0-6	Black	200-660	**179.80**
0-8	Black	200-665	**198.40**
0-12	White	200-670	**217.50**

Precision Vernier Height Gauges

Chrome finished vernier height gauges with cam-lock scriber mounting and magnifying glass.
Includes:
- Straight steel scriber
- Square holding bar
- Offset steel scriber
- Magnifying glass
- Fitted case

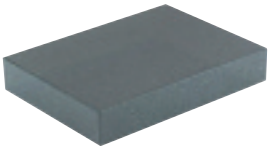
Special Features:
- Has adjusting for fine adjustment
- Column and base are extra heavy to insure stability
- Base and all measuring surfaces are hardened ground and micro lapped for accuracy
- Micro-fine black graduation on a satin chrome finish for easy reading and each 0.1" is numbered
- At zero setting, scriber point is flush with bottom base surface (no compensation calculation needed.)
- Moveable parts are fitted to extreme limits, eliminating all play
- Beam and measuring slide of stainless steel



Range (in./mm)	Graduation (in./mm)	Code No.	Price $
0-12 x 0-300	1/1000 x 1/50	200-700	**286.10**
0-18 x 0-450	1/1000 x 1/50	200-702	**363.00**

Black Granite Surface Plates 0-Ledge

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	.0001	255-100	**70.80**
12 x 18	3	110	.0001	255-105	**138.80**
18 x 24	4	189	.00015	255-110	**400.60**
24 x 36	4	475	.0002	255-115	**668.80**
36 x 48	6	1427	.0004	255-120	**1,863.80**
48 x 72	8	3300	.0007	255-125	**7,026.70**
Grade A-Inspection					
12 x 18	3	110	.000050	255-130	**176.40**
18 x 24	3	189	.000075	255-135	**289.90**
24 x 36	4	475	.0001	255-140	**611.10**

Steel Surface Plate Stands

- 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	255-200	**1,306.20**
18 x 24	95	33	255-205	**2,350.90**
24 x 36	125	32	255-210	**3,003.90**
36 x 48	175	30	255-215	**3,390.40**
48 x 72	300	28	255-220	**4,832.10**

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	225-005	**169.10**
L 300 MX	0.5mm–13mm x 0.5mm	225-010	**304.00**
	1/64–17/64 x 64ths 9/32–1/2 x 32nd	230-015	**61.00**

Surface Plate Cleaners

Features:
- An exclusive formulation that is extremely effective for the cleaning and care of granite surface plates
- Works quickly and effectively, leaves no residue on the granite.





Description	Code No.	Price $
Pint	7607510	**9.60**
Pint Spray Pump	7607520	**11.50**
Quart	7607530	**17.80**
1/2 Gallon	7607540	**29.40**
Gallon	7607550	**40.10**
5 Gallon	7607560	**100.80**

Radius Gauge Sets

- Used for measuring concave and convex surfaces



Sizes Consisting of:	Code No.	Price $
.010, .015, .020, .025, .030, .040, .050, .060, .070, .080, .090, .100, .120, .140, .160, .180, .200, .220, .240, .260, .280, .300, .350, .400, .450 and .500" in vinyl case		
26 pc. set with holder	230-005	**63.30**
.5 to 13.0 mm x .5 mm increases		
26 pc. set with holder	230-010	**63.30**

ASIMETO

Radius Gauges

Features
- 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	90º arc	7605401	**25.60**
1/32-1/4"	15 pairs	1/32-1/4 x 64ths	180º arc	7605411	**24.40**
17/64-1/2"	16 pairs	17/64-1/2 x 64ths	180º arc	7605421	**26.20**
1/64-1/2"	25 pairs	1/64-17/64 x 64ths, 9/32-1/2x3nd	-	7605441	**61.00**

STM

No. 272 Fillet or Radius Gauges

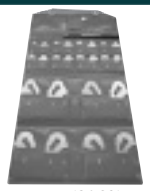


Model No.	Specifications	Code No.	Price $
272A	1/32–17/64 x 64ths	225-230	**35.40**

Mitutoyo

Radius Gauges

- Each radius gauge has five measuring locations
- The gauges have a satin finish



186-901



186-107

Mitutoyo Model No.	No. of Leaves	Description	Sowa Code No.	Price $
186-901	25	1/64 - 17/64 x 64ths 9/32-1/2 x 32nds	840-159	**153.00**
186-101	15	1/32-1/4 x 64ths	840-155	**44.00**
186-107	30	15.5mm - 25mm	840-372	**97.00**

ASIMETO

Thickness "Feeler" Gauges

Features
- Thickness is marked on each leaf
- Each leaf is detachable is necessary
- Leaf width: 1/2" or 13mm



Range	Qty	Composition	Length	Code No.	Price $
.002-.035"	26	.002-.018 x .001 step .022, .024, .025, .28, .030, .032, .035	3"	7605301	**22.10**
0.05-1mm	20	0.05-1mm x 0.05mm step	150mm	7605310	**31.40**
0.05-1mm	13	0.05-0.3mm x 0.05mm step 0.4mm-1mm x 0.1mm	100mm	7605330	**20.40**
0.05-1mm	13	0.05-0.3mm x 0.05mm step 0.4mm-1mm x 0.1mm	150mm	7605332	**23.80**

STM

Feeler Gauge

- 26 tapered leaf thickness gauges
- 3" long



Range (in.)	Code No.	Price $
.0015 to .025"	606-050	**38.20**

Mitutoyo

Thickness Gauge

- .002 thru .018 by .001" step
- plus: .0015, .020, .022, .024, .025, .028, .030, .032, .035



Mitutoyo Model No.	No. of Leaves	Sowa Code No.	Price $
950-251	26	840-242	**34.00**

Small Hole Gauges

- Set of 4 Gauges, .125"–.500"



Sizes Consisting of:	Code No.	Price $
Set of 4 Gauges .125"–.500" – Made in USA	220-940	124.40
Set of 4 Gauges .125"–.500" – Quality Import	200-713	30.50

Small Hole Gauge Set

- Extra long for gauging deep and shallow holes, slots and similar work



Mitutoyo Model No.	Description	Sowa Code No.	Price $
154-901	.125" - .500"	840-077	127.00

S829 Series Small Hole Gauge Set

- Hardened-ball measuring surface with two-point contact
- Radius on each gauge is less than the minimum diameter to be measured, which provides the two-point contact necessary for maximum accuracy
- Smooth, sensitive adjustment for better feel, giving more accurate measurements
- The adjustment of the gauges beyond their range is restricted by a safety stop that prevents breakage



Description	Starrett No.	Sowa Code No.	List $
Set of 4 in case, Nos. 829A, B, C, D	S829EZ	629-059	205.70

S579 Series Telescoping Gauge Sets





- Gauges have two telescoping contacts
- Handles are rigidly attached to contact plungers and are automatically self-centering
- Constant spring tension gives uniform contact pressure
- Both plungers are easily locked at any desired setting
- Supplied with protective case

Description	Starrett No.	Sowa Code No.	List $
Set of 4, 5/16" - 2 1/8" (8mm - 54mm)	S579GZ	629-060	187.00
Set of 6, 5/16" - 6" (8mm - 150mm)	S579HZ	629-061	323.40

Telescoping Gauges

Features:
- Plunger is spring loaded and expands within the bore, allowing measurement of the internal diameter



Range	Depth	Model	Code No.	Price $
.315"-.500"	4.2"	A	7487011	8.20
.500"-.748"	4.4"	B	7487021	11.70
.748"-1.26"	4.4"	C	7487031	14.00
1.26"-2.126"	5.85"	D	7487041	14.00
2.126"-3.54"	5.85"	E	7487051	14.00
3.54"-5.90"	5.85"	F	7487061	14.00
.315-5.90" Set of 6		A,B,C,D,E,F	7487869	55.20
.500-5.90" Set of 5		B,C,D,E,F	7487859	45.30
.315-2.126" Set of 4		A,B,C,D	7487849	35.50
.315"-.500"	12"		7487013	15.10
.500"-.748"	12"		7487023	16.90
.748"-1.26"	12"		7487033	16.90
1.26"-2.126"	12"		7487043	16.90
2.126"-3.54"	12"		7487053	16.90
3.54"-5.90"	12"		7487063	16.90

Telescoping Gauges

- 4 or 6 piece set



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	200-710	47.50
5/16–2-1/8	200-712	29.40

Telescoping Gauges

Features:
- Plunger is spring loaded and expands within the bore, allowing measurement of the internal diameter
- Knurled clamp
- Supplied in a fitted pouch



Mitutoyo Model No.	Description	Sowa Code No.	Price $
155-121	5/16 - 1/2	840-078	33.00
155-122	1/2 - 3/4	840-079	38.00
155-123	3/4 - 1-1/4	840-080	40.00
155-124	1-1/4 - 2-1/8	840-081	42.00
155-125	2-1/8 - 3-1/2	840-348	48.00
155-126	3-1/2 - 6	840-349	55.00
155-903	5/16 - 6 SET	840-082	248.00
155-907	5/16 - 2-1/8 SET	840-085	145.00

Centre Gauges

- Satin-chrome finish
- American National Standard



Model	Description	Code No.	Price $
5031	U.S. Standard, 60°	225-410	**18.10**
5032	Metric Standard, 60°	225-415	**18.10**

Centre Gauge

- Hardened with lapped edges and notches
- Meets requirements of the American National and US 60° standards



Mitutoyo Model No.	Description	Sowa Code No.	Price $
950-201	Centre Gauge	840-235	**19.00**

Countersink Angle Gauge

Features
- Easily verifies countersink angles.
- Graduated in 32nds for depth measurement.
- Standard angles are 60, 82, 90, 100, 110 and 120°

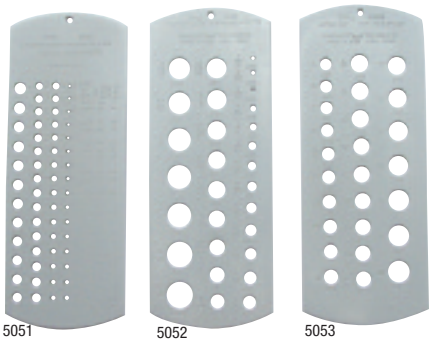


Description	Code No.	Price $
Countersink Angle Gauge	7607620 •	**27.90**

• Available only while quantities last.

Drill Gauges

- Made of high quality steel
- Satin chrome finish
- Offer a quick and accurate way of checking drill and rod sizes



1-60 Drill/Machine Screw Tap Gauge

- 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	606-314	**52.30**

1/16 - 1/2 Drill Gauge

- 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	606-316	**50.90**

A-Z Drill Gauge

- Used to select or check drill sizes from “A” to “Z”
- Each gauge hole is marked by letter and its decimal equivalent from .234 inch diameter through .413 inch diameter

Model No.	Description	Code No.	Price $
5053	A-Z Drill Gauge	606-318	**50.90**

ASIMETO

Thread Pitch Gauges



Metric Screw Pitch Gauges (60º)

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	**19.20**
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	**16.90**
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	**14.60**
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	**14.60**

Unified Screw Pitch Gauges (60º)

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, 3, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42 TPI	7605502	**19.20**
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	**25.00**

Metric and Unified Screw Pitch Gauges (60º)

Range	No. of Leaves	Composition of Leaves	Code No.	Price $
0.4-7mm 4-42 TPI	51	7605520 and 7605502	7605508	**22.70**
0.5-6mm 4-56 TPI	28	0.5, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6mm 4, 6, 7, 8, 10, 11, 11-1/2, 12, 13, 16, 20, 28, 32 TPI	7605518	**19.20**

Whitworth Screw Pitch Gauges (55º)

Range	No. of Leaves	Composition of Leaves	Code No.	Price $
4-60 TPI	28	4, 4-1/2, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22,24, 25, 26, 28, 30, 32, 34, 36, 40, 48, 60 TPI	7605515	**19.20**

STM

Screw Pitch Gauges

- With locking devices

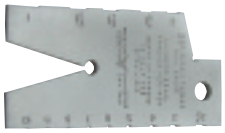


U.S. set has the following pitches:
- 3-1/2, 4, 4-1/2, 5, 5-1/2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 36, 40, 44, 48, 50, 56, 60, 64, 72, 80 and 84

Metric set has the following pitches:
- .25, .30, .35, .40, .45, .50, .55, .60, .65, .70, .75, .80, .85, .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 and 2.50

Model No.	No. of Leaves	Ranges of Pitch	Code No.	Price $
5651	51	4 to 84	225-315	**73.90**
156m	28	0.25 to 2.50 mm	225-320	**39.70**
5628	28	4 to 80	225-325	**42.30**
5617	18	.5 to 7.00mm	225-330	**36.50**
5629	28	4 to 56 .5-6.0mm	225-335	**42.30**

Acme Gauge



Description	Code No.	Price $
1-10 TPI (29°)	225-450	**48.10**

ASIMETO

Thread Measuring Wire Set

Features:
- 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	**25.60**

STM

Thread Measuring Sets

- 48 wires – 16 different sizes
- Measures all threads from 3 to 48 threads per inch
- Laminated chart included in case
- Furnished in vinyl case



Description	Code No.	Price $
Thread Measuring Set	200-870	**29.40**

ASIMETO

American & US Standard Wire Gauges

Features
- Made of heavy gauge hardened steel 62 RC.
- Satin chrome finish, no glare.
- Gaging slots meet Federal Specifications.
- Front face shows gauge size, back shows decimal equivalents adjacent to each slot.



Description	Code No.	Price $
US Standard Gauge for measuring steel, plate iron, and uncoated sheet metal	7607610 •	39.70

• Available only while quantities last

Mitutoyo

U.S. Standard Wire Gauge



Mitutoyo Model No.	Description	Sowa Code No.	Price $
950-203	No. 0-36	840-236	47.00

Mitutoyo

Wide Rigid Rules (3/64 Thick)

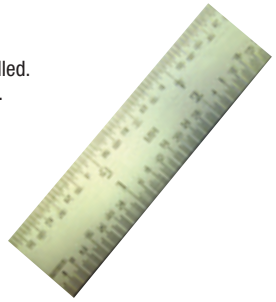


Mitutoyo Model No.	Size	Graduations	Width	Sowa Code No.	Price $
182-101	6" 4R	1/8, 1/16, 1/32, 1/64	3/4	840-112	18.00
182-102	6" 16R	1/32, 1/64, 1/50, 1/100	3/4	840-113	18.00
182-104	6" 3R	1/32, 1/64, 1/10, 1/50	3/4	840-114	18.00
182-105	6" / 150mm	1/32, 1/64, 1mm, 1/2mm	3/4	840-115	18.00
182-106	6" / 150mm	1/50, 1/100, 1mm, 1/2mm	3/4	840-778	25.00
182-111	150mm	1mm, 0.5mm, 1mm, 0.5mm	19mm	840-118	18.00
182-125	12" / 300mm	1/32, 1/64, 1mm, 1/2mm	1	840-120	38.00
182-126	12"/ 300mm	1/30, 1/100, 1mm, 1/2mm	1	840-121	47.00

ASIMETO

Rigid Steel Rules

Features:
- Made of hardened and tempered steel.
- Durable finishes for rust and wear durability.
- Satin Chrome: Precisely etched, then black filled.
- Easy View: Precisely etched, then white filled.
- Meets federal accuracy specifications.
- Thickness: 0.04"
- Micro-fine graduations:
  3R - 32nds, 64ths, 10ths, 50ths
  4R - 8ths, 16ths, 32nds, 64ths
  5R - 32nds, 64ths, 10ths, 100ths
  16R - 32nds, 64ths, 50ths, 100ths
  E/M - 32nd, 64ths, 1/2 mm, 1 mm



Range	Type	Width	Code No.	Price $
6"	5R	3/4"	7606102 •	12.30
6"	16R	3/4"	7606103 •	12.30
12"/300mm	E/M	1"	7606114 •	21.60
18"	4R	1-1/8"	7606121 •	28.80
18"	5R	1-1/8"	7606122 •	28.80
18"/450mm	E/M	1-1/8"	7606124 •	28.80
24"	4R	1-1/8"	7606131 •	52.00
24"/600mm	E/M	1-1/8"	7606134 •	52.00
48"	4R	1-1/4"	7606150 •	158.50
48"/1200mm	E/M	1-1/4"	7606151 •	158.50

• Available only while quantities last

STM

Rigid and Flexible Scales

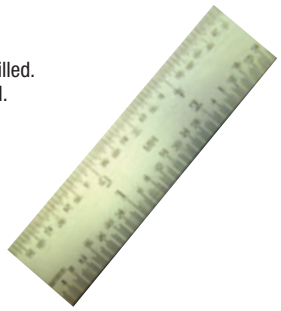


Size (in.)	Type		Graduation	Code No.	Price $
6	Flex	4R	1/8, 1/16, 1/32, 1/64	606-001	18.50
6	Flex	3R	1/32, 1/64, 1/10, 1/50	606-012	18.50
6	Flex	–	1/32, 1/64, 1/2, 1mm	606-015	18.50
6	Rigid	4R	1/8, 1/16, 1/32, 1/64	606-017	18.80
12	Flex	4R	1/8, 1/16, 1/32, 1/64	606-002	31.30
12	Flex	3R	1/32, 1/64, 1/10, 1/50	606-013	31.30
12	Flex	–	1/32, 1/64, .5mm	606-016	31.30
12	Rigid	–	1/32, 1/64, 1/2, 1mm	606-033	33.20
12	Rigid	4R	1/8, 1/16, 1/32, 1/64	606-018	33.20
24	Flex	3R	1/32, 1/64, 1/10, 1/50	606-014	77.50

ASIMETO

Flexible Steel Rules

Features:
- Made of hardened and tempered steel.
- Durable finishes for rust and wear durability.
- Satin Chrome: Precisely etched, then black filled.
- Easy View: Precisely etched, then white filled.
- Meets federal accuracy specifications.
- Thickness: 0.02”
- Micro-fine graduations:
  3R - 32nds, 64ths, 10ths, 50ths
  4R - 8ths, 16ths, 32nds, 64ths
  5R - 32nds, 64ths, 10ths, 100ths
  16R - 32nds, 64ths, 50ths, 100ths
  E/M - 32nd, 64ths, 1⁄2 mm, 1 mm
  M - 1/2 mm, 1 mm, 1/2 mm, 1 mm



Range	Type	Width	Code No.	Price $
6”	16R	1/2”	7606403 •	**9.10**
6”/150mm	E/M	1/2”	7606404 •	**9.10**
12”	16R	1/2”	7606413 •	**18.90**
12”/300mm	E/M	1/2”	7606414 •	**20.00**
18”	4R	3/4”	7606421 •	**32.60**
24”	4R	3/4”	7606431 •	**40.40**
24”	5R	3/4”	7606432 •	**40.40**
24”/600mm	E/M	3/4”	7606434 •	**40.40**

• Available only while quantities last

ASIMETO

Drill Point Gauges

Features:
- To check drills with 118º point angles.
- Sliding Head graduated in 32nds to verify equal length of cutting edges.
- Rule graduated in 64ths and 32nds on one side; 16ths and 8ths on reverse side.
- Removable end clip.
- Head only fits steel rules 3⁄4" wide x 0.040" thick.



Description	Code No.	Price $
Sliding Head with 6” Rule	7605610 •	**42.40**
Sliding Head Only	7605611 •	**18.90**

• Available only while quantities last

Mitutoyo

Flex Rules (1/64 Thick)



Mitutoyo Model No.	Size	Graduations	Width	Sowa Code No.	Price $
182-201	6” 4R	1/8, 1/16, 1/32, 1/64	1/2	840-127	**17.00**
182-202	6” 16R	1/32, 1/64, 1/50, 1/100	1/2	840-128	**17.00**
182-203	6” 5R	1/32, 1/64, 1/10,1/100	1/2	840-129	**17.00**
182-204	6” 3R	1/32, 1/64, 1/10, 1/50	1/2	840-130	**17.00**
182-205	6” / 150mm	1/32, 1/64, 1mm, 1/2mm	1/2	840-131	**17.00**
182-206	6” / 150mm	1/50, 1/100, 1mm, 1/2mm	1/2	840-132	**17.00**
182-207	6” / 150mm	1/10, 1/100, 1mm, 0.5mm	1/2	840-133	**17.00**
182-208	6” / 150mm	1/10, 1/50, 1mm, 0.5mm	1/2	840-134	**25.00**
182-211	150mm	1mm, 0.5mm, 1mm, 0.5mm	12mm	840-135	**26.00**
182-222	12” 16R	1/32, 1/64, 1/50, 1/100	1/2	840-137	**33.00**
182-225	12”/ 300mm	1/32, 1/64, 1mm, 1/2mm	1/2	840-140	**33.00**
182-226	12”/ 300mm	1/50, 1/100, 1mm, 1/2mm	1/2	840-141	**47.00**
182-231	300mm	1mm, 0.5mm, 1mm, 0.5mm	12mm	840-142	**33.00**

Mitutoyo

Pocket Rules (1/64 Thick)



Mitutoyo Model No.	Size	Graduations	Width	Sowa Code No.	Price $
950-300	6” / 150mm	1mm, 1/64	1/2	840-244	**12.00**

Narrow Rules & Depth Gauge Rules



Model No.	Description	Graduations	Code No.	Price $
7305-006	6" with clip	32nds one face, 64ths other face	606-156	**16.40**
7305-012	12" with clip	32nds one face, 64ths other face	606-158	**29.30**
7305-006	6" without clip	32nds one face, 64ths other face	606-160	**11.70**
7305-012	12" without clip	32nds one face, 64ths other face	606-162	**29.10**
7305-M06	6" with clip	32nds one face, 0.5 mm other face	606-164	**16.40**
7305-M12	12" with clip	32nds one face, 0.5 mm other face	606-166	**29.30**
7305-M06	6" without clip	32nds one face, 0.5 mm other face	606-168	**9.00**
7305-M12	12" without clip	32nds one face, 0.5 mm other face	606-170	**21.90**
7305-M15	150 mm with clip	mm one face, 0.5 mm other face	606-172	**16.70**
7305-M30	300 mm with clip	mm one face, 0.5 mm other face	606-174	**20.50**
7305-M15	150 mm without clip	mm one face, 0.5 mm other face	606-176	**11.60**
7305-M30	300 mm without clip	mm one face, 0.5 mm other face	606-178	**29.10**

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	606-180	**7.50**
7203-SS6	6" flex, not plated, round end rule with clip Metric equivalent chart on back	mm, 64ths	606-182	**7.50**
7202-C06	6" flex, chrome plated, round end rule with clip Decimal equivalent chart on back	32nds, 64ths	606-184	**12.90**
7203-C06	6" flex, chrome plated, round end rule with clip Metric equivalent chart on back	mm, 64ths	606-186	**18.30**

Adjustable Hook Rules

Features:
- Satin Chrome Finish
- Tool steel, hardened and tempered.
- Accuracy meets federal specifications.
- Hard chrome finish - no glare.
- Furnished with adjustable hook.
- Thickness: 0.040".
- Micro-fine graduations:
  4R - 8ths, 16ths, 32nds, 64ths
  16R - 32nds, 64ths, 50ths, 100ths
  E/M - 32nds, 64ths, 1/2 mm, 1 mm



Range	Type	Width	Code No.	Price $
6"	4R	3/4"	7605620 •	**25.00**
12"	4R	1"	7605623 •	**32.00**

• Available only while quantities last

12" Combination Square Set

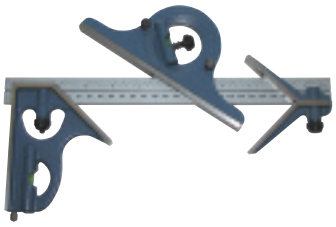
Features:
- Graduation: Protractor: 1°
  Blade: 64ths, 32nds, 1mm, .5mm (E/M)
  8ths, 16ths, 32nds, 64ths (4R)
- Blade is hardened and tempered
- Heads are hardened cast finish in baked enamel
- 45° Centre Gauge



Description	Blade Length	Code No.	Price $
4 Pc Set (With E/M rule)	12"/300mm	7490204	**130.00**
2 Pc Set (Rule, E/M Square)	12"/300mm	7490202	**69.10**
4 Pc Set (With 4R rule)	12"/300mm	7490214	**130.00**
Parts			
Lock Nut		7490200	**17.00**
12"/300mm 4R Stainless Steel Rule		7490210	**8.20**
12"/300mm E/M Stainless Steel Rule		7490208	**10.00**

Combination Set

- Used for layout, set-up, checking heights, depths and setting angles
- Square head, centre head and reversible protractor head
- Hardened cast iron heads



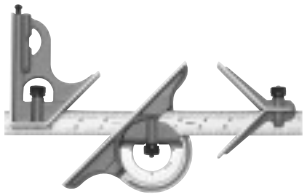
Blade for Combination Set



Graduation	Length of Rule	Code No.	Price $
1/32, 1/64, 1/2 mm, 1 mm	12	220-850	**368.50**
Rules for Combination Set			
1/32, 1/64, 1/2 mm, 1 mm	12	606-044	**72.10**
1/8, 1/16, 1/32, 1/64	24	606-046	**140.30**
Locking Assembly		220-851	**7.30**

Mitutoyo

Combination Square Sets



Mitutoyo Model No.	Type	Features	Sowa Code No.	Price $
180-905B	12	1/8, 1/16, 1/32, 1/64	840-107	**353.00**
180-907B	12 / 300mm	32, 64, 1mm, 1/2mm	848-591	**228.00**

Blades For Combination Square Sets

Mitutoyo Model No.	Length (in./mm)	Graduations	Sowa Code No.	Price $
180-501B	12”	8,16,32,64ths (4R)	840-094	**59.00**
180-502B	6”	32,64,50,100ths (16R)	840-095	**75.00**
180-503B	12”/300mm	32,64ths/1, 1/2mm	840-096	**76.00**
180-701B	18”	8,16,32,64ths (4R)	840-102	**107.00**
180-601B	24”	8,16,32,64ths (4R)	840-098	**146.00**
180-603B	24”/600mm	32,64ths/1,1/2mm	840-100	**151.00**

Heads For Combination Square Sets

Mitutoyo Model No.	Type	Features	Sowa Code No.	Price $
180-102B	Square head for 12-24”	Hardened Cast Iron	840-090	**83.00**
180-202B	Centre head for 12-24”	Hardened Cast Iron	840-366	**78.00**
180-301B	Protractor head for 12-24”	Cast Iron - Not Hardened	840-091	**134.00**

STM

Bore Gauges (Taper Gauges)

Manufactured from stainless steel, these have permanently engraved graduations. Accurate taper throughout the length of the gage. Available with imperial or metric graduations.



Range	Model No.	Code No.	Price $
1/32"-5/8"	DG/1-15	231-276	**23.40**
1-16mm	BG/1-15	231-277	**23.40**

ASIMETO

Round Bar Center Finder

Features:
- Accurately and quickly locates the center of round work pieces.
- Shank is held in collet or chuck and center is easily indicated by visual alignment of etched lines.
- Satin chrome finish.
- 3" capacity.



Description	Code No.	Price $
Round Bar Center Finder	7607280 •	**31.60**

• Available only while quantities last

STM

Centre Finder

- Satin chrome finish
- Accurately and quickly locates center 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	606-340	**32.50**

ASIMETO

Depth & Angle Gauges

Features:
- Hardened steel head with 2-1/2” base
- Angles: 30º, 45º, 60º both sides
- Stainless steel blade: 6” x 7/32” with 32nds & 64ths graduations
- Rod: Non-graduated, for holes under 3/32” diameter



Notes	Code No.	Price $
Head With Blade and Rod	7607581	**17.00**

• Available only while quantities last

STM

Depth & Angle Gauge

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"	231-274	**18.60**

Edge & Centre Finders

- 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.

EF/1



EF/6



EF/3



EF/7



EF/4



EF/8



EF/5



EF/9



Model	Tip Dia.	Shank Dia.	Code No.	Price $
Centre Finder				
EF/3		1/2	231-302	**17.90**
EF/9		3/8	231-304	**17.40**
Combination Edge & Centre Finder				
EF/6	.200	3/8	231-306	**19.10**
EF/5	.200	1/2	231-308	**20.40**
Edge Finder				
EF/1	.200	3/8	231-310	**15.20**
EF/4	.200	1/2	231-312	**17.90**
EF/11	10mm	3/8	231-314	**17.90**
EF/8	1/2	1/2	231-316	**17.40**
Double Edge Finder				
EF/7	.200	1/2	231-318	**19.10**

Mitutoyo

Edge & Centre Finders

- Hardened and ground on all surfaces



050101 050102 050103 050104 050105 050106

Mitutoyo Model No.	Shank Dia. (in./mm)	Tip Dia. (in./mm)	Description	Sowa Code No.	Price $
050101	3/8 / .375	.20	Edge type	840-009	**29.00**
050102	1/2 / .500	.20	Edge type	840-010	**30.00**
050103	3/8 / .375	.20	Edge & Centre type	840-011	**34.00**
050104	1/2 / .500	.20	Edge & Centre type	840-012	**25.00**
050105	.375 / 10mm	10mm	Edge type	840-837	**20.00**
050106	10mm	10mm	Edge type	840-269	**20.00**

Starrett

827 Series Edge Finders

- .200" Contact Diameter
- Locate work surfaces easily, quickly and accurately
- Body and contacts made of tool steel, hardened, ground and lapped to close tolerances for diameter and concentricity
- Furnished in protective case

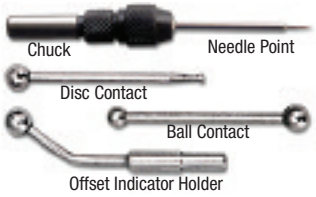


Description	Body Dia.	Starrett No.	Sowa Code No.	List $
Single End	.375"	827A	629-087	**31.90**
Double End .200" and pointed contact	.500"	827B	629-086	**38.50**

ASIMETO

Wiggler Set

Features:
- Versatile Center & Edge Finder with 4 interchangeable attachments which snap conveniently into the special chuck.
- Ball swivel joint permits adjustments to an angular position or true concentricity.
- Set includes offset indicator holder, ball contact attachment- 0.250" dia., disc contact attachment- 0.100" dia. and needle point attachment.



Replacement Attachments	Description	Set Code No.	Price $
Chuck		7607290	**38.00**
Needle Point	Length: Closed 2-3/8", Open 4-1/8"		
Ball Contact	Shank Dia.: 3/8", Ball Dia.: 0.250"		
Disc Contact	0.100" Dia.		
Offset Indicator Holder			

STM

Wiggler or Centre Finder

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 $
Center Finder complete with 4 attachments	WCF/WZ-6	231-300	**43.50**

Starrett

S828 Series Wiggler or Centre Finder

- Attachments are interchangeable
- Attachments are snapped in the chuck, clamped by a ball swivel-joint which permits adjustment to an angular position or true concentricity



Description	Starrett No.	Sowa Code No.	List $
Complete with case and 4 attachments, Nos. 828B Ball Contact .250"/6.3mm C- Disc Contact .100"/2.5mm, D- Offset Indicator Holder, PT09186 Pointed Shank	S828HZ	629-091	**74.80**

ASIMETO

Universal Bevel Protractors

Features:
- Dial graduation: 1º, Vernier 5'
- Designed to provide precise angular measurements
- Magnifying glass is provided for easier reading
- Can be used with a standard height gauge to provide angular measurement from reference plate
- Accuracy: ±5min



Description	Code No.	Price $
With 6"/150mm blade	7490061	**154.40**
With 8"/200mm blade	7490062	**164.90**
With 12"/300mm blade	7490063	**169.50**
With all three blades	7490060	**183.40**

Dial Protractor

Features:
- Measuring range: 0-360º
- Graduation: 5'
- Designed with analog readout and fine adjustment to provide precise angular measurements
- Can be used with a standard height gauge to provide angular measurement from reference plate
- Accuracy: ±5min



Blades included	Code No.	Price $
6"/150mm, 8"/200mm, 12"/300mm	7490100	**222.30**

Digital Protractor

Features:
- Resolution: 30"/0.008º
- Accuracy: ±5min
- Measuring range: 0-360º
- Range selection: 1x360º, 2x180º, 4x90º
- Dual reading LCD displays arc minutes/decimal degrees
- With fine adjustment
- Preset function



Blades included	Code No.	Price $
6"/150mm, 8"/200mm, 12"/300mm	7490150	**581.60**

Digital Protractors - Level Type

Features:
- This protractor provides an immediate digital reading of any angle in a full circle with 0º-90º-0º-90º-0º readings.
- ABS/ZERO button allows two measuring modes, Standard and Alternate Reference
- Four 90º 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 $
360º	0.1º	±0.1º	7490160	**149.20**
360º	0.1º	±0.1º	7490162	**158.50**

STM

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	205-610	**120.80**
Magnifier	–	205-645	**27.50**

ASIMETO

Magnetic Base Protractor

Features:
- Machined V-Base and leg ends have strong magnetic pull making it easy to secure to the work piece.
- Used for tool rooms and machine shops to find center of round stock and to make angular adjustments.
- 2-3⁄8" dial face has machine-divided graduations to 1 degree in four 90° quadrants.
- Maximum V-Opening: 3-3⁄16".
- Overall length of legs: 4-13⁄16"
- Accuracy: ±3 minutes.

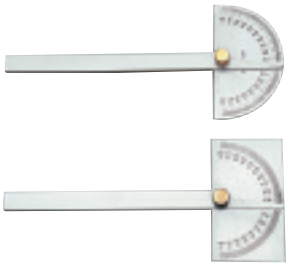


Description	Code No.	Price $
Magnetic Base Protractor	7607270	**296.90**

STM

Degree Protractors

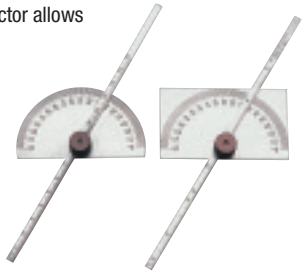
This stainless steel protractor comes with either a semi-circular or a rectangular head. The head has permanently deep etched graduations, 0 to 180° in opposite directions thus permitting reading an angle directly and also its supplement.
The 6" (150 mm) blade has a graduation line on one end that permits accurate setting and reading of angles.



Type	Code No.	Price $
Round	231-266	**21.90**
Rectangular	231-268	**23.70**

Depth Gauge with Protractor

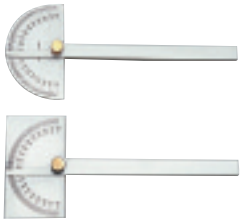
A versatile tool, the Depth Gauge with Protractor allows for measurement of both angles and depths.
- Stainless Steel
- Graduations: 0-180° in opposite directions
- 6" (150 mm) steel rule



Type	Code No.	Price $
Round	231-270	**24.40**
Rectangular	231-272	**26.30**

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

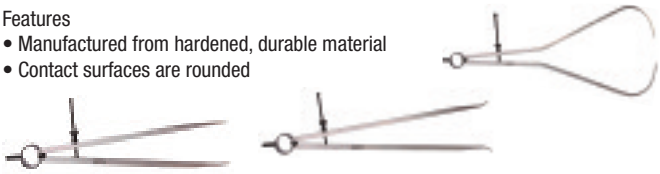


Model No.	Style	Description	Code No.	Price $
5170	Rectangle	Supplied with 6" arm	606-150	**58.30**
5180	Semi-Circle	Supplied with 6" arm	606-152	**58.30**
5190	Rectangle	With 6" graduated rule	606-154	**67.70**

ASIMETO

Spring Dividers and Calipers

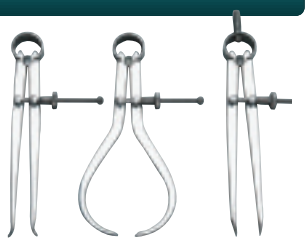
Features
- Manufactured from hardened, durable material
- Contact surfaces are rounded



Range	Style	Code No.	Price $
6”	Spring Divider	7606310	**14.00**
8”	Spring Divider	7606320	**18.00**
10”	Spring Divider	7606330	**20.90**
12”	Spring Divider	7606340	**22.70**
6”	Outside Spring Caliper	7606312	**14.00**
8”	Outside Spring Caliper	7606322	**18.00**
10”	Outside Spring Caliper	7606332	**20.90**
12”	Outside Spring Caliper	7606342	**22.70**
6”	Inside Spring Caliper	7606314	**14.00**
8”	Inside Spring Caliper	7606324	**18.00**
10”	Inside Spring Caliper	7606334	**20.90**

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			231-148	**9.90**	ID/Q-3	231-160	**12.60**
ID/4			231-150	**9.90**	ID/Q-4	231-162	**12.60**
ID/6	606-105	**18.30**	231-152	**13.70**	ID/Q-6	231-164	**16.20**
ID/8			231-154	**17.40**	ID/Q-8	231-166	**19.80**
ID/10			231-156	**22.70**	ID/Q-10	231-168	**24.90**
ID/12			231-158	**26.90**	ID/Q-12	231-170	**28.90**
Outside Calipers							
OD/3			231-172	**9.90**	OD/Q-3	231-184	**12.60**
OD/4			231-174	**9.90**	OD/Q-4	231-186	**12.60**
OD/6	606-110	**18.30**	231-176	**13.70**	OD/Q-6	231-188	**16.20**
OD/8			231-178	**17.40**	OD/Q-8	231-190	**19.80**
OD/10			231-180	**22.70**	OD/Q-10	231-192	**24.90**
OD/12			231-182	**26.90**	OD/Q-12	231-194	**28.90**
Spring Dividers							
DD/3			231-196	**9.90**	DD/Q-3	231-208	**12.60**
DD/4			231-198	**9.90**	DD/Q-4	231-210	**12.60**
DD/6	606-100	**18.30**	231-200	**13.70**	DD/Q-6	231-212	**16.20**
DD/8			231-202	**17.40**	DD/Q-8	231-214	**19.80**
DD/10			231-204	**22.70**	DD/Q-10	231-216	**24.90**
DD/12			231-206	**26.90**	DD/Q-12	231-218	**28.90**

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	231-244	**11.60**

Mitutoyo

Spring Divider

- Fully hardened and tempered joints, spring, washers and divider points
- High carbon steel legs deeply heat treated for lifetime service



Mitutoyo Model No.	Description	Sowa Code No.	Price $
950-212	6"	840-239	**40.00**

Spring Caliper

- Contact ends fully rounded to give accurate dimensions



Mitutoyo Model No.	Description	Sowa Code No.	Price $
950-222	6"	840-240	**45.00**

ASIMETO

Automatic Weld Size Welding Gauge

Features
- For accurate inspection of butt and fillet type welds. Checks size of fillet welds, permissible tolerance of convexity, concavity, and reinforcement of butt welds.
- Stainless steel, pocket size construction.
- Inch readings
- Convexity and concavity sizes preset in accordance with AWS D1-1.



Description	Code No.	Price $
Automatic Weld Size Gauge	7607630 •	**82.00**

• Available only while quantities last

Bridge Cam Welding Gauge

Features
- This versatile cam-type weld gauge can be used for checking surfaces, angles, depths, etc.
- Can measure fit-up bevels, weld reinforcement, fillet weld leg length, undercuts and pits, throat of fillet weld, angles to 60º height of weld metal, and misalignments.
- High quality stainless steel construction.
- Quick and accurate measurement of most common weld sizes.
- Readings in Inch and Metric.
- Adjustable scale compensates for wear on pointer.





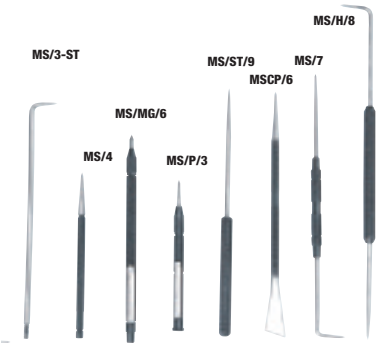
Description	Code No.	Price $
Bridge Cam Welding Gauge	7606640 •	**133.90**

• Available only while quantities last

STM

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	231-250	**6.70**
4-1/2	MS/4	231-252	**2.80**
6	MS/MG/6	231-254	**11.50**
3-1/2	MS/P/3	231-256	**6.30**
7	MS/ST/9	231-258	**4.30**
6-3/4	MSCP/6	231-260	**5.10**
7-1/2	MS/7	231-262	**4.30**
9-3/16	MS/H/8	231-264	**5.10**

STM Pen Scriber



Description	Code No.	Price $
STM Pen Scriber c/w carbide point	201-060	**6.10**
Replacement carbide point	201-065	**2.10**

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	231-278	**61.60**
ETS/2	231-280	**86.70**

ASIMETO

Steel Squares

Features:
- Made of precision ground hardened Stainless Steel


7639230


7639244


7639344

Inch Size	Metric Size	Squareness	Style	Code No.	Price $
General Type					
2" x 1.6"	50 x 40mm	0	Regular	7639214	**31.40**
2" x 1.6"	50 x 40mm	00	Bevel	7639210	**38.40**
3" x 2"	75 x 50mm	0	Regular	7639224	**35.50**
3" x 2"	75 x 50mm	00	Bevel	7639220	**40.10**
4" x 2.75"	100 x 70mm	0	Regular	7639234	**42.40**
4" x 2.75"	100 x 70mm	00	Bevel	7639230	**48.20**
6" x 4"	150 x 100mm	0	Regular	7639244	**61.60**
6" x 4"	150 x 100mm	00	Bevel	7639240	**77.20**
8" x 5"	200 x 130mm	0	Regular	7639254	**80.10**
8" x 5"	200 x 130mm	00	Bevel	7639250	**100.40**
With Wider Base "Engineers Square"					
6" x 4"	150 x 100mm	0	Regular	7639344	**117.90**
6" x 4"	150 x 100mm	00	Bevel	7639340	**142.20**
8" x 5"	200 x 130mm	0	Regular	7639354	**156.70**
8" x 5"	200 x 130mm	00	Bevel	7639350	**175.90**

Diemaker's Square Set

Features:
- 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	**185.20**

STM

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	231-320	**24.30**
3	CS/2	231-322	**46.00**

STM

Bevel Edge Square

- Accuracy Class H
- Hardened steel squares
- Accurate right angles both inside and outside
- Blades are beveled on both edges of each side
- Made from a single piece of fully seasoned tool steel
- Beams and blades are ground and accurately lapped for straightness and parallelism



Blade Size (in.)	Beam	Code No.	Price $
7-7/8	5	230-360	**61.60**

Machinist Workshop Squares

Made of carbon steel, fully ground and polished. Blade securely fitted to beam with clearance groove on inside corner.
- Hardened blades
- Not graduated
- Beams and blades are ground and accurately lapped for straightness and parallelism



Blade Size (in.)	Beam	Code No.	Price $
2	1-1/2	230-300	**12.10**
3	2-1/2	230-305	**12.70**
4	3	230-310	**14.50**
6	4	230-315	**18.30**
9	6	230-320	**49.60**
12	8	230-325	**69.90**

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.



Blade Length (in.)	Model No.	Code No.	Price $
2	SS/A/2	231-000	**23.40**
3	SS/A/3	231-010	**23.40**
4	SS/A/4	231-015	**32.30**
6	SS/A/6	231-020	**41.40**
9	SS/A/9	231-030	**102.90**
12	SS/A/12	231-040	**154.40**
Set 1	SS/A/2-3-4-6	231-045	**137.10**
Set 2	SS/A/2-4-6	231-050	**114.00**

Set 1 contains one each of 2", 3", 4" and 6" Squares
Set 2 contains one each of 2", 4" and 6" Squares

Suburban

Magnetic Cylinder Square

- Designed to easily check squareness on component parts.
- Base is perpendicular to shaft within 0.0001" over the length of the square. Magnetic base eliminates clamping distortion and speeds set-up.
- Manufactured from steel selected and normalized to insure stability and uniformity.



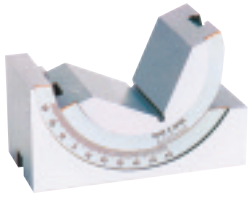
Model No.	Length	Base Dia.	Shaft Dia.	Shaft Length	Weight lbs	Code No.	Price $
MCS-4	4-1/2	1-7/16	1/2	3-1/2	3	251-926	**654.50**
MCS-6	6-1/2	3-3/8	1	5-1/2	7	251-928	**771.10**

STM

Adjustable Angle Block 0-60º

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	231-096	**230.70**
3-3/4	2	1-3/16	PAB/02	231-098	**187.50**
3	1-11/32	1	PAB/03	231-100	**151.50**

STM

Precision Square Levels



Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VSL-200A	200x200x40	3.8	230-370	**314.30**
VSL-300A	250x250x40	5.8	230-380	**462.10**

Horizontal Leveling Instrument

- 0.02mm/100mm tolerance



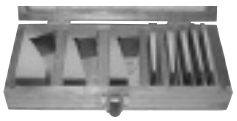
Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VLI-200A	200x50x45	2.1	230-390	**325.90**

STM Universal Angle Block Sets

- Set complete in fitted case
- Size 3" long by 1/4" thick
- Hardened steel, precision ground
- Accuracy ± .0001" per inch



DK33-006



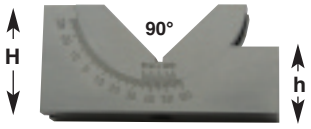
DK32-027

Model No.	Description	Code No.	Price $
DK 32-027	1 pc. each 1°, 2°, 3° 4°, 5°, 10°, 15°, 30°	230-865	**269.70**
DK 33-006	1 pc. each 1°, 2°, 3°, 4°, 5°, 10°, 15°, 20°, 25°, 30°	230-867	**117.60**

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	230-745	**145.00**
AP-2	47	30	102	28	1 kg	230-750	**139.70**
AP-3	32	25	75	22	0.5 kg	230-755	**134.40**

ASIMETO

Individual Rectangular Gauge Blocks



- Grade 0

Size (in.)	Code No.	Price $	Size (in.)	Code No.	Price $
0.050	7651010	**19.20**	0.126	7651510	**19.20**
0.05005	7651020	**31.40**	0.127	7651520	**19.20**
0.0503	7651030	**31.40**	0.128	7651530	**19.20**
0.0506	7651040	**31.40**	0.129	7651540	**19.20**
0.0507	7651050	**19.20**	0.130	7651550	**19.20**
0.0508	7651060	**31.40**	0.131	7651560	**19.20**
0.0509	7651070	**19.20**	0.132	7651570	**19.20**
0.052	7651080	**19.20**	0.133	7651580	**19.20**
0.053	7651090	**19.20**	0.134	7651590	**19.20**
0.054	7651100	**31.40**	0.135	7651600	**19.20**
0.055	7651110	**31.40**	0.136	7651610	**19.20**
0.056	7651120	**31.40**	0.137	7651620	**19.20**
0.058	7651130	**31.40**	0.138	7651630	**19.20**
0.060	7651140	**31.40**	0.139	7651640	**19.20**
0.100	7651150	**19.20**	0.140	7651650	**19.20**
0.10005	7651160	**31.40**	0.141	7651660	**19.20**
0.1001	7651170	**19.20**	0.142	7651670	**19.20**
0.1002	7651180	**19.20**	0.143	7651680	**19.20**
0.1003	7651190	**19.20**	0.144	7651690	**19.20**
0.1004	7651200	**19.20**	0.145	7651700	**19.20**
0.1005	7651210	**19.20**	0.146	7651710	**19.20**
0.1006	7651220	**19.20**	0.147	7651720	**19.20**
0.1007	7651230	**19.20**	0.148	7651730	**19.20**
0.1008	7651240	**19.20**	0.149	7651740	**19.20**
0.1009	7651250	**19.20**	0.150	7651750	**19.20**
0.101	7651260	**19.20**	0.160	7651760	**19.80**
0.102	7651270	**19.20**	0.170	7651770	**19.80**
0.103	7651280	**19.20**	0.180	7651780	**19.80**
0.104	7651290	**19.20**	0.190	7651790	**19.80**
0.105	7651300	**19.20**	0.200	7651800	**19.80**
0.106	7651310	**19.20**	0.210	7651810	**19.20**
0.107	7651320	**19.20**	0.250	7651820	**19.20**
0.108	7651330	**19.20**	0.300	7651830	**19.20**
0.109	7651340	**19.20**	0.350	7651840	**19.20**
0.110	7651350	**19.20**	0.400	7651850	**21.50**
0.111	7651360	**19.20**	0.450	7651860	**21.50**
0.112	7651370	**19.20**	0.500	7651870	**21.50**
0.113	7651380	**19.20**	0.550	7651880	**21.50**
0.114	7651390	**19.20**	0.600	7651890	**21.50**
0.115	7651400	**19.20**	0.650	7651900	**21.50**
0.116	7651410	**19.20**	0.700	7651910	**21.50**
0.117	7651420	**19.20**	0.750	7651920	**21.50**
0.118	7651430	**19.20**	0.800	7651930	**22.70**
0.119	7651440	**19.20**	0.850	7651940	**22.70**
0.120	7651450	**19.20**	0.900	7651950	**22.70**
0.121	7651460	**19.20**	0.950	7651960	**22.70**
0.122	7651470	**19.20**	1.000	7651970	**22.70**
0.123	7651480	**19.20**	2.000	7651980	**32.50**
0.124	7651490	**19.20**	3.000	7651990	**41.30**
0.125	7651500	**19.20**	4.000	7652000	**64.50**

NIST Certified Gauge Block Sets



Description	Pieces /Set	Grade	Code No.	Price $
NIST Certified Gauge Block Set	36	2	255-076	**926.20**
NIST Certified Gauge Block Set	36	B	255-080	**646.30**
NIST Certified Gauge Block Set	81	2	255-070	**1,618.20**
NIST Certified Gauge Block Set	81	3	255-072	**1,114.50**
NIST Certified Gauge Block Set	81	B	255-074	**905.90**

ASIMETO

Rectangular Gauge Block Sets - Inch

Features:
- 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	**935.00** **605.30** **395.30**
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	**479.40** **329.70** **249.60**

Rectangular Gauge Block Sets - Metric

Features:
- 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	**820.10**
87	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)	7650130	**1,292.50**

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 (±.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–.1001-.1009 in .0001 steps, 49–.101-.149 in .001 steps 19–.050-.950 in .050 steps, 4–1.000-4.000 in 1.000 steps	200-715	**252.40**

ASIMETO

36pc Round Space Block Set



Features:
- For quickly setting stops and setups in lathes, milling machines, drill presses, etc. Also excellent for setting sine bars.
- Each block marked for size. Overall diameter 0.750"
- 1/4"-28 threaded hole through centre of block
- Working surface hardened to 58-60 HRC
- Working surfaces precision ground and lapped to ±0.000050"
- 4 connecting screws supplied to form desired length

Description	Included	Code No.	Price $
38pc Set	.050, .060, .0625, .070, .080, .090, .100, .101, .102, .103, .104, .105, .106, .107, .108, .109, .110, .120, .125, .130, .140, .150, .160, .170, .180, .190, .200, .300, .400, .500, .600, .700, .800, .900, 1.00 (2 ea.)	7679950	**234.50**

STM

36 Piece Space Block Set



- 3/4" diameter, 1/4–28 I.D. thread
- Each block clearly marked for size
- Ground, hardened and tapped
- 4 connecting screws included, make any length desired
- Complete in fitted case
- ±.0001" accuracy

Blocks Included	Code No.	Price $
.050, .090, .500, 1.000, .105, .110, .150, .060, .100, .600, .101, .105, .120, .160, .0625, .200, .700, .102, .107, .125, .170, .070, .300, .800, .103, .108, .130, .180, .080, .400, .900, .104, .109, .140, .190, 1.00	200-775	**176.60**

ASIMETO

Individual Pin Gauges



Features:
- Bright finish and Black Oxide available
- Black Oxide coating prevents corrosion and shows gauge wear
- Class ZZ guaranteed to 0.0002" tolerance limit
- Each gauge over 0.060" marked with size and direction of tolerance
- Hardened drill rod RC60-62
- 2" long
- 10 micron finish or better

Plus Tolerance +0.0002"/-0

Size	Bright Code No.	Price $	Black Oxide Code No.	Price $
0.125"	7220125	**3.50**	7290125	**3.50**
0.187"	7220187	**3.50**	7290187	**3.50**
0.250"	7220250	**3.50**	7290250	**3.50**
0.377"	7220377	**2.40**	7290377	**4.10**
0.500"	7220500	**3.50**	7290500	**4.10**
0.625"	7220625	**4.70**	7290625	**5.30**
0.750"	7220750	**6.40**	7290750	**8.80**
0.875	7220875	**8.20**	7290875	**9.30**
1.000"	7221000	**9.30**	7291000	**10.50**

Minus Tolerance +0/-0.0002"

Size	Bright Code No.	Price $	Black Oxide Code No.	Price $
0.125"	7210125	**2.40**	7230125	**3.50**
0.187"	7210187	**3.50**	7230187	**3.50**
0.250"	7210250	**2.40**	7230250	**3.50**
0.377"	7210377	**3.50**	7230377	**4.10**
0.500"	7210500	**3.50**	7230500	**4.10**
0.625"	7210625	**4.70**	7230625	**5.30**
0.750"	7210750	**6.40**	7230750	**8.80**
0.875	7210875	**8.20**	7230875	**9.30**
1.000"	7211000	**9.30**	7231000	**10.50**

Premium Pin Gauge Handles

Features:
- Machined from solid aluminum, this premium handle can hold diameters from 1/32" to 1/2"
- GO and NO GO marked on handle
- Completely self contained, does not require bushings



Description	Code No.	Price $
Aluminum	7697400	**46.50**
Green Anodized Aluminum	7697401	**46.50**
Purple Anodized Aluminum	7697402	**46.50**
Red Anodized Aluminum	7697403	**46.50**
Yellow Anodized Aluminum	7697404	**46.50**

ASIMETO

Pin Gauge Sets

Features:
- Furnished in molded plastic case



Plus Tolerance +0.0002"/-0

Qty	Range	Finish	Code No.	Price $
50	0.011"-0.060" x .001" step	Bright	7697010	**71.40**
190	0.061"-0.250" x .001" step	Bright	7697020	**137.60**
250	0.251"-0.500" x .001 step	Bright	7697030	**282.70**
125	0.501"-0.625" x .001" step	Bright	7697040	**282.70**
125	0.626"-0.750" x .001" step	Bright	7697050	**402.20**
82	0.751"-0.832" x .001" step	Bright	7697060	**386.60**
84	0.833"-0.916" x .001" step	Bright	7697070	**438.20**
84	0.917"-1.000" x .001" step	Bright	7697080	**517.70**
50	0.011"-0.060" x .001" step	Black Oxide	7697090	**78.40**
190	0.061"-0.250" x .001" step	Black Oxide	7697100	**150.90**
250	0.251"-0.500" x .001 step	Black Oxide	7697110	**310.50**
125	0.501"-0.625" x .001" step	Black Oxide	7697120	**310.50**
125	0.626"-0.750" x .001" step	Black Oxide	7697130	**441.70**
82	0.751"-0.832" x .001" step	Black Oxide	7697140	**424.90**
84	0.833"-0.916" x .001" step	Black Oxide	7697150	**481.20**
84	0.917"-1.000" x .001" step	Black Oxide	7697160	**568.80**

Minus Tolerance +0/-0.0002"

Qty	Range	Finish	Code No.	Price $
50	0.011"-0.060" x .001" step	Bright	7697012	**71.40**
190	0.061"-0.250" x .001" step	Bright	7697022	**137.60**
250	0.251"-0.500" x .001 step	Bright	7697032	**282.70**
125	0.501"-0.625" x .001" step	Bright	7697042	**282.70**
125	0.626"-0.750" x .001" step	Bright	7697052	**402.20**
82	0.751"-0.832" x .001" step	Bright	7697062	**386.60**
84	0.833"-0.916" x .001" step	Bright	7697072	**438.20**
84	0.917"-1.000" x .001" step	Bright	7697082	**517.70**
50	0.011"-0.060" x .001" step	Black Oxide	7697092	**78.40**
190	0.061"-0.250" x .001" step	Black Oxide	7697102	**150.90**
250	0.251"-0.500" x .001 step	Black Oxide	7697112	**310.50**
125	0.501"-0.625" x .001" step	Black Oxide	7697122	**310.50**
125	0.626"-0.750" x .001" step	Black Oxide	7697132	**441.70**
82	0.751"-0.832" x .001" step	Black Oxide	7697142	**424.90**
84	0.833"-0.916" x .001" step	Black Oxide	7697152	**481.20**
84	0.917"-1.000" x .001" step	Black Oxide	7697162	**568.80**
Metric				
55	0.2-1.28mm x 0.02mm step	Bright	7697202	**123.10**

Ergonomic Pin Gauge Handles

Features:
- Comfortable, ergonomically designed handle for pin gauges
- Can be used with GO pin (green) on one end, NO GO (red) on opposite end

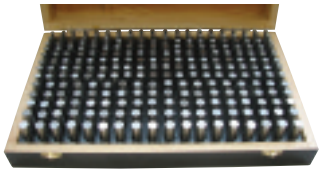


Range	Code No.	Price $
0.011" - 0.060"	7697410	**26.70**
0.061" - 0.250"	7697411	**33.70**
0.251" - 0.500"	7697412	**40.10**
0.501" - 0.625"	7697413	**39.50**
0.626" - 0.750"	7697414	**43.00**
0.751" - 0.832"	7697415	**43.00**
0.833" - 0.916"	7697416	**47.60**
0.917" - 1.000"	7697417	**47.60**

STM

Precision Steel Pin Gauge Sets

- 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 -.0002"/+.0000"



Gauge Set No.	Range	No. of Gauges	Minus Code No.	Price $
P-0	.011-.060	50	255-145	**65.80**
P-1	.061-.250	190	255-040	**131.40**
P-2	.251-.500	250	255-045	**297.00**
P-3	.501-.625	125	255-150	**262.40**
P-4	.626-.750	125	255-155	**337.30**
P-5	.751-.832	82	255-160	**337.30**
P-6	.833-.916	84	255-165	**421.60**
P-7	.917-1.000	84	255-170	**447.80**

ASIMETO

Precision Inspection Gauge Ball Sets

Features:
- Meets all grade 25 AFBMA standards
- Chrome alloy steel, hardened to 63 HRC
- 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" by 32nds	7679901	**146.30**
25 Pair	1mm to 25mm by 1mm increments	7679900	**146.30**

Suburban

Suburban Planer Gauges

- 7/16" to 10" range
- Parallelism of gauging surfaces to base within .0002" in any position
- All surfaces square and parallel for use in any plane
- 1-1/8" wide body
- Beveled ways eliminate side play
- Most accurate planer gauge made
- Base dimensions: 6-3/16" L x 1-1/8" W x 3-1/2" H
- Fitted wooden case and 3" extension included



Model	Weight (lb)	Code No.	Price $
PG-613	6 lb	251-320	**663.20**

ASIMETO

ANSI Inch Thread Plug Gauges & Ring Gauges

Features:
- Gold aluminum handles
- ANSI Standard





Size	Double End Plug Gauge Code No.	Price $	"GO" Ring Gauge Code No.	Price	"NO GO" Ring Gauge Code No.	Price $
0 - 80	7695012•	88.80	-	-	-	-
1 - 64	7695022	88.80	7695024	171.30	7695025	161.40
1 - 72	7695032	88.80	7695034	171.30	7695035	161.40
2 - 56	7695042	88.80	7695044	171.30	7695045	161.40
2 - 64	7695052	88.80	7695054	171.30	7695055	161.40
3 - 48	7695062	81.90	7695064	152.10	7695065	142.20
3 - 56	7695072	81.90	7695074	152.10	7695075	142.20
4 - 40	7695082	81.90	7695084	152.10	7695085	142.20
4 - 48	7695092	81.90	7695094	152.10	7695095	142.20
5 - 40	7695102	77.20	7695104	142.20	7695105	132.40
5 - 44	7695112	77.20	7695114	142.20	7695115	132.40
6 - 32	7695122	77.20	7695124	142.20	7695125	132.40
6 - 40	7695132	77.20	7695134	142.20	7695135	132.40
8 - 32	7695142	77.20	7695144	142.20	7695145	132.40
8 - 36	7695152	77.20	7695154	142.20	7695155	132.40
10 - 24	7695162	77.20	7695164	142.20	7695165	132.40
10 - 32	7695172	77.20	7695174	142.20	7695175	132.40
12 - 24	7695182	77.20	7695184	142.20	7695185	132.40
12 - 28	7695192	77.20	7695194	142.20	7695195	132.40
1/4 - 20	7695202	69.70	7695204	132.40	7695205	123.10
1/4 - 28	7695212	69.70	7695214	132.40	7695215	123.10
1/4 - 32	7695222	92.90	7695224	152.10	7695225	142.20
5/16 - 18	7695232	69.70	7695234	132.40	7695235	123.10
5/16 - 24	7695242	69.70	7695244	132.40	7695245	123.10
5-16 - 32	7695252	92.90	7695254	67.40	7695255	58.70
3/8 - 16	7695262	73.20	7695264	132.40	7695265	123.10
3/8 - 24	7695272	73.20	7695274	132.40	7695275	123.10
3/8 - 32	7695282	96.40	7695284	152.10	7695285	142.20
7/16 - 14	7695292	73.20	7695294	132.40	7695295	123.10
7/16 - 20	7695302	73.20	7695304	132.40	7695305	123.10
7/16 - 28	7695312	96.40	7695314	152.10	7695315	142.20
1/2 - 13	7695322	77.20	7695324	142.20	7695325	132.40
1/2 - 20	7695332	77.20	7695334	142.20	7695335	132.40
1/2 - 28	7695342	101.60	7695344	161.40	7695345	152.10
9/16 - 12	7695352	92.90	7695354	152.10	7695355	142.20
9/16 - 18	7695362	92.90	7695364	152.10	7695365	142.20
9/16 - 24	7695372	108.00	7695374	181.10	7695375	171.30
5/8 - 11	7695382	92.90	7695384	152.10	7695385	142.20
5/8 - 18	7695392	92.90	7695394	152.10	7695395	142.20
5/8 - 24	7695402	108.00	7695404	181.10	7695405	171.30
3/4 - 10	7695412	98.70	7695414	171.30	7695415	161.40
3/4 - 16	7695422	98.70	7695424	171.30	7695425	161.40
3/4 - 20	7695432	123.10	7695434	190.40	7695435	181.10
7/8 - 9	7695442	102.20	7695444	184.00	7695445	177.10
7/8 - 14	7695452	102.20	7695454	184.00	7695455	177.10
7/8 - 20	7695462	128.90	7695464	200.30	7695465	190.40
1 - 8	7695472	109.20	7695474	200.30	7695475	190.40
1 - 12	7695482	109.20	7695484	200.30	7695485	190.40

• Available only while quantities last.

ASIMETO

ANSI Metric Thread Plug Gauges & Ring Gauges

Features:
- Gold aluminum handles
- ANSI Standard





Size	Double End Plug Gauge Code No.	Price $	"GO" Ring Gauge Code No.	Price	"NO GO" Ring Gauge Code No.	Price $
M1.8 X 0.35	7696022	88.80	-	-	-	-
M2 X 0.4	7696032	62.70	7696034	64.50	7696035	64.50
M2.2 X 0.45	7696042	72.60	7696044	64.50	7696045	64.50
M2.5 X 0.45	7696052	72.60	7696054	64.50	7696055	64.50
M3 X 0.5	7696062	62.70	7696064	59.80	7696065	59.80
M3.5 X 0.6	7696072	63.30	7696074	59.80	7696075	59.80
M4 X 0.7	7696082	62.70	7696084	59.80	7696085	56.90
M4.5 X 0.75	7696092	69.70	7696094	64.50	7696095	64.50
M5 X 0.8	7696102	62.70	7696104	59.80	7696105	56.90
M6 X 1	7696112	62.70	7696114	56.90	7696115	59.80
M7 X 1	7696122	62.70	7696124	59.80	7696125	59.80
M8 X 1	7696132	62.70	7696134	59.80	7696135	55.20
M8 X 1.25	7696142	62.70	7696144	59.80	7696145	55.20
M10 X 1.25	7696152	62.70	7696154	59.80	7696155	55.20
M10 X 1.5	7696162	62.70	7696164	64.50	7696165	64.50
M12 X 1.25	7696172	62.70	7696174	59.80	7696175	55.20
M12 X 1.75	7696182	62.70	7696184	64.50	7696185	59.80
M14 X 1.5	7696192	71.40	7696194	59.80	7696195	55.20
M14 X 2	7696202	71.40	7696204	69.70	7696205	64.50
M16 X 1.5	7696212	71.40	7696214	59.80	7696215	55.20
M16 X 2	7696222	71.40	7696224	69.70	7696225	64.50
M18 X 1.5	7696232	79.00	7696234	69.70	7696235	64.50
M18 X 2.5	7696242	79.00	7696244	76.10	7696245	69.70
M20 X 1.5	7696252	79.00	7696254	69.70	7696255	64.50
M20 X 2.5	7696262	79.00	7696264	76.10	7696265	69.70
M22 X 1.5	7696272	79.00	7696274	69.70	7696275	64.50
M24 X 2	7696282	90.00	7696284	84.20	7696285	79.00
M24 X 3	7696292	90.00	7696294	98.70	7696295	74.30
M27 X 2	7696302	90.00	7696304	84.20	7696305	79.00
M27 X 3	7696312	90.00	7696314	98.70	7696315	74.30
M30 X 2	7696322	108.00	7696324	93.50	7696325	84.20
M30 X 3.5	7696332	108.00	7696334	123.10	7696335	93.50
M33 X 2	7696342	108.00	7696344	93.50	7696345	84.20
M33 X 3.5	7696352	108.00	7696354	123.10	7696355	93.50
M36 X 3	7696362	146.90	7696364	108.00	7696365	98.70
M36 X 4	7696372	146.90	7696374	137.60	7696375	108.00
M39 X 3	7696382	146.90	7696384	108.00	7696385	102.20
M39 X 4	7696392	146.90	7696394	137.60	7696395	108.00

NPT Thread Gauges

Features:
- NPT ANSI/ASME B.1.20.1





Size	Plug Gauge Code No.	Price $	Ring Gauge Code No.	Price $
1/16"-27	7690401	97.50	7690403	165.40
1/8"-27	7690411	104.50	7690413	187.50
1/4"-18	7690421	119.60	7690423	204.30
3/8"-18	7690431	133.50	7690433	242.60
1/2"-14	7690441	150.90	7690443	291.40
3/4"-14	7690451	170.10	7690453	330.30
1"-11.5	7690461	199.10	7690463	369.10
1-1/4"-11.5	7690471	252.50	7690473	517.10
1-1/2"-11.5	7690481	283.80	7690483	554.30
2"-11.5	7690491	301.20	7690493	584.50
2-1/2"-8	7690501	319.20	7690503	610.60
3"-8	7690511	359.30	7690513	644.20

Master Setting Ring Gauge

Features:
- Hardened Steel



Size	Accuracy	Taper/ Ovality	Code No.	Price $
1.000"	±.00008"	0.000024"	7679090	105.70

Standard Plug Thread Gauges

- Made of the finest steel alloy



Size	GO Class 2B Code No.	Price $	NO GO Class 2B Code No.	Price $	Double End 2B Code No.	Price $
2-56	222-000	**122.20**	222-048	**122.20**	222-096	**284.90**
4-40	222-002	**99.00**	222-050	**99.00**	222-098	**226.70**
5-40	222-004	**90.30**	222-052	**90.30**	222-100	**209.30**
6-32	222-006	**81.60**	222-054	**81.60**	222-102	**191.80**
8-32	222-008	**81.60**	222-056	**81.60**	222-104	**191.80**
10-24	222-010	**81.60**	222-058	**81.60**	222-106	**191.80**
10-32	222-012	**81.60**	222-060	**81.60**	222-108	**191.80**
1/4-20	222-014	**75.70**	222-062	**75.70**	222-110	**177.30**
1/4-28	222-016	**75.70**	222-064	**75.70**	222-112	**177.30**
5/16-18	222-018	**75.70**	222-066	**75.70**	222-114	**177.30**
5/16-24	222-020	**75.70**	222-068	**75.70**	222-116	**177.30**
3/8-16	222-022	**75.70**	222-070	**75.70**	222-118	**177.30**
3/8-24	222-024	**75.70**	222-072	**75.70**	222-120	**177.30**
7/16-14	222-026	**78.70**	222-074	**78.70**	222-122	**183.30**
7/16-20	222-028	**78.70**	222-076	**78.70**	222-124	**183.30**
1/2-13	222-030	**81.60**	222-078	**81.60**	222-126	**189.10**
1/2-20	222-032	**81.60**	222-080	**81.60**	222-128	**189.10**
9/16-18	222-034	**110.70**	222-082	**110.70**	222-130	**247.10**
5/8-11	222-036	**113.60**	222-084	**113.60**	222-132	**253.00**
5/8-18	222-038	**113.60**	222-086	**113.60**	222-134	**253.00**
3/4-10	222-040	**119.40**	222-088	**119.40**	222-136	**264.50**
3/4-16	222-042	**119.40**	222-090	**119.40**	222-138	**264.50**
7/8-9	222-044	**125.10**	222-092	**125.10**	222-140	**279.00**
7/8-14	222-046	**130.80**	222-094	**130.80**	222-142	**290.80**

Standard Ring Gauges

- Made of the finest steel alloy
- Please specify class of fit



Size	GO 2A Code No.	Price $	GO 3A Code No.	Price $	NO GO 2A Code No.	Price $	NO GO 3A Code No.	Price $	Holders Code No.	Price $
2-56	222-220	**331.20**	222-276	**331.20**	222-332	**331.20**	222-388	**331.20**		
4-40	222-222	**305.20**	222-278	**305.20**	222-334	**305.20**	222-390	**305.20**		
5-40	222-224	**267.50**	222-280	**267.50**	222-336	**267.50**	222-392	**267.50**		
6-32	222-226	**267.50**	222-282	**267.50**	222-338	**267.50**	222-394	**267.50**		
8-32	222-228	**255.90**	222-284	**255.90**	222-340	**255.90**	222-396	**284.90**		
10-24	222-230	**255.90**	222-286	**255.90**	222-342	**255.90**	222-398	**255.90**		
10-32	222-232	**255.90**	222-288	**255.90**	222-344	**255.90**	222-400	**255.90**	222-450	**52.50**
1/4-20	222-234	**258.70**	222-290	**258.70**	222-346	**258.70**	222-402	**258.70**		
1/4-28	222-236	**258.70**	222-292	**258.70**	222-348	**258.70**	222-404	**258.70**		
5/16-18	222-238	**250.00**	222-294	**250.00**	222-350	**250.00**	222-406	**250.00**		
5/16-24	222-240	**250.00**	222-296	**250.00**	222-352	**250.00**	222-408	**250.00**	222-452	**58.30**
3/8-16	222-242	**279.00**	222-298	**279.00**	222-354	**279.00**	222-410	**279.00**		
3/8-24	222-244	**279.00**	222-300	**279.00**	222-356	**279.00**	222-412	**279.00**		
7/16-14	222-246	**267.50**	222-302	**267.50**	222-358	**267.50**	222-414	**267.50**		
7/16-20	222-248	**267.50**	222-304	**267.50**	222-360	**267.50**	222-416	**267.50**		
1/2-13	222-250	**279.00**	222-306	**279.00**	222-362	**279.00**	222-418	**279.00**		
1/2-20	222-252	**279.00**	222-308	**279.00**	222-364	**279.00**	222-420	**279.00**	222-454	**58.30**
9/16-12	222-254	**325.60**	222-310	**325.60**	222-366	**325.60**	222-422	**325.60**		
9/16-18	222-256	**325.60**	222-312	**325.60**	222-368	**325.60**	222-424	**325.60**		
5/8-11	222-258	**325.60**	222-314	**325.60**	222-370	**325.60**	222-426	**325.60**		
5/8-18	222-260	**325.60**	222-316	**325.60**	222-372	**325.60**	222-428	**325.60**		
3/4-10	222-262	**401.10**	222-318	**401.10**	222-374	**401.10**	222-430	**401.10**		
3/4-16	222-264	**401.10**	222-320	**401.10**	222-376	**401.10**	222-432	**401.10**	222-456	**67.10**
7/8-9	222-266	**430.10**	222-322	**430.10**	222-378	**430.10**	222-434	**430.10**		
7/8-14	222-268	**430.10**	222-324	**430.10**	222-380	**430.10**	222-436	**430.10**		
1"-8	222-270	**528.80**	222-326	**528.80**	222-382	**528.80**	222-438	**528.80**		
1"-12	222-272	**528.80**	222-328	**528.80**	222-384	**528.80**	222-440	**528.80**		
1"-14	222-274	**528.80**	222-330	**528.80**	222-386	**528.80**	222-442	**528.80**	222-458	**90.30**

Metric Plug Thread Gauges

- Made of the finest steel alloy



Size	6H GO Plug Code No.	Price $	6H NO GO Plug Code No.	Price $	Handle Code No.	Price $	Double End w/ Handle	Price $
M2.0 x 0.4	222-460	**134.00**	222-500	**134.00**	222-540	**26.40**	222-182	**296.40**
M2.5 x 0.45	222-462	**125.10**	222-502	**125.10**	222-540	**26.40**	222-184	**279.00**
M3.0 x 0.5	222-464	**125.10**	222-504	**125.10**	222-540	**26.40**	222-186	**279.00**
M3.5 x 0.6	222-468	**107.60**	222-506	**107.60**	222-540	**26.40**	222-188	**244.30**
M4.0 x 0.7	222-470	**107.60**	222-508	**107.60**	222-540	**26.40**	222-190	**244.30**
M5.0 x 0.8	222-472	**107.60**	222-510	**107.60**	222-540	**26.40**	222-192	**244.30**
M6.0 x 1.0	222-474	**81.60**	222-512	**81.60**	222-542	**26.40**	222-194	**189.10**
M8.0 x 1.25	222-476	**81.60**	222-514	**81.60**	222-542	**26.40**	222-196	**189.10**
M8.0 x 1.0	222-478	**81.60**	222-516	**81.60**	222-542	**26.40**	222-198	**189.10**
M10.0 x 1.5	222-480	**84.50**	222-518	**84.50**	222-544	**26.40**	222-200	**194.80**
M10.0 x 1.25	222-482	**84.50**	222-520	**84.50**	222-544	**26.40**	222-202	**194.80**
M12 x 1.75	222-484	**99.00**	222-522	**99.00**	222-544	**26.40**	222-204	**224.00**
M12 x 1.25	222-486	**104.80**	222-524	**104.80**	222-544	**26.40**	222-206	**336.30**
M14.0 x 2.0	222-488	**110.70**	222-526	**110.70**	222-546	**26.40**	222-208	**247.10**
M14 x 1.5	222-490	**110.70**	222-528	**110.70**	222-546	**26.40**	222-210	**247.10**
M16 x 2.0	222-492	**110.70**	222-530	**110.70**	222-546	**26.40**	222-212	**247.10**
M16 x 1.5	222-494	**110.70**	222-532	**110.70**	222-546	**26.40**	222-214	**247.10**
M20.0 x 2.5	222-496	**154.30**	222-534	**154.30**	222-548	**26.40**	222-216	**334.30**

Metric Ring Gauges

- Made of the finest steel alloy



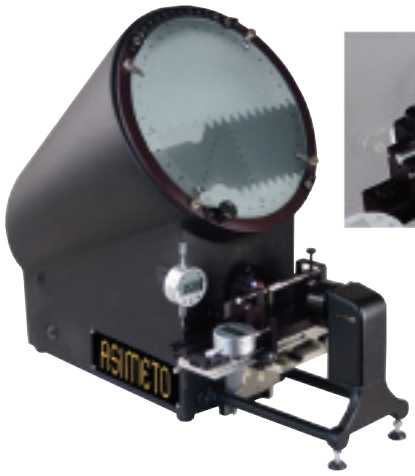
Size	6G GO Code No.	Price $	6G NO GO Code No.	Price $
M2.0 x 0.4				
M2.5 x 0.45				
M3.0 x 0.5	222-144	**340.10**	222-164	**340.10**
M3.5 x 0.6				
M4.0 x 0.7	222-146	**316.80**	222-166	**316.80**
M5.0 x 0.80	222-148	**316.80**	222-168	**316.80**
M6.0 x 1.0	222-150	**290.80**	222-170	**290.80**
M8.0 x 1.25	222-152	**290.80**	222-172	**290.80**
M8.0 x 1.0	222-154	**290.80**	222-174	**290.80**
M10.0 x 1.5	222-156	**316.80**	222-176	**316.80**
M10.0 x 1.25	222-158	**316.80**	222-178	**316.80**
M12.0 x 1.75	222-160	**337.10**		
M12.0 x 1.25	222-162	**325.60**	222-180	**325.60**
M14.0 x 2.0				
M14.0 x 1.5				
M16.0 x 2.0				
M16.0 x 1.5				
M20.0 x 2.5				

ASIMETO

Optical Comparator

Features:

- With 2 Digimatic Indicators (1" and 2" travel).
- Large 12" x 3" t-slot stage with 6" horizontal and 2-1/2" vertical travel.
- 12" 1 quadrant protractor screen.
- Rotatable screen with fine adjustment.
- 5 minutes vernier
- Overlay clips
- Exclusive high and low intensity profile illumination switch





Model	Description	Code No.	Price $
Type I	c/w 10X Lens	7641090	**4,206.20**

Mitutoyo

Surftest SJ-210

- 2.4-inch colour LCD display with backlighting is switchable to vertical or horizontal left and right-hand views
- Built-in battery allows approximately 1,000 measurements
- Internal memory can store up to 10 measurement conditions
- Optional MicroSD card can store up to 10,000 measurement results
- Auto-sleep function can be set from 10-600 seconds
- External output includes Digimatic SPC, RS-232C and USB
- Functions such as calibrations, measuring conditions, parameter and display settings can be password protected



Mitutoyo Model No.	Sowa Code No.	Price $
178-561-02A	847-140	**2,500.00**

ASIMETO

Impact Hardness Tester

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



New Code No.: 7640171 **Price $: 3,580.10**

STM

STM Precision Hardness Tester

A high grade precision instrument, using the Rockwell method for testing hardness in metals.

Accessories:

- Hardness standards (one each) for Rockwell "C" and "B" scales and "A" scales
- Diamond penetrator
- Flat anvil
- "V" anvil
- Large flat anvil
- Rockwell standard block set



Note:

Consists of high, medium and low "C" scale. A and B masters. No need to change weight loads. Can be easily adjusted by a calibrated knob.



Total Load in KGF (Initial Load 10kgf)	60	100	150
Indentor	Diamond 120°	Ball 1/16"	Diamond 120°
Test Scales	Rockwell A	Rockwell B	Rockwell C
Suitable for hardened steel	Test on case and non-ferrous metals	Annealed ferrous hardened and tempered or case hardened steel	Annealed

Test Height	Throat Depth	L x W x H	Code No.	Price $
6-3/4	5-5/16	18-3/8 x 9-3/8 x 24-13/16	240-200	**2,297.10**
Replacement Diamond Penetrator for Hardness Tester			240-201	**430.50**

ASIMETO

Surface Roughness Standards Set

- Used for the visual comparison of surface roughness
- Set of 30 specimens, 7/8" x 3/8" electro-formed, solid nickel



New Code No.: 7506010 **Price $ 322.00**

Qty.	Desc.	Roughness
2	Flat Lapping	0.05; 0.1µm (2; 4µm)
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; 500µm)
6	Vert. Milling	0.4; 0.8; 1.6; 3.2; 6.3; 12.5µm (16; 32; 63; 125; 250; 500µm)
6	Turning	0.4; 0.8; 1.6; 3.2; 6.3; 12.5µm (16; 32; 63; 125; 250; 500µm)

ASIMETO

ViewMeasure Quick Optical Measuring Instruments

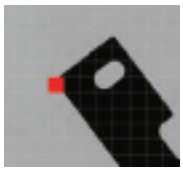
Instant measurement of any object within the field of view.
- Precise optical measurement
- Reduce measurement error
- Maximum repeatability of measurement results

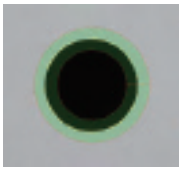
Please call for pricing

Code No.	7643110	7643111	7643112
Price $	**RFQ**	**RFQ**	**RFQ**
Model	QVM 3040	QVM 3077	QVM 3095
Magnification	.133	.074	.059
Depth of Field (mm)	19	31	48
Field of View X (mm)	42	77	96
Field of View Y (mm)	32	57	72
Z Axis travel	30	30	30
Accuracy (µm)	±4.1+L/50	±6.0+L/50	±7.5+L/50
Camera	B/W .5MP, Matrix		
Illumination			
Surface Illumination	White Ring Light		
Contour Illumination	Green Collimated Light		
Max workpiece weight	2kg		
W x L x H (mm)	290 x 222 x 618	290 x 222 x 700	330 x 245 x 750
Software	Asimeto Vision Software		
Working Temperature	23 to 27 C		
Relative Humidity	20 to 80%		









Normal Pixel Conversion





High Accuracy Pixel Conversion



Optical Features
- Large field of view is provided by telecentric optical system
- Long focal depth eliminates the focal adjustment
- Minimal distortion
- Perspective and fluoroscopy error eliminated

Illumination Features
- A crisp clear outline of the work piece is provided with the vertical light source
- Improved measurement repeatability

Work Piece Auto Positioning
The work can be placed anywhere on the optical stage. The pattern recognition algorithm will locate the work piece and perform dimensional measurement relative to the desired coordinate system.

High Accuracy
Measurement repeatability is ensured with the high resolution CCD camera system thereby reducing measurement uncertainty

Measuring Capabilities
- Auto correct will remove outlier points caused by burrs or surface imperfections
- Least mean square algorithms are used to calculate geometric elements (line, circle, etc,)

Multiple Object Measurement
The patter recognition will find the individual objects and provide measuring results based on the measuring outline.



Automatic Point Measure



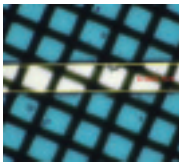
Automatic Line Measure



Automatic Circle Measure



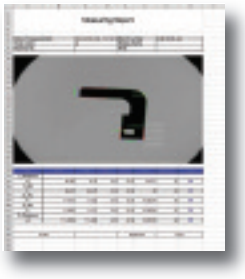
Automatic Arc Measure



Automatic Complex Feature Measure



Interrupted Feature Identification



Reporting Capabilities
- Inspection results report is automatically generated
- Measured results and viewed image can be exported to Excel or text format

ASIMETO

Vertical Profile Projector

Features:

- Used to inspect the profiles of a wide variety of parts and components
- Designed to provide an excellent quality image with accurate magnification
- The error of the contour measuring is under 0.08% deviation
- A convenient foot switch transfers the coordinate data to the data processing system
- Provides the data processing system and foot-switch, which are convenient to output and gather the data



Standard Accessories

1	Main body	1 pcs
2	Lens	1 pcs
3	Corresponding semi-reflective (Equipped with the Lens)	1 pcs
4	Spring Fixture of screen	4 pcs
5	2m Power wire	1 pcs
6	Instruction manual	1 pcs
7	Certification	1 pcs
8	Packaging list	1 pcs
9	4A/5 x 20 Fuse	5 pcs
10	24V 150W Halogen bulb	2 pcs

Description	Code No.	Price $
Vertical Profile Projector	7641010	**18,213.10**

Imaging Direction		Direct Image		
Working Table	Stage Size (mm)	340 x 152		
	Glass Table Size (mm)	196 x 96		
	X-Axis Travel(mm)	150		
	Y-Axis Travel (mm)	50		
	Z-Axis Travel (mm)	90 (for focusing)		
	Measuring Accuracy	4.0+L/25 µm L: Measuring Length (mm)		
	Resolution (X/Y-Axis)	0.001mm (1µm) or 0.0005mm (0.5µm)		
Projector Screen	Dimension	12" (Ø312mm), usable range >Ø300mm		
	Rotary Range	0º - 360º		
	Angle Resolution	1' or 0.01º		
Objective Lens	Magnification	10X Standard	20X option	50X option
	Object View (mm)	Ø30	Ø15	Ø6
	Working Distance (mm)	77.7	44.3	38.4
Data Processing System	DC-3000 multi-function data processing system: Coordinate skew, mm/inch conversion, ABS/INC conversion, Zero setting, calculation, 0º, 90º, 270º, 360º conversion, linear compensation			
Illumination	Transmission and reflected light source: 24V/150W halogen lamp			
Power	110V/220V(AC), 50/60Hz, 400W total power			
Light Source Cooling	Forced air cooling			
Dimensions	770 x 550 x 1100			
Weight	130kg			

Mitutoyo

Profile Projector - PH-A14

High Performance

- Mitutoyo's lens technology and workmanship unite to provide a bright, crisp image for error free inspection
- The PH-14's generous XY workstage travel (8x4) provides users with ample range to cover application needs
- The workstage provide high accuracy and can handle a workload of up to 100 lbs

CALL OUR ORDER DESK FOR **PACKAGE PRICING!**



Affordability

- Our customer's will benefit in acquisition savings from Mitutoyo's Global manufacturing strength and efficiency. We have brought together proven quality components and combined them to produce for our customers our new PH-14 optical comparator

Flexibility

- Mitutoyo has designed the PH-14 for your toughest in-process, shop floor, or quality room inspection needs
- A wide variety of lens, magnifications and other accessories are available to fit your every measuring need

G3 TOOLING

see Section G

DUAL CONTACT HOLDERS & CHUCKS
FOR DUAL CONTACT SPINDLES

Features:

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- Premium Balanced up to 30,000 rpm
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



Eliminates the gap between the flange and the spindle for increased rigidity



Mitutoyo

Save Time. Save Money. Save Now!

Absolute AT715 Linear Scales



- Absolute electro-magnetic induction system achieves IP67 rating to resist the harshest contamination found in machine tool environments
- Patented ABSOLUTE technology system detects and outputs an absolute position - no reference point setup needed at every power-on
- Scale position detection is not affected by electric noise such as power spike, brown out or power-off
- Water and splash-proof signal cable connector for easy installation and maintenance

KA Display Counter

- High cost performance 2 axis counter with many standard functions
- Can be used as "standard counter" or "lathe counter" by modifying parameters
- Selectable resolution

Choose from these popular sizes, or call us for many other custom size options to fit your application needs.

12" x 30" Knee Mill Package

Package contains:
- 174-183A 2 Axis KA Counter
- 539-805 12" AT715 Scale
- 539-814 30" AT715 Scale
- Y axis bracket
- X axis screw kit
- Tray with arm

Model No.	Code No.	Price $
D950-989	847-858	1,530.00

16" x 36" Knee Mill Package

Package contains:
- 174-183A 2 Axis KA Counter
- 539-807 16" AT715 Scale
- 539-816 36" AT715 Scale
- Y axis bracket
- X axis screw kit
- Tray with arm

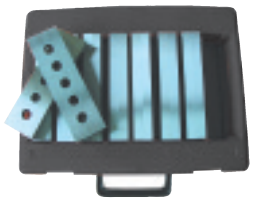
Model No.	Code No.	Price $
D950-992	847-363	1,555.00

FIVE YEAR MFG. WARRANTY

ASIMETO

Precision Parallel Set

Features
- 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	**191.60**
9 Pair 1/4"	3/4" to 1-3/4" x 1/8	±0.0002"	±0.0002"	7607090	**181.70**
10 Pair 1/8"	1/2" to1-5/8" x 1/8	±0.0002"	±0.0002"	7607100	**109.20**
10 Pair 1/32"	1/2" to1-5/8" x 1/8	±0.0002"	±0.0002"	7607101	**90.00**

STM

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	230-850	**117.10**
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	230-853	**111.00**
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	230-855	**130.80**
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	230-857	**214.80**
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	230-860	**208.20**

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"



Code No.: 230-863 **Price $: 123.30**

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

ASIMETO

Ultra Precision Wavy Parallel Set

Features
- 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	**119.00**

STM

18 Piece Wavy Parallel Set

- Consists of 9 pair ranging from 1/2 to 1-1/2" in 1/8" height increments
- Complete with fitted case
- New concept, practical and reliable for the precise vertical positioning of workpieces
- Ideal for clamping a group of flat workpieces
- Can readily be used as elastic shims
- Made of high quality spring steel, hardened, stress relieved and precision ground
- Guaranteed to size in height and parallelism ±.0002"



Description	Code No.	Price $
18 piece wavy parallel set	230-150	**144.00**

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: ±.0002" parallelism in height ±.001" to size in height



W x H x L	Hole Size	Code No.	Price $
1/8 x 1/2 x 6	13/64	230-200	**12.30**
1/8 x 5/8 x 6	1/4	230-205	**13.40**
1/8 x 3/4 x 6	5/16	230-210	**13.40**
1/8 x 7/8 x 6	5/16	230-215	**13.40**
1/8 x 1 x 6	5/16	230-220	**13.30**
1/8 x 1-1/8 x 6	3/8	230-225	**12.90**
1/8 x 1-1/4 x 6	3/8	230-230	**13.40**
1/8 x 1-3/8 x 6	7/16	230-235	**13.40**
1/8 x 1-1/2 x 6	1/2	230-240	**13.40**
1/8 x 1-5/8 x 6	1/2	230-245	**13.40**

Suburban

2-Way Steel Parallels - Matched Pairs



- Made of tool steel, hardened to Rc 58-62 and ground in matched pairs on two sides.
- Provides an economical alternative to 4-way ground parallels, when only two parallel sides required.
- Size tolerance of the ground height is ±0.001" while being held to a total of .0001" between the pieces of a matched pair.
- Total parallelism over the 6" length is 0.0001".

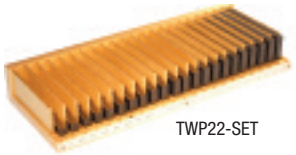
Model No.	Length	Width	Height	Weight (lb)	Code No.	Price $
TWP-001	6”	1/4	3/8	1	251-786	**111.40**
TWP-002	6”	1/4	7/16	1	251-788	**111.40**
TWP-003	6”	1/4	1/2	1	251-789	**111.40**
TWP-004	6”	1/4	9/16	1	251-790	**111.40**
TWP-005	6”	1/4	5/8	1	251-792	**111.40**
TWP-006	6”	1/4	11/16	1	251-793	**111.40**
TWP-007	6”	1/4	3/4	1	251-794	**111.40**
TWP-008	6”	1/4	13/16	1	251-795	**111.40**
TWP-009	6”	1/4	7/8	1	251-796	**111.40**
TWP-010	6”	1/4	15/16	2	251-797	**111.40**
TWP-011	6”	1/4	1”	2	251-798	**111.40**
TWP-012	6”	1/4	1-1/16	2	251-799	**111.40**
TWP-013	6”	1/4	1-1/8	2	251-800	**111.40**
TWP-014	6”	1/4	1-3/16	2	251-801	**111.40**
TWP-015	6”	1/4	1-1/4	2	251-802	**111.40**
TWP-016	6”	1/4	1-5/16	2	251-803	**111.40**
TWP-017	6”	1/4	1-3/8	2	251-804	**111.40**
TWP-018	6”	1/4	1-7/16	2	251-805	**111.40**
TWP-019	6”	1/4	1-1/2	2	251-806	**111.40**
TWP-020	6”	1/4	1-9/16	2	251-807	**111.40**
TWP-021	6”	1/4	1-5/8	2	251-808	**111.40**
TWP-022	6”	1/4	1-11/16	2	251-809	**111.40**
TWP-023	6”	1/4	1-3/4	2	251-810	**111.40**
TWP-024	6”	1/4	1-13/16	2	251-811	**111.40**
TWP-025	6”	1/4	1-7/8	2	251-812	**111.40**
TWP-026	6”	1/4	1-15/16	2	251-813	**111.40**
TWP-027	6”	1/4	2”	2	251-814	**111.40**

2-Way Steel Parallels - Sets of Matched Pairs

- Includes matched pairs 6" long x 1/4" wide in 1/16" height increments.
- Furnished in a wooden holder, marked with sizes.



TWP9-SET



TWP22-SET

Model No.	Pairs/ Set	Size Range	Weight (lb)	Code No.	Price $
TWP9-SET-A	9	3/8 through 7/8	9	251-815	**1,037.40**
TWP9-SET-B	9	15/16 through 1-7/16	13	251-816	**1,037.40**
TWP9-SET-C	9	1-1/2 through 2”	18	251-817	**1,037.40**
TWP22-SET	22	1/2 through 1-13/16	30	251-818	**2,513.50**

Suburban

4-Way Steel Parallels - Individual



- Hardened steel parallels are ground to such close tolerances on four sides that there is no need to buy matched pairs for many common uses.
- Can be used individually or matched with any other individual 4-way parallel at any time.
- Different sizes can be used together - for example a 6" x 1/2" x 1" can be used with a 8" x 3/4" x 1" on the 1" dimension.
- Held to size ±0.00025" on four sides.
- Adjacent sides within 0.0005" per square inch.
- Opposite sides parallel within 0.0001" per 6 inches.

Model No.	Length	Width	Height	Weight (lb)	Code No.	Price $
P-06025038	6”	1/4	3/8	1	251-849	**113.20**
P-06025050	6”	1/4	1/2	1	251-850	**114.90**
P-06025063	6”	1/4	5/8	1	251-851	**114.90**
P-06025075	6”	1/4	3/4	1	251-852	**121.90**
P-06025100	6”	1/4	1”	1	251-853	**127.10**
P-06038050	6”	3/8	1/2	1	251-854	**121.90**
P-06038063	6”	3/8	5/8	1	251-855	**127.10**
P-06038075	6”	3/8	3/4	1	251-856	**127.10**
P-06050063	6”	1/2	5/8	1	251-857	**148.00**
P-06050075	6”	1/2	3/4	1	251-858	**155.00**
P-06050100	6”	1/2	1”	2	251-859	**158.40**
P-08050100	8”	1/2	1”	2	251-860	**242.00**
P-08075100	8”	3/4	1”	3	251-861	**261.10**
P-08075125	8”	3/4	1-1/4	3	251-862	**276.80**
P-12075100	12”	3/4	1”	4	251-863	**184.90**
P-12100150	12”	1”	1-1/2	6	251-864	**365.60**
P-12100200	12”	1”	2”	8	251-865	**403.90**
P-12150200	12”	1-1/2	2”	11	251-866	**557.00**
P-12150300	12”	1-1/2	3”	16	251-867	**651.00**

Suburban

4-Way Steel Parallels - Matched Pairs



- Made of tool steel, hardened to Rc 58-62 and ground in matched pairs on four sides. For use where extra precision is required.
- Pairs are matched in size on the width and height to a tolerance of ±0.0002" on 6", 8" & 12" lengths and 0.0003" for longer lengths.
- Total parallelism, straightness over the full length and size tolerance between pieces of a matched pair is 0.0001" on 6" & 8" lengths, 0.0002" on 12" lengths & 0.0003" on longer lengths.
- Adjacent ground sides are square with each other within 0.0004", except the 6" x 1/4" x 3/4", 6" x 1/4" x 3/8" and 6" x 1/4" x 1/2" sizes, which are square within 0.0005".

Model No.	Length	Width	Height	Weight (lb)	Code No.	Price $
P-06025038-M	6”	1/4	3/8	1	251-822	**280.30**
P-06025050-M	6”	1/4	1/2	1	251-823	**285.50**
P-06025063-M	6”	1/4	5/8	1	251-824	**285.50**
P-06025075-M	6”	1/4	3/4	1	251-825	**299.40**
P-06038050-M	6”	3/8	1/2	1	251-826	**299.40**
P-06038075-M	6”	3/8	3/4	2	251-827	**306.40**
P-06050063-M	6”	1/2	5/8	2	251-828	**365.60**
P-06050075-M	6”	1/2	3/4	2	251-829	**381.20**
P-06050100-M	6”	1/2	1”	2	251-830	**388.20**
P-06063100-M	6”	5/8	1”	3	251-831	**403.90**
P-06075100-M	6”	3/4	1”	3	251-832	**421.30**
P-06075150-M	6”	3/4	1-1/2	5	251-833	**445.60**
P-08050100-M	8”	1/2	1”	3	251-834	**602.30**
P-08063150-M	8”	5/8	1-1/2	5	251-835	**602.30**
P-08075100-M	8”	3/4	1”	4	251-836	**597.10**
P-08075125-M	8”	3/4	1-1/4	5	251-837	**406.30**
P-08075163-M	8”	3/4	1-5/8	6	251-838	**442.90**
P-12075100-M	12”	3/4	1”	6	251-839	**774.60**
P-12100150-M	12”	1”	1-1/2	11	251-840	**910.40**
P-12100200-M	12”	1”	2”	14	251-841	**1,002.60**
P-12150200-M	12”	1-1/2	2”	21	251-842	**1,389.00**
P-12150300-M	12”	1-1/2	3”	32	251-843	**1,625.80**
P-18100200-M	18”	1”	2”	22	251-844	**1,653.60**
P-24100200-M	24”	1”	2”	29	251-845	**2,231.50**
P-36100200-M	36”	1”	2”	53	251-846	**3,589.10**

4-Way Steel Parallels - Sets of Matched Pairs



- Each set includes four pairs of parallels in the sizes shown.
- Furnished in a wooden holder marked with sizes.
- Parallel specifications same as for matched pairs of the same size.

Model No.	Pairs/ Set	Size Range	Weight (lb)	Code No.	Price $
P4W-SET-A	4	6x1/4x1/2, 6x1/4x3/4, 6x1/2x3/4, 6x1/2x1	6	251-847	**1,411.70**
P4W-SET-B	4	8x1/2x1, 8x3/4x1, 12x3/4x1, 12x1x2	30	251-848	**3,080.90**

Suburban

Tool Steel Straight Edges



- Extremely accurate reference line.
- Can be used for checking surfaces for straightness.
- Precision ground and finely finished.
- Perfect for drawing or scribing straight lines.
- Graduated & non-graduated models available.
- Straight within 0.0005" per foot.

Model No.	Length	Width	Thickness	Weight (lb)	Code No.	Price $
Graduated - Beveled Edge						
SE-24-TSBG	24”	1-13/32	11/64	3	251-718	**344.70**
SE-36-TSBG	36”	2-13/32	7/32	12	251-720	**614.50**
SE-48-TSBG	48”	2-13/32	7/32	17	251-722	**1,444.70**
Non-Graduated - Square Edge						
SE-12-TS	12”	1-13/32	11/64	2	251-724	**73.20**
SE-24-TS	24”	1-13/32	11/64	3	251-726	**120.20**
SE-36-TS	36”	2-13/32	7/32	12	251-728	**255.90**
SE-48-TS	48”	2-13/32	7/32	17	251-730	**402.10**
SE-72-TS	72”	3-5/32	9/32	36	251-732	**645.80**
Non-Graduated - Beveled Edge						
SE-12-TSB	12”	1-13/32	11/64	2	251-734	**92.30**
SE-24-TSB	24”	1-13/32	11/64	3	251-736	**215.90**
SE-36-TSB	36”	2-13/32	7/32	12	251-738	**306.40**
SE-48-TSB	48”	2-13/32	7/32	17	251-740	**503.10**
SE-72-TSB	72”	3-5/32	9/32	36	251-742	**765.90**
SE-96-TSB	96”	3-1/4	5/16	51	251-744	**1,180.20**

Stainless Steel Straight Edges



- Extremely accurate reference line.
- Can be used for checking surfaces for straightness.
- Precision ground and finely finished.
- Perfect for drawing or scribing straight lines.
- Graduated & non-graduated models available.
- Stainless steel models have hang-up hole.
- Straight within 0.0005" per foot.

Model No.	Length	Width	Thickness	Weight (lb)	Code No.	Price $
Non-Graduated - Beveled Edge						
SE-12-SSBHD	12”	1-1/2	3/16	2	251-748	**348.20**
SE-24-SSBHD	24”	2”	3/16	4	251-750	**377.80**
SE-36-SSBHD	36”	2”	1/4	12	251-752	**565.70**
SE-48-SSBHD	48”	2-1/2	1/4	18	251-754	**823.30**
SE-60-SSBHD	60”	3”	1/4	28	251-756	**1,122.70**
SE-72-SSBHD	72”	3”	1/4	34	251-758	**1,347.30**
SE-96-SSBHD	96”	3-1/4	5/16	76	251-760	**2,053.90**
Non-Graduated - Square Edge						
SE-12-SSHD	12”	1-1/2	3/16	2	251-762	**287.20**
SE-24-SSHD	24”	2”	3/16	4	251-764	**339.50**
SE-36-SSHD	36”	2”	1/4	13	251-766	**508.30**
SE-48-SSHD	48”	2-1/2	1/4	19	251-768	**738.10**
SE-60-SSHD	60”	3”	1/4	29	251-770	**1,014.80**
SE-72-SSHD	72”	3”	1/4	35	251-772	**1,213.20**
SE-96-SSHD	96”	3-1/4	5/16	78	251-774	**1,834.60**

Suburban

Cast Iron Straight Edges

- Made of stress-relieved, cast iron for maximum stability.
- Cored and ribbed for increased rigidity and reduced weight.
- Top and bottom faces are precision ground parallel and straight to within 0.0001" per 12".
- Use for setting up and leveling machinery and equipment and for checking the flatness of surfaces or scribing.
- Also can be used for positioning above and parallel to a surface.



Model No.	Length	Width	Thickness	Weight (lb)	Code No.	Price $
Non-Graduated - Square Edge						
SE-24-CI	24"	1"	2"	10	251-776	**950.40**
SE-36-CI	36"	1-1/2	3"	27	251-778	**1,380.30**
SE-48-CI	48"	1-1/2	3"	36	251-780	**1,768.50**
SE-6024-CI	60"	2"	4"	95	251-782	**2,854.60**
SE-72-CI	72"	2"	4"	110	251-784	**3,105.30**
SE-96-CI	96"	3"	8"	400	251-785	**10,018.90**

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 RC and ground to surface finish 6-10 micro inches
- Tolerances are guaranteed to .0001" for squareness per inch
- .0002" for parallelism
- Blocks are matched and measure 1" x 2" x 3"
- Price includes fitted case



Description	Code No.	Price $
2 Piece set	230-876	**43.80**

1-2-3 or 2-4-6 Blocks

- Heat treated and case hardened to HRC 55-60
- Precision ground and case hardened
- Squareness of all sides is within .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	230-870	**45.00**
2-4-6	23 Holes	230-872	**363.10**
1-2-3	No Hole (Pair)	230-874	**44.90**

Suburban

Precision Tri Blocks

- Hardened steel, ground on all six sides.
- Available as single blocks or in matched pairs, per chart below.
- B-123-H1-M has one 1/2" through hole in 2" x 3" face.
- 11-hole models have 5/16-18 tapped holes.
- 23-hole models have 3/8-16 tapped holes.
- All models, except PB123, come with fitted, wooden box.
- B-123-H11-M, B-123-H23M, B-234-H23-M & B-246-H23-M have drilled, counter-bored & tapped holes to allow screw mounting and conversion into angle plates & other precision set-ups.



Model No.	Single or Pair	Holes	Square	Flat & Parallel	Size	Weight lbs	Code No.	Price $
B-123-H11-M	Pair	11	.0001"/1"	.0002"	1" x 2" x 3" ±0.0002"	3	251-958	**247.20**
B-123-H1-M	Pair	1	.0001"/1"	.0002"	1" x 2" x 3" +0.0001"/+0.0003"	3	251-960	**193.30**
B-123-H23-M	Pair	23	.0001"/1"	.0002"	1" x 2" x 3" +0.0001"/+0.0003"	3	251-962	**301.20**
B-123-NH-M	Pair	None	.0001"/1"	.0002"	1" x 2" x 3" +0.0001"/+0.0003"	3	251-964	**165.40**
B-234-H23-M	Pair	23	.0001"/1"	.0003"	2" x 3" x 4" +0.0001"/+0.0004"	12	251-966	**677.10**
B-246-H23-M	Pair	23	.0001"/1"	.0003"	2" x 4" x 6" +0.0001"/+0.0004"	24	251-968	**1,044.40**
PB-123	Single	None	.0002" Total	.0002"	1" x 2" x 3" ±0.0001"	2	251-970	**132.30**

ASIMETO

High Precision Adjustable V-Blocks

Features:
- Precision made tool that performs all of the functions normally, requiring the use of various blocks, shims, or non-precision machinist jacks. Supports single and multiple diameter shafts, bars, etc. by quickly adjusting height.
- Wide 120 degree angle with 2-3/4" opening. Accommodates diameters from 3/16 to 5 inches
- Top faces are precision ground parallel to the base
- Position lock prevents vibration creeping.
- Total height adjustment: 9/16", 0.050" per revolution, 0.001" dial increments.
- Base dimensions: 4" W x 1-3/4" L, V opening: 2-3/4", 1-3/16" wide.
- Height: approximately 3" closed, 3-9/16" opened.

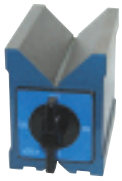


Description	Code No.	Price $
2 PCS Set	7607070	**742.30**

STM

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 .750" diameter and the larger for workpieces up to 2.500" diameter
- Sold Individually



Description	Code No.	Price $
Magnetic vee blocks	225-710	**145.70**

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	231-084	**383.50**
4	3	3-3/4	Pair	MVB/4P	231-086	**766.70**
3-3/16	2-3/8	3-3/4	Single	MVB/5S	231-088	**296.40**
3-3/16	2-3/8	3-3/4	Pair	MVB/5P	231-090	**592.50**

ASIMETO

Ball Bearing V-Blocks

Features:
- Ideal for use where inspection set-ups are not possible using plain V-Blocks. This unique product allows you to inspect and detect out of round conditions, defects, and lobes without damage to parts or blocks.
- Accuracy of ball sphericity: 0.000025" on small and medium sets 0.00005" on large set
- Balls finished to .2 micro inches, hardened to 62 RC.
- Overall accuracy of matched pairs: ±5 microns
- Case iron base and housing are heat stabilized and seasoned
- Sold in pairs with clamps and test ball
- Base dimensions: Small Pair: 2-3/16" square x 1-1/16" O/A height Medium Pair: 3-3/8" square x 1-5/8" O/A height Large Pair: 4-3/4" square x 2-1/2" O/A height



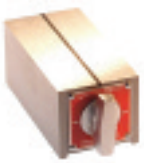
Description	Cap. Range	Ball Dia.	Wt. Cap. Lbs.	Code No.	Price $
Small Pair	3/64" - 2-1/4"	1/2"	220	7607210	**504.80**
Medium Pair	3/32" - 5"	15/16"	1100	7607220	**742.30**
Large Pair	3/16" - 15"	1-1/2"	2000	7607230	**1,484.50**

Suburban

Suburban Magnetic Toolmaker's Chucks

- All models precision ground flat, square and parallel to an overall accuracy of 0.0005".
- Top, bottom and end magnetize simultaneously.
- Model MTC-VB has "V" capacity of 2-3/4" dia.
- Model MTC-LFP has 3/16" x 1/16" fine pole construction for holding small or thin parts; and removable side and end rails.


MTC-S


MTC-L


MTC-LFP


MTC-VB

Model No.	Length (in.)	Width (in.)	Height (in.)	Weight (lb)	Code No.	Price $
MTC-S	5"	2"	2"	6	251-868	**771.10**
MTC-L	5-1/2	2-3/4	2-1/2	11	251-869	**922.60**
MTC-LFP	5-1/2	2-3/4	3"	12	251-870	**1,002.60**
MTC-VB	5-1/2	2-3/4	3-5/8	13	251-871	**1,002.60**
MTC-VB-M**	5-1/2	2-3/4	3-5/8	26	251-872	**2,306.30**

** Matched pair of MTC-VB

V-Block & Clamp - Versatile

The "Versatile" Vee block is made from finely selected tool steel fully hardened to 55-60 HRC. Comes complete with a reversible swing away style clamp that clamps against almost any shape of product. Each unit comes complete with the basic block, reversible clamp and 2 clamp screws.



Block Length (in.)	Block Width (in.)	Block Height (in.)	Type	Model No.	Code No.	Price $
2-1/2	2-1/2	2	Single	VB/SP/V-63S	231-092	**124.40**
2-1/2	2-1/2	2	Pair	VB/SP/V-63P	231-094	**256.90**

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	231-072	**85.90**
2	1-1/2	1-1/2	Regular	VB/SP/T-35	231-074	**103.00**
2-3/4	1-3/4	1-5/8	Regular	VB/SP/T-70	231-076	**145.70**
2-3/4	2-1/2	1-3/4	Non-Protruding	VB/SP/R/T-70	231-078	**196.30**
4-7/8	3-1/2	2-3/4	Non-Protruding	VB/SP/R/T-125	231-080	**522.90**

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 .0002"

90° V-Block Dimensions			Dia. To Be Inspected or Scribed			
Length	Width	Height	Min.	Max.	Code No.	Price $
1-3/8	1-3/8	1-3/16	1/8	19/32	230-130	**89.90**
2-3/8	2-3/8	2	13/64	1-3/16	230-135	**194.70**
4-1/8	4-1/8	3-1/16	9/32	2-9/16	230-140	**301.50**

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

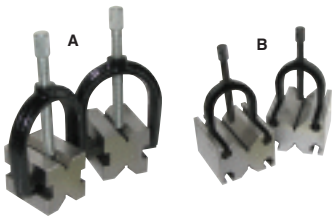


Block Length (in.)	Block Height 9in.)	Block Width (in.)	Model No.	Code No.	Price $
3-19/32	1-7/8	1-7/8	VB/S-48	231-082	**128.50**

V-Blocks & Clamps

All sides are ground square and parallel to each other. Sturdy enough to be used in machining operations.

- Matched accuracy .0002"
- Accurate enough to be used in layouts and surface plate work
- 90° vees are ground central, parallel and square with the ends
- Sold in matched pairs
- Clamps included



Capacity	Dimensions (H x W x L)	Type	Code No.	Price $
1	1-3/8 x 1-5/8 x 1-3/4	A	230-105	**117.20**
1-1/4	1-5/8 x 1-3/4 x 2-3/4	B	230-110	**96.30**
2-1/8	2-3/4 x 3-1/2 x 4-7/8	B	230-120	**395.00**

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 .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



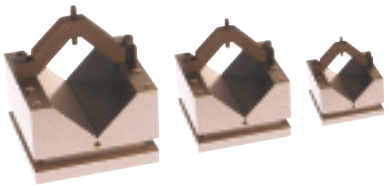
Cap.	Dimensions (W x H x L)	Type	Code No.	Price $	Clamp Code No.	Price $
1-1/2	1-3/4 x 2-1/2 x 2-3/4	A	205-115	**491.80**	-	-
2-1/8	2-3/4 x 3-1/2 x 4-7/8	A	205-120	**1,220.80**	205-140	**105.50**
1	1-3/8 x 1-5/8 x 1-3/4	B	205-105	**188.20**	205-125	**25.60**
1-1/2	1-5/8 x 1-3/4 x 2-3/4	B	205-110	**121.90**	205-130	**39.70**

Suburban

Suburban V-Blocks

Each block comes with one clamp and blocks are available in matched pairs. All models are made of hardened steel. Sizes other than those priced are available by special order.

- M = Matched pairs



Model No.	Dimensions	Parallel, Square& Central	Capacity	Code No.	Price $
90° Vee Blocks					
VB-222	2-1/2 x 2-1/2 x 2	0.0002"	1-3/8	251-232	**301.20**
VB-222-M	2-1/2 x 2-1/2 x 2	0.0002"	1-3/8	251-234	**708.50**
VB-334	4 x 3 x 3	0.0002"	2-1/4	251-236	**414.30**
VB-334-M	4 x 3 x 3	0.0002"	2-1/4	251-238	**962.60**
VB-466	4 x 6 x 6	0.0003"	4-3/8	251-244	**1,089.70**
VB-466-M	4 x 6 x 6	0.0003"	4-3/8	251-246	**2,537.80**
VB-666	6 x 6 x 6	0.0005"	4-3/8	251-256	**1,594.40**
VB-666-M	6 x 6 x 6	0.0005"	4-3/8	251-258	**3,831.10**
60° Vee Blocks					
VB-602	2-1/2 x 2-1/2 x 2	0.0002"	1-3/8	251-248	**525.70**
VB-602-M	2-1/2 x 2-1/2 x 2	0.0002"	1-3/8	251-250	**1,439.50**
VB-604	4 x 3 x 3	0.0002"	2-1/4	251-252	**764.20**
VB-604-M	4 x 3 x 3	0.0002"	2-1/4	251-254	**1,946.00**

ASIMETO

Microscope XC-100L

Features:
- Sharp stereo erect image over a wide field of view. It is suitable for spot examination for the machining industry, paper making, print, and textile, etc.
- Features small size, light weight, nice design and easy operation
- Working Distance: 7mm
- Pen illumination



Standard Accessories
- Eyepiece, Lamp, Instruction Manual

Graduation	Magnification	Field Of View	Objective	Code No.	Price $
0.01mm	100X	1.6mm	10X	7642010	**287.70**

Microscope MS-2

Features:
- Sharp stereo erect image over a wide field of view
- Rotatable objective, 45º inclined and 360º rotatable



Standard Accessories
- Eyepiece, Glass Stage, Instruction Manual

Magnification	Field Of View	Working Distance	Objective	Code No.	Price $
20X	8.5mm	80mm	2X	7642011	**193.90**

Sine Bar Riser Kit



Sine Bar:
- 5" length, 1" body size.
- Hardened and ground steel.
- Top parallel to bottom of rolls within 0.0002".

Riser:
- 18 risers: 1/2, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 1/4T and 1/2T.
- Within 0.0001" of exact constants.
- Note: Risers to be used individually, not to be stacked. 1/4T and 1/2T are to obtain angle of 1/4" and 1/2" taper per foot respectively.

Description	Code No.	Price $
Sine Bar Riser Kit	7605730	**311.30**

Engineers Black Book - Imperial Edition

Easy to use **Pocket Book** contains a wealth of up to date, useful, practical and hard to find information.

- Tables
- Grind Wheels
- Bolts & Nuts
- Tapers
- Tapping Drill Sizes
- Tolerances
- Spur Gear Calculations
- Hardening and Tempering
- Sharpening Information
- Illustrations
- Lubricants-Coolants
- Plastics
- Standards
- Conversion Factors
- Formulae
- Keys and Keyways
- Speeds and Feeds
- G Codes
- Engineering Drawing Standards
- Geometrical Construction
- Tungsten Carbide
- Equivalent Charts
- Weights of Metals

- **Free Drill point sharpening gauge with every book**



Description	Code No.	Price $
Engineers Black Book Imperial version	180-155	**67.80**

Fastener Black Book

- Inch
- ISO & DIN Specifications
- Fastener Platings & Finishes
- Pre-Loads & Tightening Torques
- Thread Terminology & Classifications
- Standard Grades, Tolerances & Markings
- Thread Forms, Heads, Points, Materials and Coatings

Includes a Free Thread Gauge!



Description	Code No.	Price $
Fastener Black Book Metric	180-156	**67.30**

Pocket Reference Book - 4th Edition

Information for do-it-yourselfers, engineers, craftsmen, students, teachers, managers, maintenance & industrial personnel, and travelers. The ultimate reference and problem solver. The uses for this book are endless! 864 pages of valuable information in an easy to use pocket reference book. 3.2" x 5.4" x 0.8"

- Automotive
- Steels & Metals
- Electrical
- Tools
- Weights & Properties of materials
- Geology
- Math
- Welding
- Conversion tables
- and much more



Description	Code No.	Price $
Pocket Reference Book	180-175	**22.90**

The Machinery's Handbook Latest Edition



Celebrating nearly 100 years as "The Bible of the Mechanical Industries", the latest edition brings together volumes of knowledge, information and data gathered, revised and improved upon from experts throughout the mechanical industries. Extraordinarily comprehensive yet easy to use since it premiered, Machinery's Handbook provides mechanical and manufacturing engineers, designers, draftsmen, toolmakers, and machinists with a broad range of material, from the very basic to the more advanced. It has always, and continues to provide industry fundamentals and standards while it moves into the 21st century with material reflecting technological advances and offering vast editorial improvements, making this latest edition the best tool…ever!

Offering interactive math, the new latest edition CD continues to combine the complete contents of the Handbook with the power, versatility, and convenience of Adobe PDF. These compact files can be viewed, navigated, and printed exactly as they appear by anyone with Adobe Acrobat Reader, which is included free on this disk. Now more than ever the CD combined with print edition is the most powerful tool you'll need to easily and effectively perform your job!

Also Available:
Machinery's Handbook Latest Edition CD-ROM

Combines the complete contents of the latest edition of Machinery's Handbook with the power, versatility, and convenience of Adobe® Portable Document Format (PDF).

Description	Code No.	Price $
Machinery Handbook	180-105	**174.10**
Large Print Version	180-115	**210.90**
CD ROM Version	180-120	**184.10**
Machinery Handbook Guide	180-110	**28.50**

ASIMETO

5pc Precision Tool Kit

- 6" x .0005" Sylvac Digital Caliper
- .03" x .0005" Dial Test Indicator
- 1" x .001" AGD2 Dial Indicator
- 0-1" x .0001" Outside Micrometer
- Articulating Arm Magnetic Base



Description	Code No.	Price $
5pc Precision Tool Kit	7960161	**877.30**

ASIMETO

8pc Ultimate Metrology Kit

- 6" X .001" Aluminum Dial Caliper
- 6" x .0005" Absolute Digital Caliper
- 0-1" x .001" Outside Micrometer
- 0-1" x .00005" IP65 Digital Micrometer
- 1/2" x .001" AGD2 Dial Indicator
- 1/2" x .0005" Digital Indicator
- .03" x .005" Dial Test Indicator
- Articulating Arm Magnetic Base



Description	Code No.	Price $
Ultimate Metrology Kit	7285086	**1,695.70**

STM

STM Precision Tool Kit



Description	Code No.	Price $
Includes 1 each of the following: • 200-578 (0-3" .0001" outside micrometer set) • 125-383 (#3 centre drill) • 125-384 (#4 centre drill) • 180-155 (Engineers Black Book)(imperial) • 606-322 (1/2 dia. (.200) tip edge finder) • 200-870 (thread measuring set) • 225-410 (#650-60 centre gauge) • 225-315 (4-84 screw pitch gauge) • 231-268 (rectangular protractor) • 205-875 (5" x 3" bevel edge square) • 231-254 (carbide tipped scriber) • 200-720 (1" travel .001" dial indicator) • 200-645 (6" digital caliper) • 225-001 (BA-1 magnetic base) • 896-919 (6" pocket rule with Sowa logo) • 890-086 (inch/metric hex key set)	500-028	**434.20**

ASIMETO

"Digital Basic" Kit

- 6" x .0005" Digital Caliper
- 0-1" x .00005" Digital Outside Mic



Description	Code No.	Price $
"Basic Digital" Kit	7960051	**335.50**

"Digital Plus" Kit

- 6" x .0005" Digital Caliper
- 0-1" x .00005" Digital Outside Mic
- 0-8" x .0005" Digital Depth Caliper



Description	Code No.	Price $
"Digital Plus" Kit	7960031	**616.40**

"Analog Basic" Kit

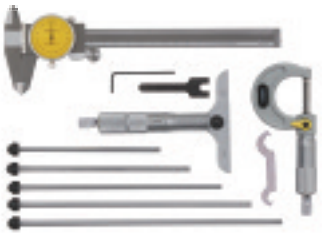
- 6" x .001" Dial Caliper
- 0-1" x .0001" Outside Micrometer



Description	Code No.	Price $
"Basic Analog" Kit	7960011	**184.00**

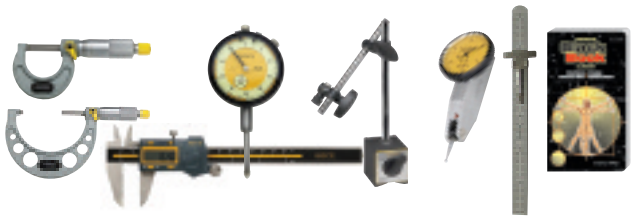
"Analog Plus" Kit

- 6" x .001" Dial Caliper
- 0-1" x .0001" Outside Micrometer
- 0-6" x .001" Depth Micrometer



Description	Code No.	Price $
"Analog Plus" Kit	7960021	**493.90**

Asimeto Precision Tools Kit #1



Description	Code No.	Price $
Includes 1 each of the following: • 7101013 (0-1" micrometer .0001") • 7101023 (1-2" micrometer .0001") • 7307065 (6" digital caliper) • 7402261 (0-1" dial indicator .001") • 7601011 (magnetic base) • 7501733 (.0005" x .030" dial test indicator) • 606-180 (6" pocket rule) • 180-155 (Engineers Black Book)(Imperial)	500-122	**545.60**

Asimeto Precision Tools Kit #2



Description	Code No.	Price $
Includes 1 each of the following: • 7101637 (0-3" .0001" outside micrometer set) • 7307065 (6" digital caliper) • 7402261 (0-1" dial indicator .001") • 7601011 (magnetic base) • 7501733 (.0005" x .030" dial test indicator) • 896-919 (6" pocket rule with Sowa logo) • 180-155 (Engineers Black Book)(Imperial)	500-128	**629.10**

ASIMETO

Asimeto Precision Tools Kit #3



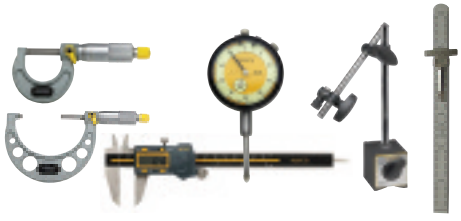
Description	Code No.	Price $
Includes 1 each of the following: • 7101647 (0-4" .0001" micrometer set) • 7307065 (6" digital caliper) • 7402261 (0-1" dial indicator .001") • 7601011 (magnetic base) • 7501733 (.0005" x .03" horizontal dial test indicator) • 896-919 (6" pocket rule with Sowa logo) • 180-155 (Engineers Black Book)(Imperial)	500-138	**715.00**

Asimeto Precision Tools Kit #4



Description	Code No.	Price $
Includes 1 each of the following: • 7101667 (0-6" .0001" micrometer set) • 7307065 (6" digital caliper) • 7402261 (0-1" dial indicator .001") • 7601011 (magnetic base) • 7501783 (.0001" x .008" dial test indicator) • 606-180 (6" pocket rule) • 180-155 (Engineers Black Book)(Imperial)	500-152	**970.60**

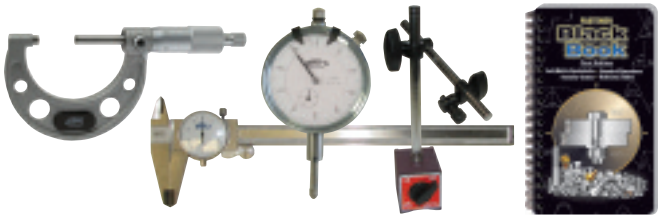
Asimeto Precision Tools Kit #5



Description	Code No.	Price $
Includes 1 each of the following: • 7101013 (0-1" micrometer .0001") • 7101023 (1-2" micrometer .0001") • 7307085 (8"/200mm digital caliper) • 7402261 (0-1" dial indicator .001") • 7601011 (magnetic base) • 606-180 (6" pocket rule)	500-155	**412.30**

STM

Toolmakers Kit



Description	Code No.	Price $
Includes 1 each of the following: • 200-582 (6" .001" dial caliper) • 200-570 (0-1" .0001" outside micrometer) • 200-720 (1" travel .001" dial indicator) • 225-001 (BA-1 magnetic base) • 180-156 (Fastener Black Book)	500-193	**199.90**

STM

Water Resistant Dial Indicator & Mag Base Combo



Description	Code No.	Price $
Includes 1 each of the following: • 225-700 (STM fine adjustment magnetic base) • 200-075 (0-.4" .0005" water resistant dial indicator)	500-006	**61.10**

ASIMETO

Asimeto Indicator/Mag Base Kit #1



Description	Code No.	Price $
Includes 1 each of the following: • 7602021 (Type II triple jointed magnetic base) • 7401061 (0-.25" .001" AGD1 dial indicator)	500-216	**171.90**

Asimeto Indicator/Mag Base Kit #2



Description	Code No.	Price $
Includes 1 each of the following: • 7602031 (Type III triple jointed magnetic base) • 7402261 (0-1" .001" AGD2 dial indicator)	500-730	**178.50**

Dial/Digit Height Gauge Combos



Description	Code No.	Price $
12" Dial/Digit Height Gauge Combo Includes 1 each of the following: • 7623121 (0-12" .001" dial/digit height gauge) • 7501733 (Asimeto .0005" x .03" dial test indicator) • Holding bar & clamp	500-147	**657.10**
18" Dial/Digit Height Gauge Combo Includes 1 each of the following: • 7623181 (0-18" .001" dial/digit height gauge) • 7501733 (Asimeto .0005" x .03" dial test indicator) • Holding bar & clamp	500-148	**875.00**
24" Dial/Digit Height Gauge Combo Includes 1 each of the following: • 7623241 (0-24" .001" dial/digit height gauge) • 7501733 (Asimeto .0005" x .03" dial test indicator) • Holding bar & clamp	500-149	**940.50**

ASIMETO

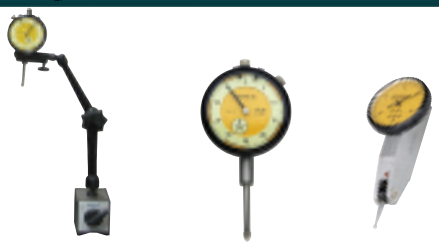
NOGA

Noga MA61003 Mag Base Kits



Description	Code No.	Price $
MA61003 Mag Base/Dial Indicator Kit Includes 1 each of the following: • 165-425 (Noga mag base MA61003, 25" reach) • 7402261 (Asimeto 0-1" dial indicator .001")	500-116	**604.50**
MA61003 Mag Base/Test Indicator Kit Includes 1 each of the following: • 165-425 (Noga mag base MA61003, 25" reach) • 7501733 (Asimeto .0005" x .03" dial test indicator)	500-132	**665.90**

Noga DG1003 Mag Base Kits



Description	Code No.	Price $
DG1003 Mag Base/Dial Indicator Kit Includes 1 each of the following: • 165-350 (Noga mag base DG1003, 11" reach) • 7402261 (Asimeto 0-1" dial indicator .001")	500-114	**302.40**
DG1003 Mag Base/Test Indicator Kit Includes 1 each of the following: • 165-350 (Noga mag base DG1003, 11" reach) • 7501733 (Asimeto .0005" x .03" dial test indicator)	500-124	**343.60**

Digital Height Gauge Combos



Description	Code No.	Price $
12"/300mm Digital Height Gauge Combo Includes 1 each of the following: • 7625120 (0-12"/300mm digital height gauge) • 7501733 (Asimeto .0005" x .03" dial test indicator) • Holding bar & clamp	500-150	**737.90**
24"/600mm Digital Height Gauge Combo Includes 1 each of the following: • 7625240 (0-24"/600mm digital height gauge) • 7501733 (Asimeto .0005" x .03" dial test indicator) • Holding bar & clamp	500-151	**1,054.50**

8" Dial Caliper & Deburring Set Combo



Description	Code No.	Price $
Includes 1 each of the following: • 7303081 (8" .001" Asimeto dial caliper) • 165-478 (NG8050 Noga Economy Set: Noga Grip handle & 20pcs N1 (B10) blades)	500-184	**124.60**

8" STM Dial Caliper & Engineers Black Book Combo



Description	Code No.	Price $
Includes 1 each of the following: • 200-584 (8" .001" STM dial caliper) • 180-155 (Engineers Black Book)(imperial)	500-135	**111.50**

0-3" Mic Set & Deburring Set Combo



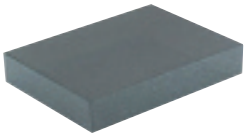


Description	Code No.	Price $
Includes 1 each of the following: • 7101637 (0-3" .0001" Asimeto outside micrometer set) • 165-464 (NG8150 Noga Promo E Set: Noga Grip handle & 10pcs S10 (E100) blades)	500-185	**134.90**

24" Height Gauge & Surface Plate Combo



- 0-24"/600mm
- Resolution: .0005"/0.01mm
- Fine adjustment

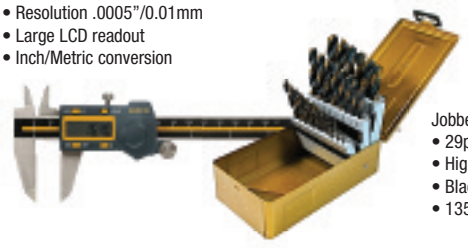


- 24" x 36" x 4" No Ledge
- Grade B - Tool Room
- Made of highest quality black granite
- 475 lbs

Description	Code No.	Price $
Includes 1 each of the following: • 24" Digital Height Gauge (7625240) • 24" x 36" x 4" Grade B Surface Plate (255-115)	500-729	**1,242.20**

8" Digital Caliper & 29pc Gold & Black Drill Set Combo

Digital Caliper 7307081
- 0-8"/0-200mm
- Resolution .0005"/0.01mm
- Large LCD readout
- Inch/Metric conversion



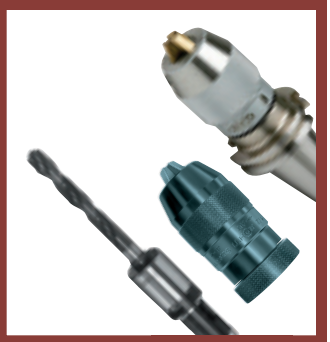
Jobber Drill Set 105-380
- 29pc 1/16" - 1/2" by 64ths
- High Speed Steel
- Black & Gold
- 135º split point

Description	Code No.	Price $
Includes 1 each of the following: • 0-8"/0-200mm Digital Caliper (7307081) • 29pc 1/16" - 1/2" by 64ths Drill Set (105-380)	500-254	**173.20**













ROTARY TOOLING

End Mill Holder Index	G3
End Mill Holders	G4
Shell Mill Holders & Milling Arbors Index	G13
Shell Mill Holders	G14
Milling Arbors	G18,19
Collet Chucks & Collets Index	G21
Collet Chucks & Collets	G22
Shrink Fit Tooling Index	G49
Shrink Fit Tooling	G50
Right Angle Heads & Spindle Speeders Index	G55
Right Angle Heads	G56
Spindle Speeders	G70
Tapping Chuck & Collets Index	G75
Tapping Chucks	G76
Tap Collets, Reducers & Sets	G79
Synchrolize Tapping System	G80
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Narex Boring & Facing Heads	G107
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Draw Bar for Bridgeport Machine	G114
Tool Locks	G115
Spindle Taper Wipers	G115
Pull Studs Cross-Reference Chart	G116

SOWA
METALWORKING SOLUTIONS

www.sowatool.com

ABOUT GS HOLDERS

100% Forged Construction
Balanced up to 30,000 r.p.m. Certified
DIN Coolant Thru The Flange - Standard

Best Added Value On Standard Holders In The Market!!

• 100% Forged Construction (Competitors - turned down bar stock)

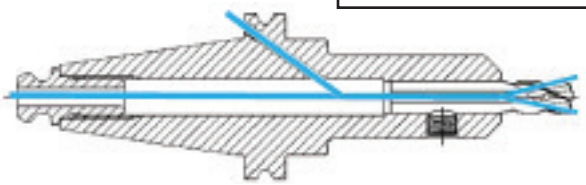





Note: You can see the compression of the steel core of the tool holder during the forging process
= Strongest holder on the market
• Traverse ground throughout



2 Coolant Options Standard



• DIN Coolant through the flange option standard (Most competitors Standard Holders do not offer this - you need to order this as a special feature which is more expensive than GS standard holders)
• AT3 or better taper accuracy
• Material: Low Carbon Chromium-Molybdenum Alloy Steel - SCM415 hardened to HRC 58-60
• Maximum TIR 0.0002" O.D. to I.D.
• Each holder balanced with Haimer machine
• Each holder comes with a certificate on inspection lab report

End Mill Holders Taper/RPM
• BT30 End Mill Holders balanced to 20,000 rpm
• CAT/BT40 & HSK63 End Mill Holders Balanced to 30,000 rpm - (Competitors - 15,000 to 25,000 rpm)
• CAT/BT50 & HSK100 End Mill Holders balanced to 25,000 rpm

Shrink Fit Holders (Balanceable) -RPM
• BT30 balanced to 20,000 rpm
• CAT/BT40 & HSK63 balanced to 30,000 rpm
• CAT50 & HSK100 balanced to 25,000 rpm

Collet Chucks Taper/RPM
• Balanced with Nut on Chuck
• ER Chucks 30-20,000, 40-30,000, 50-25,000
• SA Collet Chucks 30/40-20,000, 50-15,000
• TG Single Angle Collet Chucks 30/40-20,000, 50-15,000
• DA Collet Chucks 30/40-20,000, 50-15,000

END MILL HOLDERS

CAT40 End Mill Holders	G4
CAT40 Dual Contact End Mill Holders	G4
CAT40 Direct Coolant End Mill Holders	G5
CAT50 End Mill Holders	G5
CAT50 Direct Coolant End Mill Holders	G6
CAT50 Dual Contact End Mill Holders	G6
CAT50 Aerospace 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	G9
BT50 Direct Coolant End Mill Holders	G9
HSK63A End Mill Holders	G9
HSK63A Direct Coolant End Mill Holders	G9
HSK100A End Mill Holders	G10
HSK100A Direct Coolant End Mill Holders	G10
NMTB30 & NMTB40 End Mill Holders	G10
NMTB50 End Mill Holders	G11
R8 End Mill Holders	G11
Straight Shank End Mill Holders	G11
Morse Taper End Mill Holders	G11
Blank Bars	G11
Replacement Set Screws	G12
HSK Coolant Tubes & Coolant Tube Wrenches	G12
Replacement O-Rings For Direct Coolant Holders	G12



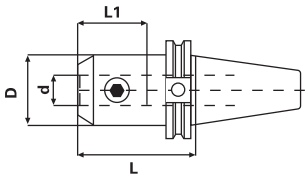
CAT40 End Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



CAT 40 Premium Balanced 30x RPM

Complete with certificate



Set Screw pg G12

Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/8"	1.35"*	0.63"	0.75"	8-32	531-069	**176.90**
CT40	1/8"	2.50"	0.63"	0.75"	8-32	531-070	**185.90**
CT40	1/8"	4.00"	0.63"	0.75"	8-32	531-071	**194.80**
CT40	3/16"	1.38"*	0.63"	0.75"	10-32	531-072	**166.30**
CT40	3/16"	2.50"	0.86"	0.75"	10-32	531-073	**174.50**
CT40	3/16"	4.00"	0.86"	0.75"	10-32	531-074	**183.50**
CT40	1/4"	1.38"*	1.18"	0.79"	1/4-28	531-000	**141.30**
CT40	1/4"	2.50"	1.10"	0.79"	1/4-28	531-002	**148.30**
CT40	1/4"	4.00"	1.10"	0.79"	1/4-28	531-004	**155.50**
CT40	1/4"	9.00"	1.10"	0.79"	1/4-28	531-005	**319.80**
CT40	5/16"	1.38"*	1.34"	0.87"	5/16-24	531-006	**141.30**
CT40	5/16"	2.50"	1.26"	0.87"	5/16-24	531-008	**148.30**
CT40	5/16"	4.00"	1.26"	0.87"	5/16-24	531-010	**155.50**
CT40	5/16"	9.00"	1.26"	0.87"	5/16-24	531-011	**296.20**
CT40	3/8"	1.38"*	1.34"	1.00"	3/8-24	531-012	**141.30**
CT40	3/8"	2.50"	1.26"	1.00"	3/8-24	531-014	**148.30**
CT40	3/8"	4.00"	1.26"	1.00"	3/8-24	531-016	**155.50**
CT40	3/8"	5.00"	1.26"	1.00"	3/8-24	531-018	**169.00**
CT40	3/8"	9.00"	1.26"	1.00"	3/8-24	531-031	**296.90**
CT40	7/16"	2.50"	1.50"	1.38"	7/16-20	531-020	**153.60**
CT40	7/16"	4.00"	1.50"	1.38"	7/16-20	531-022	**155.50**
CT40	7/16"	9.00"	1.50"	1.38"	7/16-20	531-033	**296.20**
CT40	1/2"	1.75"*	1.50"	1.38"	7/16-20	531-024	**141.30**
CT40	1/2"	2.50"	1.50"	1.38"	7/16-20	531-026	**148.30**
CT40	1/2"	4.00"	1.50"	1.38"	7/16-20	531-028	**155.50**
CT40	1/2"	5.00"	1.50"	1.38"	7/16-20	531-030	**175.70**
CT40	1/2"	9.00"	1.50"	1.38"	7/16-20	531-035	**296.90**
CT40	5/8"	1.75"*	1.61"	1.65"	9/16-18	531-032	**141.30**
CT40	5/8"	3.00"	1.61"	1.65"	9/16-18	531-034	**148.30**
CT40	5/8"	4.00"	1.61"	1.65"	9/16-18	531-036	**155.50**
CT40	5/8"	5.50"	1.61"	1.65"	9/16-18	531-038	**169.00**
CT40	5/8"	9.00"	1.61"	1.65"	9/16-18	531-037	**296.20**
CT40	3/4"	1.75"*	1.77"	1.89"	5/8-18	531-040	**141.30**
CT40	3/4"	3.00"	1.77"	1.75"	5/8-18	531-042	**148.30**
CT40	3/4"	4.00"	1.77"	1.75"	5/8-18	531-044	**155.50**
CT40	3/4"	5.50"	1.77"	1.75"	5/8-18	531-046	**169.00**
CT40	3/4"	9.00"	1.77"	1.75"	5/8-18	531-039	**296.90**
CT40	7/8"	1.75"*	2.08"	1.94"	5/8-18	531-048	**141.30**
CT40	7/8"	3.50"	2.08"	2.00"	5/8-18	531-050	**148.30**
CT40	7/8"	6.00"	2.08"	2.00"	5/8-18	531-052	**144.90**
CT40	7/8"	9.00"	2.08"	2.00"	5/8-18	531-041	**297.50**
CT40	1"	2.00"*	2.36"	2.25"	3/4-16	531-054	**141.30**
CT40	1"	4.00"	2.36"	2.36"	3/4-16	531-056	**155.50**
CT40	1"	6.00"	2.36"	2.36"	3/4-16	531-058	**177.30**
CT40	1"	9.00"	2.36"	2.36"	3/4-16	531-043	**390.80**
CT40	1-1/4"	2.00"*	2.28"	2.25"	3/4-16	531-060•	**141.30**
CT40	1-1/4"	4.00"	2.55"	2.48"	3/4-16	531-062	**155.50**
CT40	1-1/4"	6.00"	2.55"	2.48"	3/4-16	531-064	**177.30**
CT40	1-1/2"	4.50"	2.55"	2.99"	3/4-16	531-066	**178.40**
CT40	1-1/2"	6.00"	2.83"	2.99"	3/4-16	531-068	**192.50**

* Stubby Length

• Not DIN Coolant

CAT40 DUAL CONTACT End Mill Holders

New

FOR DUAL CONTACT SPINDLES

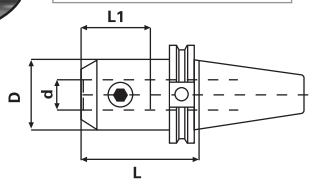
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



CAT 40 Premium Balanced 30x RPM



Complete with certificate



Set Screw pg G12

Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT40	1/2"	2.50"	1.50"	1.38"	7/16-20	521-026	**207.70**
CT40	1/2"	4.00"	1.50"	1.38"	7/16-20	521-028	**217.70**
CT40	1/2"	5.00"	1.50"	1.38"	7/16-20	521-030	**245.80**
CT40	5/8"	3.00"	1.61"	1.65"	9/16-18	521-034	**207.70**
CT40	5/8"	4.00"	1.61"	1.65"	9/16-18	521-036	**217.70**
CT40	5/8"	5.50"	1.61"	1.65"	9/16-18	521-038	**236.70**
CT40	3/4"	3.00"	1.77"	1.75"	5/8-18	521-042	**207.70**
CT40	3/4"	4.00"	1.77"	1.75"	5/8-18	521-044	**217.70**
CT40	3/4"	5.50"	1.77"	1.75"	5/8-18	521-046	**236.70**
CT40	1"	2.00"	2.36"	2.36"	3/4-16	521-054	**197.90**
CT40	1"	4.00"	2.36"	2.36"	3/4-16	521-056	**217.70**
CT40	1"	6.00"	2.36"	2.36"	3/4-16	521-058	**248.10**
CT40	1-1/4"	2.00"*	2.28"	2.25"	3/4-16	521-060•	**197.90**
CT40	1-1/4"	4.00"	2.55"	2.48"	3/4-16	521-062	**217.70**
CT40	1-1/4"	6.00"	2.55"	2.48"	3/4-16	521-064	**248.10**
CT40	1-1/2"	4.50"	2.55"	2.99"	3/4-16	521-066	**249.50**

* Stubby Length

• Not DIN Coolant

CAT40 DIRECT COOLANT End Mill Holders

New

NOW 3 COOLANT OPTIONS ALL IN ONE!

- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- All Ground Body
- 100% Forged Construction

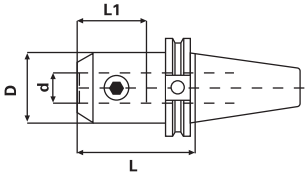


CAT 40 Premium Balanced 30x RPM



Set Screw pg G12 | Pull Stud pg G116 | O-Ring pg G12

Complete with certificate



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	522-014	**169.60**
CT40	1/4"	2.50"	1.10"	0.79"	1/4-28	522-016	**178.00**
CT40	1/4"	4.00"	1.10"	0.79"	1/4-28	522-018	**186.60**
CT40	1/4"	9.00"	1.10"	0.79"	1/4-28	522-020	**383.60**
CT40	5/16"	1.38"*	1.34"	0.87"	5/16-24	522-022	**169.60**
CT40	5/16"	2.50"	1.26"	0.87"	5/16-24	522-024	**178.00**
CT40	5/16"	4.00"	1.26"	0.87"	5/16-24	522-026	**186.60**
CT40	5/16"	9.00"	1.26"	0.87"	5/16-24	522-028	**355.30**
CT40	3/8"	1.38"*	1.34"	1.00"	3/8-24	522-030	**169.60**
CT40	3/8"	2.50"	1.26"	1.00"	3/8-24	522-032	**178.00**
CT40	3/8"	4.00"	1.26"	1.00"	3/8-24	522-034	**186.60**
CT40	3/8"	5.00"	1.26"	1.00"	3/8-24	522-036	**202.80**
CT40	3/8"	9.00"	1.26"	1.00"	3/8-24	522-038	**356.20**
CT40	7/16"	2.50"	1.50"	1.38"	7/16-20	522-040	**184.10**
CT40	7/16"	4.00"	1.50"	1.38"	7/16-20	522-042	**186.60**
CT40	7/16"	9.00"	1.50"	1.38"	7/16-20	522-044	**355.30**
CT40	1/2"	1.75"*	1.50"	1.38"	7/16-20	522-046	**169.60**
CT40	1/2"	2.50"	1.50"	1.38"	7/16-20	522-048	**178.00**
CT40	1/2"	4.00"	1.50"	1.38"	7/16-20	522-050	**186.60**
CT40	1/2"	5.00"	1.50"	1.38"	7/16-20	522-052	**210.70**
CT40	1/2"	9.00"	1.50"	1.38"	7/16-20	522-054	**356.20**
CT40	5/8"	1.75"*	1.61"	1.65"	9/16-18	522-056	**169.60**
CT40	5/8"	3.00"	1.61"	1.65"	9/16-18	522-058	**178.00**
CT40	5/8"	4.00"	1.61"	1.65"	9/16-18	522-060	**186.60**
CT40	5/8"	5.50"	1.61"	1.65"	9/16-18	522-062	**202.80**
CT40	5/8"	9.00"	1.61"	1.65"	9/16-18	522-064	**355.30**
CT40	3/4"	1.75"*	1.77"	1.89"	5/8-18	522-066	**169.60**
CT40	3/4"	3.00"	1.77"	1.75"	5/8-18	522-068	**178.00**
CT40	3/4"	4.00"	1.77"	1.75"	5/8-18	522-070	**186.60**
CT40	3/4"	5.50"	1.77"	1.75"	5/8-18	522-072	**202.80**
CT40	3/4"	9.00"	1.77"	1.75"	5/8-18	522-074	**356.20**
CT40	7/8"	1.75"*	2.08"	1.94"	5/8-18	522-076	**169.60**
CT40	7/8"	3.50"	2.08"	2.00"	5/8-18	522-078	**178.00**
CT40	1"	2.00"*	2.36"	2.25"	3/4-16	522-080	**169.60**
CT40	1"	4.00"	2.36"	2.36"	3/4-16	522-082	**186.60**
CT40	1"	6.00"	2.36"	2.36"	3/4-16	522-084	**213.00**
CT40	1"	9.00"	2.36"	2.36"	3/4-16	522-086	**464.60**
CT40	1-1/4"	2.00"*	2.28"	2.25"	3/4-16	522-088	**169.60**
CT40	1-1/4"	4.00"	2.55"	2.48"	3/4-16	522-090	**186.60**
CT40	1-1/4"	6.00"	2.55"	2.48"	3/4-16	522-092	**213.00**
CT40	1-1/2"	4.50"	2.55"	2.99"	3/4-16	522-094	**214.00**

* Stubby Length

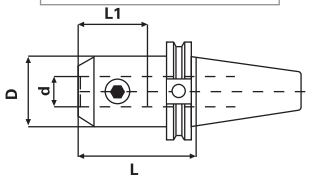
CAT50 End Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



CAT 50 Premium Balanced 25x RPM

Complete with certificate



Set Screw pg G12 | Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/4"	1.38"*	1.10"	0.79"	1/4-28	531-082	**218.00**
CT50	1/4"	2.50"	1.10"	0.79"	1/4-28	531-084	**218.00**
CT50	1/4"	4.00"	1.10"	0.79"	1/4-28	531-086	**218.00**
CT50	1/4"	6.00"	1.10"	0.79"	1/4-28	531-088	**237.20**
CT50	1/4"	8.00"	1.10"	0.79"	1/4-28	531-090	**277.10**
CT50	5/16"	2.50"	1.26"	0.87"	5/16-24	531-092	**218.00**
CT50	5/16"	4.00"	1.26"	0.87"	5/16-24	531-094	**218.00**
CT50	5/16"	6.00"	1.26"	0.87"	5/16-24	531-096	**237.20**
CT50	3/8"	1.38"*	1.26"	1.00"	3/8-24	531-098	**198.90**
CT50	3/8"	2.50"	1.26"	1.00"	3/8-24	531-100	**198.90**
CT50	3/8"	4.00"	1.26"	1.00"	3/8-24	531-102	**218.00**
CT50	3/8"	6.00"	1.26"	1.00"	3/8-24	531-104	**237.20**
CT50	3/8"	8.00"	1.26"	1.00"	3/8-24	531-106	**277.10**
CT50	3/8"	14.00"	1.26"	1.00"	3/8-24	531-107	**979.00**
CT50	7/16"	2.50"	1.50"	1.38"	7/16-20	531-108	**198.90**
CT50	7/16"	4.00"	1.50"	1.38"	7/16-20	531-110	**218.00**
CT50	7/16"	6.00"	1.53"	1.38"	7/16-20	531-112	**237.20**
CT50	7/16"	8.00"	1.48"	1.38"	7/16-20	531-114	**228.00**
CT50	7/16"	14.00"	1.48"	1.38"	7/16-20	531-113	**845.70**
CT50	1/2"	1.75"*	1.50"	1.38"	7/16-20	531-116	**198.90**
CT50	1/2"	2.63"	1.50"	1.38"	7/16-20	531-118	**198.90**
CT50	1/2"	4.00"	1.50"	1.38"	7/16-20	531-120	**218.00**
CT50	1/2"	6.00"	1.50"	1.38"	7/16-20	531-122	**237.20**
CT50	1/2"	8.00"	1.48"	1.38"	7/16-20	531-124	**277.10**
CT50	1/2"	14.00"	1.48"	1.38"	7/16-20	531-125	**979.00**
CT50	9/16	6.00"	1.61"	1.65"	9/16-18	531-133	**237.20**
CT50	5/8"	1.75"*	1.61"	1.65"	9/16-18	531-126	**198.90**
CT50	5/8"	3.00"	1.61"	1.65"	9/16-18	531-128	**198.90**
CT50	5/8"	4.00"	1.61"	1.65"	9/16-18	531-130	**218.00**
CT50	5/8"	6.00"	1.61"	1.65"	9/16-18	531-132	**237.20**
CT50	5/8"	8.00"	1.57"	1.65"	9/16-18	531-134	**277.10**
CT50	5/8"	14.00"	1.57"	1.65"	9/16-18	531-131	**845.70**
CT50	3/4"	1.75"*	1.77"	1.89"	5/8-18	531-136	**198.90**
CT50	3/4"	3.00"	1.77"	1.89"	5/8-18	531-138	**198.90**
CT50	3/4"	4.00"	1.77"	1.89"	5/8-18	531-140	**218.00**
CT50	3/4"	6.00"	1.77"	1.89"	5/8-18	531-142	**237.20**
CT50	3/4"	8.00"	1.77"	1.89"	5/8-18	531-144	**277.10**
CT50	3/4"	14.00"	1.77"	1.89"	5/8-18	531-145	**979.00**
CT50	7/8"	1.75"*	2.08"	2.00"	5/8-18	531-146	**198.90**
CT50	7/8"	3.75"	2.08"	2.00"	5/8-18	531-148	**204.00**
CT50	7/8"	6.00"	2.08"	2.00"	5/8-18	531-150	**237.90**
CT50	1"	2.00"*	2.36"	2.36"	3/4-16	531-152	**198.90**
CT50	1"	4.00"	2.36"	2.36"	3/4-16	531-154	**204.00**
CT50	1"	6.00"	2.36"	2.36"	3/4-16	531-156	**237.90**
CT50	1"	8.00"	2.36"	2.36"	3/4-16	531-158	**277.10**
CT50	1"	14.00"	2.36"	2.36"	3/4-16	531-159	**1,335.20**
CT50	1-1/4"	2.00"*	2.55"	2.75"	3/4-16	531-160	**226.90**
CT50	1-1/4"	4.00"	2.55"	2.48"	3/4-16	531-162	**237.90**
CT50	1-1/4"	6.00"	2.55"	2.48"	3/4-16	531-164	**263.70**
CT50	1-1/4"	8.00"	2.55"	2.48"	3/4-16	531-166	**303.50**
CT50	1-1/4"	14.00"	2.55"	2.48"	3/4-16	531-167	**1,340.70**
CT50	1-1/2"	2.25"*	2.83"	2.75"	3/4-16	531-168	**226.90**
CT50	1-1/2"	4.50"	2.83"	2.99"	3/4-16	531-170	**237.90**
CT50	1-1/2"	7.00"	2.83"	2.99"	3/4-16	531-172	**276.60**
CT50	1-1/2"	9.00"	2.83"	2.99"	3/4-16	531-174	**745.60**
CT50	2"	3.63"*	3.34"	3.74"	1"-14	531-176	**265.60**
CT50	2"	5.37"	3.34"	3.74"	1"-14	531-178	**291.20**
CT50	2"	8.00"	3.34"	3.74"	1"-14	531-180	**319.60**
CT50	2"	10.00"	3.34"	3.74"	1"-14	531-182	**361.00**
CT50	2-1/2"	6.00"	3.66"	4.25"	1"-14	531-184	**376.20**

* Stubby Length

G3 TOOLING

CAT50 DUAL CONTACT End Mill Holders

New

FOR DUAL CONTACT SPINDLES

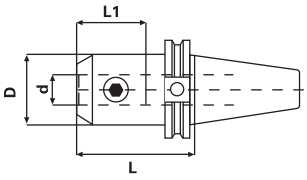
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



CAT 50 Premium Balanced 25x RPM



Complete with certificate



Set Screw — pg G12

Pull Stud — pg G116

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	521-120	**305.30**
CT50	1/2"	6.00"	1.50"	1.38"	7/16-20	521-122	**332.00**
CT50	5/8"	4.00"	1.61"	1.65"	9/16-18	521-130	**305.30**
CT50	5/8"	6.00"	1.61"	1.65"	9/16-18	521-132	**332.00**
CT50	3/4"	3.00"	1.77"	1.89"	5/8-18	521-138	**278.50**
CT50	3/4"	4.00"	1.77"	1.89"	5/8-18	521-140	**305.30**
CT50	3/4"	6.00"	1.77"	1.89"	5/8-18	521-142	**332.00**
CT50	1"	4.00"	2.36"	2.36"	3/4-16	521-154	**285.50**
CT50	1"	6.00"	2.36"	2.36"	3/4-16	521-156	**332.70**
CT50	1"	8.00"	2.36"	2.36"	3/4-16	521-158	**387.70**
CT50	1-1/4"	4.00"	2.55"	2.48"	3/4-16	521-162	**332.70**
CT50	1-1/4"	6.00"	2.55"	2.48"	3/4-16	521-164	**369.00**
CT50	1-1/4"	8.00"	2.55"	2.48"	3/4-16	521-166	**424.80**
CT50	1-1/2"	4.50"	2.83"	2.99"	3/4-16	521-170	**332.70**
CT50	1-1/2"	7.00"	2.83"	2.99"	3/4-16	521-172	**387.00**
CT50	2"	5.37"	3.34"	3.74"	1"-14	521-178	**407.60**

CAT50 DIRECT COOLANT End Mill Holders

New

NOW 3 COOLANT OPTIONS ALL IN ONE!

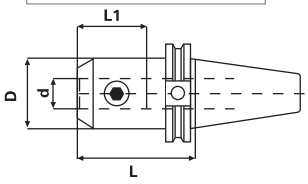
- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- All Ground Body
- 100% Forged Construction





CAT 50 Premium Balanced 25x RPM

Complete with certificate



Set Screw — pg G12

Pull Stud — pg G116

O-Ring — pg G12

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CT50	1/4"	1.38"*	1.10"	0.79"	1/4-28	522-100	**261.60**
CT50	1/4"	2.50"	1.10"	0.79"	1/4-28	522-102	**261.60**
CT50	1/4"	4.00"	1.10"	0.79"	1/4-28	522-104	**261.60**
CT50	1/4"	6.00"	1.10"	0.79"	1/4-28	522-106	**284.70**
CT50	1/4"	8.00"	1.10"	0.79"	1/4-28	522-108	**332.30**
CT50	5/16"	2.50"	1.26"	0.87"	5/16-24	522-110	**261.60**
CT50	5/16"	4.00"	1.26"	0.87"	5/16-24	522-112	**261.60**
CT50	5/16"	6.00"	1.26"	0.87"	5/16-24	522-114	**284.70**
CT50	3/8"	1.38"*	1.26"	1.00"	3/8-24	522-116	**238.60**
CT50	3/8"	2.50"	1.26"	1.00"	3/8-24	522-118	**238.60**
CT50	3/8"	4.00"	1.26"	1.00"	3/8-24	522-120	**261.60**
CT50	3/8"	6.00"	1.26"	1.00"	3/8-24	522-122	**284.70**
CT50	3/8"	8.00"	1.26"	1.00"	3/8-24	522-124	**332.30**
CT50	3/8"	14.00"	1.26"	1.00"	3/8-24	522-126	**1,175.00**
CT50	7/16"	2.50"	1.50"	1.38"	7/16-20	522-128	**238.60**
CT50	7/16"	4.00"	1.50"	1.38"	7/16-20	522-130	**261.60**
CT50	7/16"	6.00"	1.53"	1.38"	7/16-20	522-132	**284.70**
CT50	1/2"	1.75"*	1.50"	1.38"	7/16-20	522-134	**238.60**
CT50	1/2"	2.63"	1.50"	1.38"	7/16-20	522-136	**238.60**
CT50	1/2"	4.00"	1.50"	1.38"	7/16-20	522-138	**261.60**
CT50	1/2"	6.00"	1.50"	1.38"	7/16-20	522-140	**284.70**
CT50	1/2"	8.00"	1.48"	1.38"	7/16-20	522-142	**332.30**
CT50	1/2"	14.00"	1.48"	1.38"	7/16-20	522-144	**1,175.00**
CT50	9/16"	6.00"	1.61"	1.65"	9/16-18	522-146	**284.70**
CT50	5/8"	1.75"*	1.61"	1.65"	9/16-18	522-148	**238.60**
CT50	5/8"	3.00"	1.61"	1.65"	9/16-18	522-150	**238.60**
CT50	5/8"	4.00"	1.61"	1.65"	9/16-18	522-152	**261.60**
CT50	5/8"	6.00"	1.61"	1.65"	9/16-18	522-154	**284.70**
CT50	5/8"	8.00"	1.57"	1.65"	9/16-18	522-156	**332.30**
CT50	3/4"	1.75"*	1.77"	1.89"	5/8-18	522-158	**238.60**
CT50	3/4"	3.00"	1.77"	1.89"	5/8-18	522-160	**238.60**
CT50	3/4"	4.00"	1.77"	1.89"	5/8-18	522-162	**261.60**
CT50	3/4"	6.00"	1.77"	1.89"	5/8-18	522-164	**284.70**
CT50	3/4"	8.00"	1.77"	1.89"	5/8-18	522-166	**332.30**
CT50	3/4"	12.00"	1.77"	1.89"	5/8-18	522-167	**410.20**
CT50	3/4"	14.00"	1.77"	1.89"	5/8-18	522-168	**1,175.00**
CT50	7/8"	1.75"*	2.08"	2.00"	5/8-18	522-170	**238.60**
CT50	7/8"	3.75"	2.08"	2.00"	5/8-18	522-172	**244.80**
CT50	7/8"	6.00"	2.08"	2.00"	5/8-18	522-174	**285.30**
CT50	1"	2.00"*	2.36"	2.36"	3/4-16	522-176	**238.60**
CT50	1"	4.00"	2.36"	2.36"	3/4-16	522-178	**244.80**
CT50	1"	6.00"	2.36"	2.36"	3/4-16	522-180	**285.30**
CT50	1"	8.00"	2.36"	2.36"	3/4-16	522-182	**332.30**
CT50	1"	12.00"	2.36"	2.36"	3/4-16	522-183	**410.20**
CT50	1"	14.00"	2.36"	2.36"	3/4-16	522-184	**1,602.10**
CT50	1-1/4"	2.00"*	2.55"	2.75"	3/4-16	522-186	**272.20**
CT50	1-1/4"	4.00"	2.55"	2.48"	3/4-16	522-188	**285.30**
CT50	1-1/4"	6.00"	2.55"	2.48"	3/4-16	522-190	**316.30**
CT50	1-1/4"	8.00"	2.55"	2.48"	3/4-16	522-192	**364.10**
CT50	1-1/4"	14.00"	2.55"	2.48"	3/4-16	522-194	**1,608.70**
CT50	1-1/2"	2.25"*	2.83"	2.75"	3/4-16	522-196	**272.20**
CT50	1-1/2"	4.50"	2.83"	2.99"	3/4-16	522-198	**285.30**
CT50	1-1/2"	7.00"	2.83"	2.99"	3/4-16	522-200	**331.80**
CT50	1-1/2"	9.00"	2.83"	2.99"	3/4-16	522-202	**894.70**
CT50	2"	3.63"*	3.34"	3.74"	1"-14	522-204	**318.60**
CT50	2"	5.37"	3.34"	3.74"	1"-14	522-206	**349.50**
CT50	2"	8.00"	3.34"	3.74"	1"-14	522-208	**383.40**
CT50	2"	10.00"	3.34"	3.74"	1"-14	522-210	**433.10**
CT50	2-1/2"	6.00"	3.66"	4.25"	1"-14	522-212	**451.20**

* Stubby Length

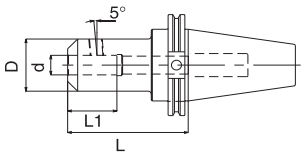
CAT50 Aerospace End Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction
- Accepts end mills with 5º angled shanks



CAT 50 Premium Balanced 25x RPM

Complete with certificate



Set Screw pg G12 | Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
CAT50	1/2"	2.73"	1.68"	1.63"	3/8-24	531-706•	**250.10**
CAT50	1/2"	6.60"	1.68"	1.63"	3/8-24	531-710•	**323.40**
CAT50	5/8"	2.66"	1.74"	1.81"	1/2-20	531-712•	**250.10**
CAT50	5/8"	4.53"	1.74"	1.81"	1/2-20	531-714•	**286.20**
CAT50	5/8"	6.53"	1.74"	1.81"	1/2-20	531-716•	**323.40**
CAT50	3/4"	2.63"	2.01"	2.00"	1/2-20	531-718•	**250.10**
CAT50	3/4"	6.50"	2.01"	2.00"	1/2-20	531-722•	**323.40**
CAT50	1"	3.00"	2.27"	2.63"	3/4-16	531-730•	**262.60**
CAT50	1"	6.50"	2.27"	2.63"	3/4-16	531-734•	**340.10**
CAT50	1-1/4"	3.00"	2.27"	2.87"	3/4-16	531-736•	**285.20**
CAT50	1-1/4"	4.50"	2.27"	2.87"	3/4-16	531-738•	**315.30**
CAT50	1-1/4"	6.50"	2.27"	2.87"	3/4-16	531-740•	**356.30**
CAT50	1-1/2"	4.00"	2.27"	3.25"	3/4-16	531-742•	**317.30**
CAT50	2"	5.35"	3.38"	4.00"	3/4-16	531-744•	**383.40**
CAT50	2"	7.35"	3.38"	4.00"	3/4-16	531-746•	**420.60**

• Available only while quantities last.

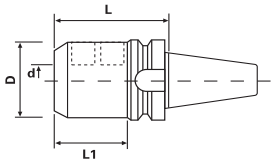
BT30 End Mill Holders

- All Ground Body
- 100% Forged Construction



BT 30 Premium Balanced 20x RPM

Complete with certificate



Set Screw pg G12 | Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT30	1/8"	2.36"	0.63"	0.75"	8-32	532-001	**171.10**
BT30	3/16"	2.36"	0.87"	0.75"	10-32	532-003	**171.10**
BT30	1/4"	2.36"	1.10"	0.79"	1/4-28	532-000	**141.00**
BT30	5/16"	2.36"	1.26"	0.87"	5/16-24	532-002	**141.00**
BT30	3/8"	2.36"	1.26"	1.00"	3/8-24	532-004	**141.00**
BT30	7/16"	2.36"	1.50"	1.38"	7/16-20	532-006	**115.90**
BT30	1/2"	2.36"	1.50"	1.38"	7/16-20	532-008	**141.00**
BT30	5/8"	2.50"	1.61"	1.65"	9/16-18	532-010	**141.00**
BT30	3/4"	3.00"	1.77"	1.88"	5/8-18	532-012	**141.00**
BT30	7/8"	3.54"	2.09"	2.00"	5/8-18	532-014	**115.90**
BT30	1"	3.54"	2.36"	2.36"	3/4-16	532-016	**141.00**

BT30 DIRECT COOLANT End Mill Holders

New

NOW 3 COOLANT OPTIONS ALL IN ONE!

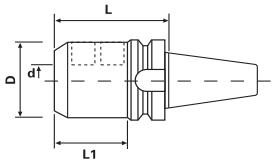
- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- All Ground Body
- 100% Forged Construction



BT 30 Premium Balanced 20x RPM



Complete with certificate



Set Screw pg G12 | Pull Stud pg G116 | O-Ring pg G12

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	522-218	**169.00**
BT30	5/16"	2.36"	1.26"	0.87"	5/16-24	522-220	**169.00**
BT30	3/8"	2.36"	1.26"	1.00"	3/8-24	522-222	**169.00**
BT30	1/2"	2.36"	1.50"	1.38"	7/16-20	522-224	**169.00**
BT30	5/8"	2.50"	1.61"	1.65"	9/16-18	522-226	**169.00**
BT30	3/4"	3.00"	1.77"	1.88"	5/8-18	522-228	**169.00**
BT30	1"	3.54"	2.36"	2.36"	3/4-16	522-230	**169.00**

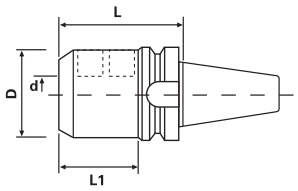
BT40 End Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



BT 40 Premium Balanced 30x RPM

Complete with certificate



Set Screw pg G12 | Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT40	1/8"	1.38"*	0.63"	1.75"	8-32	531-019	**176.90**
BT40	1/8"	2.50"	0.63"	0.75"	8-32	531-021	**185.90**
BT40	1/8"	4.00"	0.63"	0.75"	8-32	531-023	**194.80**
BT40	3/16"	1.38"*	0.63"	0.75"	10-32	531-025	**166.30**
BT40	3/16"	2.50"	0.86"	0.75"	10-32	531-027	**174.50**
BT40	3/16"	4.00"	0.86"	0.75"	10-32	531-029	**183.50**
BT40	1/4"	1.38"*	1.18"	0.79"	1/4-28	532-018	**148.30**
BT40	1/4"	2.50"	1.10"	0.79"	1/4-28	532-020	**148.30**
BT40	1/4"	4.00"	1.10"	0.79"	1/4-28	532-022	**155.50**
BT40	5/16"	1.38"*	1.38"	0.87"	5/16-24	532-024	**148.30**
BT40	5/16"	2.50"	1.26"	0.87"	5/16-24	532-026	**148.30**
BT40	5/16"	4.00"	1.26"	0.87"	5/16-24	532-028	**155.50**
BT40	3/8"	1.38"*	1.38"	1.00"	3/8-24	532-030	**148.30**
BT40	3/8"	2.50"	1.26"	1.00"	3/8-24	532-032	**148.30**
BT40	3/8"	4.00"	1.26"	1.00"	3/8-24	532-034	**155.50**
BT40	7/16"	2.50"	1.53"	1.38"	7/16-20	532-036	**148.30**
BT40	1/2"	1.75"*	1.57"	1.38"	7/16-20	532-038	**148.30**
BT40	1/2"	2.50"	1.50"	1.38"	7/16-20	532-040	**148.30**
BT40	1/2"	4.00"	1.57"	1.38"	7/16-20	532-042	**155.50**
BT40	5/8"	1.75"*	1.61"	1.65"	9/16-18	532-044	**148.30**
BT40	5/8"	2.50"	1.61"	1.65"	9/16-18	532-046	**148.30**
BT40	5/8"	4.00"	1.61"	1.65"	9/16-18	532-048	**155.50**
BT40	3/4"	1.75"*	1.77"	1.89"	5/8-18	532-050	**148.30**
BT40	3/4"	2.50"	1.77"	1.89"	5/8-18	532-052	**148.30**
BT40	3/4"	4.00"	1.77"	1.89"	5/8-18	532-054	**155.50**
BT40	7/8"	3.38"	2.08"	2.00"	5/8-18	532-056	**148.30**
BT40	7/8"	6.00"	2.08"	2.00"	5/8-18	532-058	**145.90**
BT40	1"	2.00"*	2.28"	2.25"	3/4-16	532-060	**148.30**
BT40	1"	3.56"	2.36"	2.36"	3/4-16	532-062	**148.30**
BT40	1"	6.00"	2.36"	2.36"	3/4-16	532-064	**177.30**
BT40	1-1/4"	2.00"*	2.16"	2.25"	3/4-16	532-066•	**148.30**
BT40	1-1/4"	3.56"	2.56"	2.48"	3/4-16	532-068	**148.30**
BT40	1-1/4"	6.00"	2.56"	2.48"	3/4-16	532-070	**177.30**
BT40	1-1/2"	4.50"	2.83"	2.99"	3/4-16	532-072	**178.40**
BT40	1-1/2"	6.00"	2.83"	2.99"	3/4-16	532-074	**199.70**

* Stubby Length

• Not DIN Coolant

BT40 DIRECT COOLANT End Mill Holders

New

NOW 3 COOLANT OPTIONS ALL IN ONE!

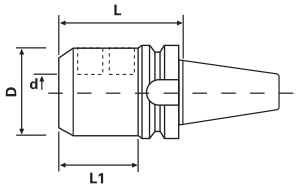
- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- All Ground Body
- 100% Forged Construction



BT 40 Premium Balanced 30x RPM



Complete with certificate



Set Screw pg G12 | Pull Stud pg G116 | O-Ring pg G12

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT40	1/4"	1.38"*	1.18"	0.79"	1/4-28	522-242	**178.00**
BT40	1/4"	2.50"	1.10"	0.79"	1/4-28	522-244	**178.00**
BT40	1/4"	4.00"	1.10"	0.79"	1/4-28	522-246	**186.60**
BT40	5/16"	1.38"*	1.38"	0.87"	5/16-24	522-248	**178.00**
BT40	5/16"	2.50"	1.26"	0.87"	5/16-24	522-250	**178.00**
BT40	5/16"	4.00"	1.26"	0.87"	5/16-24	522-252	**186.60**
BT40	3/8"	1.38"*	1.38"	1.00"	3/8-24	522-254	**178.00**
BT40	3/8"	2.50"	1.26"	1.00"	3/8-24	522-256	**178.00**
BT40	3/8"	4.00"	1.26"	1.00"	3/8-24	522-258	**186.60**
BT40	7/16"	2.50"	1.53"	1.38"	7/16-20	522-260	**178.00**
BT40	1/2"	1.75"*	1.57"	1.38"	7/16-20	522-262	**178.00**
BT40	1/2"	2.50"	1.50"	1.38"	7/16-20	522-264	**178.00**
BT40	1/2"	4.00"	1.57"	1.38"	7/16-20	522-266	**186.60**
BT40	5/8"	1.75"*	1.61"	1.65"	9/16-18	522-268	**178.00**
BT40	5/8"	2.50"	1.61"	1.65"	9/16-18	522-270	**178.00**
BT40	5/8"	4.00"	1.61"	1.65"	9/16-18	522-272	**186.60**
BT40	3/4"	1.75"*	1.77"	1.89"	5/8-18	522-274	**178.00**
BT40	3/4"	2.50"	1.77"	1.89"	5/8-18	522-276	**178.00**
BT40	3/4"	4.00"	1.77"	1.89"	5/8-18	522-278	**186.60**
BT40	7/8"	3.38"	2.08"	2.00"	5/8-18	522-280	**178.00**
BT40	1"	2.00"*	2.28"	2.25"	3/4-16	522-282	**178.00**
BT40	1"	3.56"	2.36"	2.36"	3/4-16	522-284	**178.00**
BT40	1"	6.00"	2.36"	2.36"	3/4-16	522-286	**213.00**
BT40	1-1/4"	2.00"*	2.16"	2.25"	3/4-16	522-288	**178.00**
BT40	1-1/4"	3.56"	2.56"	2.48"	3/4-16	522-290	**178.00**
BT40	1-1/4"	6.00"	2.56"	2.48"	3/4-16	522-292	**213.00**
BT40	1-1/2"	4.50"	2.83"	2.99"	3/4-16	522-294	**214.00**
BT40	1-1/2"	6.00"	2.83"	2.99"	3/4-16	522-296	**239.40**

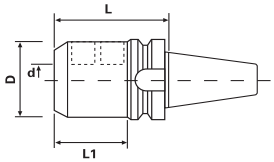
BT50 End Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction

BT 50 Premium Balanced 25x RPM



Complete with certificate



Set Screw pg G12 — Pull Stud pg G116

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT50	3⁄8"	2.50"	1.26"	1.00"	3/8-24	532-075	**196.20**
BT50	3⁄8"	5.31"	3.82"	1.00"	3/8-24	532-076	**218.00**
BT50	1⁄2"	2.75"	1.50"	1.38"	7/16-20	532-077	**196.20**
BT50	1⁄2"	5.31"	3.82"	1.38"	7/16-20	532-078	**218.00**
BT50	5⁄8"	3.00"	1.61"	1.65"	9/16-18	532-079	**196.20**
BT50	5⁄8"	5.31"	3.82"	1.65"	9/16-18	532-081	**259.00**
BT50	3⁄4"	3.00"	1.46"	1.75"	5/8-18	532-083	**196.20**
BT50	3⁄4"	6.00"	1.77"	1.75"	5/8-18	532-085	**218.00**
BT50	1"	4.00"	2.64"	2.36"	3/4-16	532-087	**196.20**
BT50	1"	6.00"	4.41"	2.36"	3/4-16	532-089	**218.00**
BT50	1-1⁄4"	4.00"	2.64"	2.48"	3/4-16	532-091	**218.00**
BT50	1-1⁄4"	6.00"	2.55"	2.48"	3/4-16	532-093	**242.10**
BT50	1-1⁄2"	4.13"	2.83"	2.99"	3/4-16	532-095	**218.00**
BT50	1-1⁄2"	7.00"	2.83"	2.99"	3/4-16	532-097	**242.10**
BT50	2"	4.72"	3.23"	3.86"	1"-14	532-099	**218.00**

BT50 DIRECT COOLANT End Mill Holders

New

NOW 3 COOLANT OPTIONS ALL IN ONE!

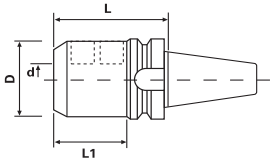
- Coolant thru the spindle
- DIN Coolant thru flange option
- Coolant thru the body
- All Ground Body
- 100% Forged Construction

BT 50 Premium Balanced 25x RPM





Complete with certificate



Set Screw pg G12 — Pull Stud pg G116 — O-Ring pg G12

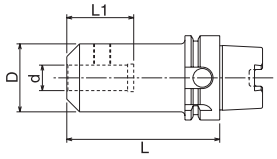
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
BT50	3⁄8"	2.50"	1.26"	1.00"	3/8-24	522-300	**235.30**
BT50	3⁄8"	5.31"	3.82"	1.00"	3/8-24	522-302	**261.50**
BT50	1⁄2"	2.75"	1.50"	1.38"	7/16-20	522-304	**235.30**
BT50	1⁄2"	5.31"	3.82"	1.38"	7/16-20	522-306	**261.50**
BT50	5⁄8"	3.00"	1.61"	1.65"	9/16-18	522-308	**235.30**
BT50	5⁄8"	5.31"	3.82"	1.65"	9/16-18	522-310	**310.70**
BT50	3⁄4"	3.00"	1.46"	1.75"	5/8-18	522-312	**235.30**
BT50	3⁄4"	6.00"	1.77"	1.75"	5/8-18	522-314	**261.50**
BT50	1"	4.00"	2.64"	2.36"	3/4-16	522-316	**235.30**
BT50	1"	6.00"	4.41"	2.36"	3/4-16	522-318	**261.50**
BT50	1-1⁄4"	4.00"	2.64"	2.48"	3/4-16	522-320	**261.50**
BT50	1-1⁄4"	6.00"	2.55"	2.48"	3/4-16	522-322	**290.30**
BT50	1-1⁄2"	4.50"	2.83"	2.99"	3/4-16	522-324	**261.50**
BT50	1-1⁄2"	7.00"	2.83"	2.99"	3/4-16	522-326	**290.30**
BT50	2"	4.72"	3.23"	3.86"	1"-14	522-328	**261.50**

HSK63A End Mill Holders

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission

HSK 63 Premium Balanced 30x RPM





Set Screw pg G12

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	536-002	**333.10**
HSK63A	3/16"	5.00"	0.866"	0.748"	10-32X1/4	536-004	**368.40**
HSK63A	1/4"	3.00"	1.102"	0.787"	1/4-28X1/4	536-006	**333.10**
HSK63A	1/4"	5.00"	1.102"	0.787"	1/4-28X1/4	536-008	**368.40**
HSK63A	5/16"	3.00"	1.417"	0.874"	5/16-24X1/4	536-010	**333.10**
HSK63A	5/16"	5.00"	1.417"	0.874"	5/16-24X1/4	536-012	**368.40**
HSK63A	3/8"	3.50"	1.574"	1.00"	3/8-24X5/16	536-014	**350.80**
HSK63A	3/8"	5.00"	1.574"	1.00"	3/8-24X5/16	536-016	**387.70**
HSK63A	7/16"	4.00"	1.771"	1.378"	7/16-20X3/8	536-018	**333.30**
HSK63A	7/16"	5.00"	1.771"	1.378"	7/16-20X3/8	536-020	**368.40**
HSK63A	1/2"	4.00"	1.771"	1.378"	7/16-20X3/8	536-022	**350.80**
HSK63A	1/2"	5.00"	1.771"	1.378"	7/16-20X3/8	536-024	**387.70**
HSK63A	5/8"	4.00"	1.889"	1.654"	9/16-18X1/2	536-026	**350.80**
HSK63A	5/8"	5.00"	1.889"	1.654"	9/16-18X1/2	536-028	**387.70**
HSK63A	3/4"	4.50"	1.968"	1.889"	5/8-18X1/2	536-030	**350.80**
HSK63A	3/4"	6.00"	1.968"	1.889"	5/8-18X1/2	536-032	**387.70**
HSK63A	1"	4.50"	2.755"	2.363"	3/4-16X11/16 (2)	536-034	**369.20**
HSK63A	1"	6.00"	2.755"	2.363"	3/4-16X11/16 (2)	536-036	**406.20**
HSK63A	1-1/4"	4.50"	2.952"	2.88"	3/4-16X11/16 (2)	536-038	**391.20**
HSK63A	1-1/4"	6.00"	2.952"	2.88"	3/4-16X11/16 (2)	536-040	**428.20**

HSK63A DIRECT COOLANT End Mill Holders

New

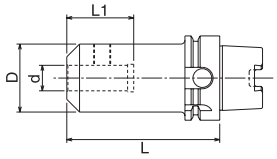
- Coolant thru the body
- All Ground Body
- 100% Forged Construction

HSK 63 Premium Balanced 30x RPM





Complete with certificate



Set Screw pg G12 — O-Ring pg G12

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
HSK63A	1/4"	3.00"	1.102"	0.787"	1/4-28X1/4	522-332	**399.70**
HSK63A	1/4"	5.00"	1.102"	0.787"	1/4-28X1/4	522-334	**442.10**
HSK63A	5/16"	3.00"	1.417"	0.874"	5/16-24X1/4	522-336	**399.70**
HSK63A	5/16"	5.00"	1.417"	0.874"	5/16-24X1/4	522-338	**442.10**
HSK63A	3/8"	3.50"	1.574"	1.00"	3/8-24X5/16	522-340	**420.80**
HSK63A	3/8"	5.00"	1.574"	1.00"	3/8-24X5/16	522-342	**465.30**
HSK63A	1/2"	4.00"	1.771"	1.378"	7/16-20X3/8	522-344	**420.80**
HSK63A	1/2"	5.00"	1.771"	1.378"	7/16-20X3/8	522-346	**465.30**
HSK63A	5/8"	4.00"	1.889"	1.654"	9/16-18X1/2	522-348	**420.80**
HSK63A	3/4"	4.50"	1.968"	1.889"	5/8-18X1/2	522-350	**420.80**
HSK63A	3/4"	6.00"	1.968"	1.889"	5/8-18X1/2	522-352	**465.30**
HSK63A	1"	4.50"	2.755"	2.363"	3/4-16X11/16 (2)	522-354	**442.80**
HSK63A	1"	6.00"	2.755"	2.363"	3/4-16X11/16 (2)	522-356	**487.30**
HSK63A	1-1/4"	4.50"	2.952"	2.88"	3/4-16X11/16 (2)	522-358	**469.60**
HSK63A	1-1/4"	6.00"	2.952"	2.88"	3/4-16X11/16 (2)	522-360	**513.90**

HSK100A End Mill Holders

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission

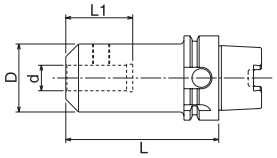


HSK 100 Premium Balanced 25x RPM

Set Screw



pg G12



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	536-042	**561.00**
HSK100A	3/16"	6.00"	0.867"	0.748"	10-32X1/4	536-044	**613.50**
HSK100A	1/4"	4.00"	1.102"	0.787"	1/4-28X1/4	536-046	**455.90**
HSK100A	1/4"	6.00"	1.102"	0.787"	1/4-28X1/4	536-048	**491.10**
HSK100A	5/16"	4.00"	1.220"	0.866"	5/16-24X1/4	536-050	**455.90**
HSK100A	5/16"	6.00"	1.220"	0.866"	5/16-24X1/4	536-052	**491.10**
HSK100A	3/8"	4.00"	1.260"	1.00"	3/8-24X5/16	536-054	**455.90**
HSK100A	3/8"	6.00"	1.260"	1.00"	3/8-24X5/16	536-056	**508.30**
HSK100A	7/16"	4.00"	1.496"	1.378"	7/16-20X3/8	536-058	**455.90**
HSK100A	7/16"	6.00"	1.496"	1.378"	7/16-20X3/8	536-060	**491.10**
HSK100A	1/2"	4.00"	1.575"	1.378"	7/16-20X3/8	536-062	**455.90**
HSK100A	1/2"	6.00"	1.575"	1.378"	7/16-20X3/8	536-064	**491.10**
HSK100A	5/8"	4.00"	1.693"	1.654"	9/16-18X1/2	536-066	**455.90**
HSK100A	5/8"	6.00"	1.693"	1.654"	9/16-18X1/2	536-068	**491.10**
HSK100A	3/4"	4.00"	1.969"	1.890"	5/8-18X1/2	536-070	**455.90**
HSK100A	3/4"	6.00"	1.969"	1.890"	5/8-18X1/2	536-072	**491.10**
HSK100A	1"	4.00"	2.559"	2.362"	3/4-16X11/16 (2)	536-074	**483.90**
HSK100A	1"	6.00"	2.559"	2.362"	3/4-16X11/16 (2)	536-076	**526.10**
HSK100A	1-1/4"	4.00"	2.559"	2.480"	3/4-16X11/16 (2)	536-078	**511.90**
HSK100A	1-1/4"	6.00"	2.559"	2.480"	3/4-16X11/16 (2)	536-080	**554.10**

HSK100A DIRECT COOLANT End Mill Holders

New

- Coolant thru the body
- All Ground Body
- 100% Forged Construction



HSK 100 Premium Balanced 25x RPM



Complete with certificate

Set Screw

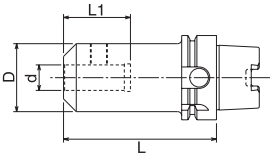


pg G12

O-Ring



pg G12



Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
HSK100A	1/4"	4.00"	1.102"	0.787"	1/4-28X1/4	522-362	**547.10**
HSK100A	1/4"	6.00"	1.102"	0.787"	1/4-28X1/4	522-364	**589.10**
HSK100A	3/8"	4.00"	1.260"	1.00"	3/8-24X5/16	522-366	**547.10**
HSK100A	1/2"	4.00"	1.575"	1.378"	7/16-20X3/8	522-368	**547.10**
HSK100A	1/2"	6.00"	1.575"	1.378"	7/16-20X3/8	522-370	**589.10**
HSK100A	5/8"	4.00"	1.693"	1.654"	9/16-18X1/2	522-372	**547.10**
HSK100A	5/8"	6.00"	1.693"	1.654"	9/16-18X1/2	522-374	**589.10**
HSK100A	3/4"	4.00"	1.969"	1.890"	5/8-18X1/2	522-376	**547.10**
HSK100A	3/4"	6.00"	1.969"	1.890"	5/8-18X1/2	522-378	**589.10**
HSK100A	1"	4.00"	2.559"	2.362"	3/4-16X11/16 (2)	522-380	**580.60**
HSK100A	1"	6.00"	2.559"	2.362"	3/4-16X11/16 (2)	522-382	**631.10**
HSK100A	1-1/4"	4.00"	2.559"	2.480"	3/4-16X11/16 (2)	522-384	**614.20**
HSK100A	1-1/4"	6.00"	2.559"	2.480"	3/4-16X11/16 (2)	522-386	**664.70**

NMTB30 End Mill Holders

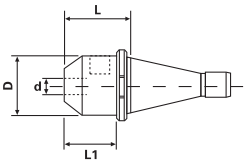
- All Ground Body
- 100% Forged Construction



Set Screw



pg G12



Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
NMTB30	3/16"	1.75"	1.33	0.69	8-32	534-240	**129.90**
NMTB30	1/4"	1.75"	1.33	0.78	1/4-28	534-242	**129.90**
NMTB30	5/16"	1.75"	1.33	1.00	5/6-24	534-244	**129.90**
NMTB30	3/8"	1.75"	1.33	1.00	3/8-24	534-246	**129.90**
NMTB30	1/2"	1.75"	1.33	1.38	7/16-20	534-248	**117.70**
NMTB30	5/8"	1.75"	1.33	1.63	9/16-18	534-250	**129.90**
NMTB30	3/4"	2.25"	1.83	1.75	5/8-18	534-252	**129.90**
NMTB30	7/8"	2.50"	2.08	1.88	5/8-18	534-254	**129.90**
NMTB30	1"	2.69"	2.27	2.00	3/4-16	534-256	**129.90**

NMTB40 End Mill Holders

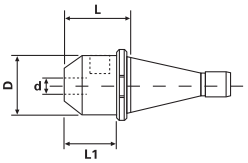
- All Ground Body
- 100% Forged Construction



Set Screw



pg G12

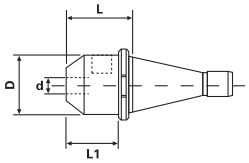


Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
NMTB40	1/4"	2.31"	1.10"	0.79"	1/4-28	534-000	**143.90**
NMTB40	5/16"	2.31"	1.26"	0.87"	5/16-24	534-002	**143.90**
NMTB40	3/8"	2.31"	1.26"	1.00"	3/8-24	534-004	**143.90**
NMTB40	7/16"	2.31"	1.50"	1.38"	7/16-20	534-006	**143.90**
NMTB40	1/2"	2.31"	1.50"	1.38"	7/16-20	534-008	**143.90**
NMTB40	5/8"	2.31"	1.61"	1.65"	9/16-18	534-010	**143.90**
NMTB40	3/4"	2.31"	1.77"	1.89"	5/8-18	534-012	**143.90**
NMTB40	7/8"	2.94"	2.09"	2.01"	5/8-18	534-014	**143.90**
NMTB40	1"	3.37"	2.36"	2.36"	3/4-16	534-016	**143.90**
NMTB40	1-1/4"	3.69"	2.56"	2.48"	3/4-16	534-018	**143.90**
NMTB40	1-1/2"	3.95"	2.56"	2.99"	3/4-16	534-019	**148.10**

NMTB50 End Mill Holders

- All Ground Body
- 100% Forged Construction





Set Screw

pg G12

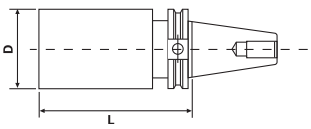
Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
NMTB50	1/4"	2.75"	1.10"	0.79"	1/4-28	534-020	**198.10**
NMTB50	3/8"	2.75"	1.26"	1.00"	3/8-24	534-022	**198.10**
NMTB50	3/8"	4.50"	1.26"	1.00"	3/8-24	534-024	**198.10**
NMTB50	1/2"	2.75"	1.50"	1.38"	7/16-20	534-026	**198.10**
NMTB50	1/2"	4.50"	1.50"	1.38"	7/16-20	534-028	**207.60**
NMTB50	5/8"	2.75"	1.61"	1.65"	9/16-18	534-030	**198.10**
NMTB50	5/8"	4.50"	1.61"	1.65"	9/16-18	534-032	**207.60**
NMTB50	3/4"	2.88"	1.77"	1.89"	5/8-18	534-034	**198.10**
NMTB50	3/4"	4.50"	1.77"	1.89"	5/8-18	534-036	**207.60**
NMTB50	7/8"	2.88"	2.09"	2.01"	5/8-18	534-038	**205.60**
NMTB50	7/8"	4.50"	2.09"	2.01"	5/8-18	534-040	**215.50**
NMTB50	1"	3.50"	2.36"	2.36"	3/4-16	534-042	**211.50**
NMTB50	1"	5.50"	2.36"	2.36"	3/4-16	534-044	**221.50**
NMTB50	1-1/4"	3.50"	2.56"	2.48"	3/4-16	534-046	**237.30**
NMTB50	1-1/4"	5.50"	2.56"	2.48"	3/4-16	534-048	**248.90**
NMTB50	1-1/2"	4.00"	2.83"	2.99"	3/4-16	534-050	**244.40**
NMTB50	1-1/2"	6.00"	2.83"	2.99"	3/4-16	534-052	**256.10**
NMTB50	2"	4.69"	3.34"	3.74"	1-14	534-054	**283.30**

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



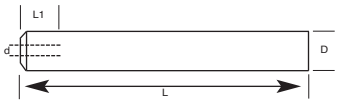


Pull Stud

pg G116

Taper	L	D	Code No.	Price $
CAT Taper				
CAT 40	13"	2.50"	531-592	**369.30**
CAT 50	13"	3.88"	531-594	**415.60**
BT Taper				
BT 30	8"	2.25"	532-300	**281.30**
BT 40	13"	2.50"	532-302	**369.30**
HSK Taper				
HSK 63	13"	2.50"	531-600	**534.30**
HSK 63	13"	4.00"	531-602	**698.40**
NMTB Taper				
NMTB40	13"	2.50"	534-600	**346.40**
NMTB50	13"	3.88"	534-602	**387.10**

Straight Shank End Mill Holders



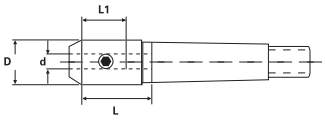


Set Screw

pg G12

Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
1/4"	6.00"	1.10"	.750"	1/4-28	534-078	**104.20**
5/16"	6.00"	1.26"	.750"	5/16-24	534-080	**98.70**
3/8"	6.00"	1.26"	1.00"	3/8-24	534-082	**105.30**
1/2"	6.00"	1.49"	1.00"	1/4-28	534-084	**105.30**

Morse Taper End Mill Holders





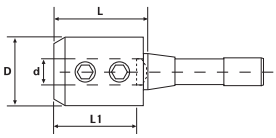
Set Screw

pg G12

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
MT#2	5/16"	1.50"	1.26"	0.87"	5/16-24	534-088 •	**63.20**
MT#3	1/4"	1.50"	1.07"	0.79"	1/4-28	534-094 •	**78.00**
MT#3	1/2"	1.94"	1.50"	1.38"	7/16-20	534-100 •	**99.50**
MT#4	3/4"	2.75"	1.77"	1.89"	5/8-18	534-108 •	**138.80**

• Available only while supplies last.

R8 End Mill Holders





Set Screw

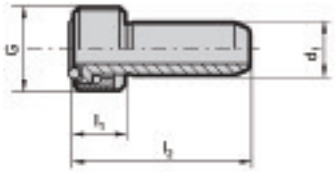
pg G12

Taper	Hole Dia. (d)	Gauge Length (L)	L1	D	Set Screw	Code No.	Price $
R8	1/4"	1.33"	1.10"	0.79"	1/4-28	534-056	**81.40**
R8	5/16"	1.75"	1.26"	0.87"	5/16-24	534-058	**81.40**
R8	3/8"	1.33"	1.26"	1.00"	3/8-24	534-060	**81.40**
R8	7/16"	1.33"	1.50"	1.38"	7/16-20	534-062	**81.40**
R8	1/2"	1.33"	1.50"	1.38"	7/16-20	534-064	**81.40**
R8	5/8"	1.50"	1.61"	1.65"	9/16-18	534-066	**81.40**
R8	3/4"	2.37"	1.77"	1.89"	5/8-18	534-068	**93.10**
R8	7/8"	2.75"	2.36"	2.01"	5/8-18	534-070	**93.10**
R8	1"	3.25"	2.76"	2.36"	3/4-16	534-072	**103.50**
R8	1-1/4"	3.25"	2.56"	2.48"	3/4-16	534-074	**108.60**
R8	1-1/2"	3.75"	2.83"	2.99"	3/4-16	534-076	**93.70**

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	536-600	**19.60**
HSK100A	16	M24x1.5	44.0	15.5	536-602	**21.10**

Coolant Tube Wrenches



Description	Used with Taper	Code No.	Price $
Coolant Tube Wrench	HSK63A	536-604	**34.90**
Coolant Tube Wrench	HSK100A	536-606	**40.70**

Replacement O-Rings For DIRECT COOLANT Holders

- Can be used in all tapers of Direct Coolant Holders



Holder Size	Code No.	Price $
1/4"	522-390	**1.70**
5/16"	522-391	**1.70**
3/8"	522-392	**1.70**
1/2"	522-393	**1.70**
5/8"	522-394	**1.70**
3/4"	522-395	**1.70**
1"	522-396	**1.70**
1-1/4"	522-397	**1.70**

Replacement Set Screws



Size	Size of Holder	Code No.	Price $
8-32 x 5/16	1/8	534-109	**1.00**
10-32 x 5/16	3/16	534-111	**1.00**
1/4-28 x 1/4	1/4"	534-110	**3.50**
5/16-24 x 1/4	5/16"	534-112	**3.50**
3/8-24 x 5/16	3/8", 7/16"	534-114	**5.20**
7/16-20 x 3/8	1/2"	534-116	**6.10**
9/16-18 x 1/2	5/8"	534-118	**7.60**
5/8-18 x 1/2	3/4", 7/8"	534-120	**8.40**
3/4-16 x 9.5mm	1", 1-1/4", 1-1/2"	534-119	**11.10**
3/4-16 x 11/16	1", 1-1/4", 1-1/2"	534-122	**9.20**
1-14 x 7/8	2"	534-124	**29.90**



SHELL MILL HOLDERS & MILLING ARBORS

CAT40 Shell Mill Holders	G14
CAT40 Dual Contact Shell Mill Holders	G14
CAT50 Shell Mill Holders	G14
CAT50 Dual Contact Shell Mill Holders	G14
CAT50 Face Mill Holders	G15
BT Taper Shell Mill Holders	G15
HSK63 Shell Mill Holders	G15
HSK100 Shell Mill Holders	G15
NMTB Taper Shell Mill & Face Mill Holders	G16
R8 Shell Mill Holders	G16
Replacement Drive Keys & Arbor Screws	G16
Shell End Mill Arbors For MT Spindles	G17
STM Face Mill Holders	G17
CAT & BT Taper Stub Arbors	G17
Replacement Stub Arbor Nuts & Spacers	G18
Slitting Saw Arbor	G18
Milling Machine Arbors	G19-20
Arbor Spacers & Bushings With Keyways	G20
Arbor Nuts	G20

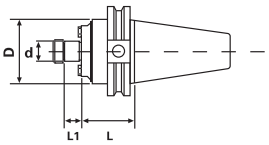


CAT40 Shell Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



Pull Stud pg G116 | Drive Key pg G16 | Arbor Screw pg G16



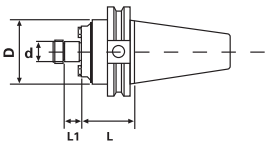
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT40	1/2"	1.75"	1.38"	0.57"	1/4"	1/4"-28	531-190	**183.10**
CT40	3/4"	1.75"	1.75"	0.67"	5/16"	3/8"-24	531-192	**183.10**
CT40	3/4"	4.00"	1.75"	0.67"	5/16"	3/8"-24	531-194	**212.30**
CT40	3/4"	6.00"	1.75"	0.67"	5/16"	3/8"-24	531-195	**342.20**
CT40	1"	1.75"	2.38"	0.67"	3/8"	1/2"-20	531-196	**183.10**
CT40	1"	4.00"	2.38"	0.67"	3/8"	1/2"-20	531-198	**212.30**
CT40	1"	6.00"	2.38"	0.67"	3/8"	1/2"-20	531-199	**345.30**
CT40	1-1/4"	2.00"	2.88"	0.67"	1/2"	5/8"-18	531-200	**183.10**
CT40	1-1/4"	4.00"	2.88"	0.67"	1/2"	5/8"-18	531-202	**212.30**
CT40	1-1/4"	6.00"	2.88"	0.67"	1/2"	5/8"-18	531-203	**532.80**
CT40	1-1/2"	2.00"	3.80"	0.93"	5/8"	3/4"-16	531-204	**183.10**
CT40	1-1/2"	4.00"	3.80"	0.93"	5/8"	3/4"-16	531-206	**212.30**

CAT50 Shell Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



Pull Stud pg G116 | Drive Key pg G16 | Arbor Screw pg G16



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	531-208	**229.70**
CT50	3/4"	4.00"	2.00"	0.67"	5/16"	3/8"-24	531-210	**251.80**
CT50	3/4"	6.00"	2.00"	0.67"	5/16"	3/8"-24	531-212	**259.60**
CT50	3/4"	8.00"	2.00"	0.67"	5/16"	3/8"-24	531-214	**314.80**
CT50	1"	1.75"	2.75"	0.69"	3/8"	1/2"-20	531-216	**229.70**
CT50	1"	4.00"	2.75"	0.69"	3/8"	1/2"-20	531-218	**251.80**
CT50	1"	6.00"	2.75"	0.69"	3/8"	1/2"-20	531-220	**259.60**
CT50	1"	8.00"	2.75"	0.69"	3/8"	1/2"-20	531-222	**314.80**
CT50	1-1/4"	1.75"	2.88"	0.69"	1/2"	5/8"-18	531-224	**234.60**
CT50	1-1/4"	4.00"	2.88"	0.69"	1/2"	5/8"-18	531-226	**258.90**
CT50	1-1/4"	6.00"	2.88"	0.69"	1/2"	5/8"-18	531-228	**282.80**
CT50	1-1/4"	8.00"	2.88"	0.69"	1/2"	5/8"-18	531-230	**325.20**
CT50	1-1/2"	2.00"	3.80"	0.93"	5/8"	3/4"-16	531-232	**257.20**
CT50	1-1/2"	4.00"	3.80"	0.93"	5/8"	3/4"-16	531-234	**282.20**
CT50	1-1/2"	6.00"	3.80"	0.93"	5/8"	3/4"-16	531-236	**306.60**
CT50	1-1/2"	8.00"	3.80"	0.93"	5/8"	3/4"-16	531-238	**356.90**
CT50	2"	2.00"	4.38"	0.93"	3/4"	1"-14	531-240	**290.00**
CT50	2"	4.00"	4.38"	0.93"	3/4"	1"-14	531-242	**335.50**
CT50	2"	6.00"	4.38"	0.93"	3/4"	1"-14	531-244	**354.90**

CAT40 DUAL CONTACT Shell Mill Holders

New

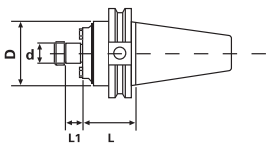
FOR DUAL CONTACT SPINDLES

- **DIN Coolant thru the flange option - standard**
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- All Ground Body
- 100% Forged Construction





Pull Stud pg G116 | Drive Key pg G16 | Arbor Screw pg G16



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	521-192	**256.10**
CT40	3/4"	4.00"	1.75"	0.67"	5/16"	3/8"-24	521-194	**297.10**
CT40	3/4"	6.00"	1.75"	0.67"	5/16"	3/8"-24	521-195	**479.10**
CT40	1"	1.75"	2.38"	0.67"	3/8"	1/2"-20	521-196	**256.10**
CT40	1"	4.00"	2.38"	0.67"	3/8"	1/2"-20	521-198	**297.10**
CT40	1"	6.00"	2.38"	0.67"	3/8"	1/2"-20	521-199	**483.20**
CT40	1-1/4"	2.00"	2.88"	0.67"	1/2"	5/8"-18	521-200	**256.10**
CT40	1-1/4"	4.00"	2.88"	0.67"	1/2"	5/8"-18	521-202	**297.10**
CT40	1-1/2"	2.00"	3.80"	0.93"	5/8"	3/4"-16	521-204	**256.10**
CT40	1-1/2"	4.00"	3.80"	0.93"	5/8"	3/4"-16	521-206	**297.10**

CAT50 DUAL CONTACT Shell Mill Holders

New

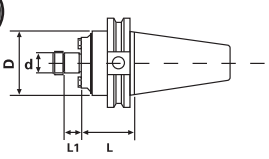
FOR DUAL CONTACT SPINDLES

- **DIN Coolant thru the flange option - standard**
- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- All Ground Body
- 100% Forged Construction





Pull Stud pg G116 | Drive Key pg G16 | Arbor Screw pg G16



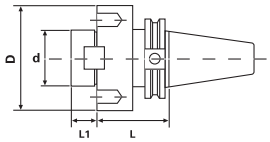
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
CT50	3/4"	1.75"	2.00"	0.67"	5/16"	3/8"-24	521-208	**321.40**
CT50	3/4"	4.00"	2.00"	0.67"	5/16"	3/8"-24	521-210	**352.60**
CT50	3/4"	6.00"	2.00"	0.67"	5/16"	3/8"-24	521-212	**363.20**
CT50	1"	1.75"	2.75"	0.69"	3/8"	1/2"-20	521-216	**321.40**
CT50	1"	4.00"	2.75"	0.69"	3/8"	1/2"-20	521-218	**352.60**
CT50	1"	6.00"	2.75"	0.69"	3/8"	1/2"-20	521-220	**363.20**
CT50	1"	8.00"	2.75"	0.69"	3/8"	1/2"-20	521-222	**440.40**
CT50	1-1/4"	1.75"	2.88"	0.69"	1/2"	5/8"-18	521-224	**328.20**
CT50	1-1/4"	4.00"	2.88"	0.69"	1/2"	5/8"-18	521-226	**362.20**
CT50	1-1/4"	6.00"	2.88"	0.69"	1/2"	5/8"-18	521-228	**395.90**
CT50	1-1/4"	8.00"	2.88"	0.69"	1/2"	5/8"-18	521-230	**455.30**
CT50	1-1/2"	2.00"	3.80"	0.93"	5/8"	3/4"-16	521-232	**359.80**
CT50	1-1/2"	4.00"	3.80"	0.93"	5/8"	3/4"-16	521-234	**394.90**
CT50	1-1/2"	6.00"	3.80"	0.93"	5/8"	3/4"-16	521-236	**429.00**
CT50	1-1/2"	8.00"	3.80"	0.93"	5/8"	3/4"-16	521-238	**499.50**
CT50	2"	2.00"	4.38"	0.93"	3/4"	1"-14	521-240	**406.00**
CT50	2"	4.00"	4.38"	0.93"	3/4"	1"-14	521-242	**469.60**

CAT50 Face Mill Holders

- All Ground Body
- 100% Forged Construction



Pull Stud pg G116 | Drive Key pg G16 | Mounting Bolt pg G16



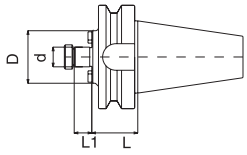
Taper	d	L	D	L1	Key Size	Code No.	Price $
CT50	2”	2.95”	5.06”	0.86”	3/4”	531-246	**348.60**
CT50	2-1/2”	2.95”	5.00”	1.18”	1”	531-248	**358.60**

BT Taper Shell Mill Holders

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction



Pull Stud pg G116 | Drive Key pg G16 | Arbor Screw pg G16



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	532-080•	**173.90**
BT30	3/4”	1.19”	2.00”	0.67”	5/16”	3/8”-24	532-082•	**173.90**
BT30	1”	1.77”	2.38”	0.69”	3/8”	1/2”-20	532-084	**173.90**
BT40								
BT40	1/2”	1.75”	1.38”	0.57”	1/4”	1/4”-28	532-086	**183.10**
BT40	3/4”	1.75”	1.75”	0.67”	5/16”	3/8”-24	532-088	**183.10**
BT40	3/4”	4.00”	1.75”	0.67”	5/16”	3/8”-24	532-111	**258.50**
BT40	3/4”	6.00”	1.75”	0.67”	5/16”	3/8”-24	532-114	**325.10**
BT40	1”	1.75”	2.38”	0.67”	3/8”	1/2”-20	532-090	**183.10**
BT40	1”	4.00”	2.38”	0.67”	3/8”	1/2”-20	532-115	**261.40**
BT40	1”	6.00”	2.38”	0.67”	3/8”	1/2”-20	532-117	**284.00**
BT40	1-1/4”	2.00”	2.88”	0.67”	1/2”	5/8”-18	532-092	**183.10**
BT40	1-1/4”	4.00”	2.88”	0.67”	1/2”	5/8”-18	532-119	**399.70**
BT40	1-1/4”	6.00”	2.88”	0.67”	1/2”	5/8”-18	532-121	**438.40**
BT40	1-1/2”	2.00”	3.80”	0.92”	5/8”	3/4”-16	532-094	**183.10**
BT50								
BT50	1”	1.75”	2.75”	0.69”	3/8”	1/2-20	532-101	**218.90**
BT50	1-1/4”	1.75”	2.88”	0.69”	1/2”	5/8-18	532-103	**234.50**
BT50	1-1/2”	1.75”	3.80”	0.92”	5/8”	3/4-16	532-105	**183.10**
BT50	2”	1.75”	4.38”	0.92”	3/4”	1”-14	532-107	**260.00**

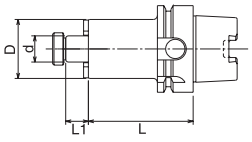
• Not DIN Coolant

HSK63A Shell Mill Holders

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission



Drive Key pg G16 | Arbor Screw pg G16



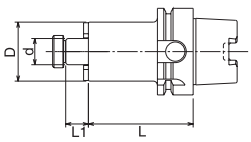
Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
HSK63A	3/4”	3.00”	1.693"	0.669"	5/16”	3/8”-24	536-082	**425.30**
HSK63A	3/4”	5.00”	1.693"	0.669"	5/16”	3/8”-24	536-084	**469.60**
HSK63A	1”	3.00”	2.165"	0.669"	3/8”	1/2”-20	536-086	**442.80**
HSK63A	1”	5.00”	2.165"	0.669"	3/8”	1/2”-20	536-088	**487.30**
HSK63A	1-1/4”	3.00”	2.756"	0.669"	1/2”	5/8”-18	536-090	**500.70**
HSK63A	1-1/4”	5.00”	2.756"	0.669"	1/2”	5/8”-18	536-092	**598.00**

HSK100A Shell Mill Holders

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission



Drive Key pg G16 | Arbor Screw pg G16

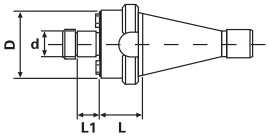


Taper	d	L	D	L1	Key Size	Arbor Thread	Code No.	Price $
HSK100A	3/4”	4.00”	1.693"	0.669"	5/16”	3/8”-24	536-094	**547.10**
HSK100A	3/4”	6.00”	1.693"	0.669"	5/16”	3/8”-24	536-096	**588.80**
HSK100A	1”	4.00”	2.165"	0.669"	3/8”	1/2”-20	536-098	**547.10**
HSK100A	1”	6.00”	2.165"	0.669"	3/8”	1/2”-20	536-100	**589.00**
HSK100A	1-1/4”	4.00”	2.756"	0.669"	1/2”	5/8”-18	536-102	**547.00**
HSK100A	1-1/4”	6.00”	2.756"	0.669"	1/2”	5/8”-18	536-104	**589.00**
HSK100A	1-1/2”	4.00”	3.504"	0.902"	5/8”	3/4”-16	536-106	**631.10**
HSK100A	1-1/2”	6.00”	3.504"	0.902"	5/8”	3/4”-16	536-108	**673.20**
HSK100A	2”	4.00”	4.488"	0.902"	3/4”	1”-14	536-110	**673.20**
HSK100A	2”	6.00”	4.488"	0.902"	3/4”	1”-14	536-112	**715.40**

NMTB Taper Shell Mill Holders

- All Ground Body
- 100% Forged Construction





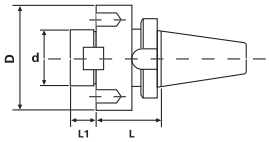
Drive Key pg G16 Arbor Screw pg G16

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	534-130	**177.50**
NMTB40	3/4"	0.87"	1.94"	0.67"	5/16"	3/8"-24	534-132	**177.50**
NMTB40	1"	1.31"	2.38"	0.67"	3/8"	1/2"-20	534-134	**177.50**
NMTB40	1-1/4"	1.50"	2.88"	0.67"	1/2"	5/8"-18	534-136	**177.50**
NMTB40	1-1/2"	1.63"	3.50"	0.93"	5/8"	3/4"-16	534-138	**177.50**
NMTB50								
NMTB50	3/4"	1.25"	2.00"	0.67"	5/16"	3/8"-24	534-140	**223.30**
NMTB50	1"	1.88"	2.38"	0.67"	3/8"	1/2"-20	534-142	**230.00**
NMTB50	1-1/4"	1.88"	2.88"	0.67"	1/2"	5/8"-18	534-144	**234.50**
NMTB50	1-1/2"	1.88"	3.50"	0.93"	5/8"	3/4"-16	534-146	**257.50**
NMTB50	2"	1.88"	4.38"	0.93"	3/4"	1"-14	534-148	**260.00**

NMTB50 Taper Face Mill Holders

- All Ground Body
- 100% Forged Construction

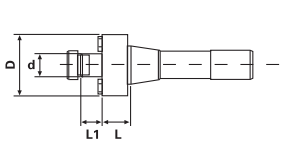




Drive Key pg G16 Mounting Bolt pg G16

Taper	d	L	D	L1	Key Size	Code No.	Price $
NMTB50	2"	3.00"	5.05"	0.87"	3/4"	534-150	**257.50**
NMTB50	2-1/2"	3.00"	5.00"	1.18"	1"	534-152	**260.00**

R8 Shell Mill Holders





Drive Key pg G16 Arbor Screw pg G16

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	534-154	**106.60**
R8	3/4"	1.00"	2.00"	0.69"	5/16"	3/8"-24	534-156	**106.60**
R8	1"	1.00"	2.38"	0.69"	3/8"	1/2"-20	534-158	**111.40**
R8	1-1/4"	1.00"	2.88"	0.69"	1/2"	5/8"-18	534-160	**114.40**
R8	1-1/2"	1.75"	3.50"	0.94"	5/8"	3/4"-16	534-162	**127.90**

Replacement Drive Keys



Spigot Dia.	Description	Code No.	Price $
1/2	Two 1/4" Drive keys	534-164	**17.60**
3/4	Two 5/16"	534-166	**21.60**
1	Two 3/8"	534-168	**25.50**
1-1/4	Two 1/2"	534-170	**28.30**
1-1/2	Two 5/8"	534-172	**30.60**
2	Two 3/4"	534-174	**34.70**
2-1/2	Two 1"	534-176	**38.00**

Replacement Arbor Screws

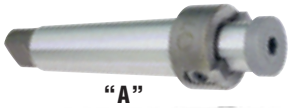


Thread Size	Size of Holder	Code No.	Price $
5/8-11	Face Mill Mounting Bolt	534-178	**16.70**
1/4-28	1/2"	534-180	**16.70**
3/8-24	3/4"	534-182	**18.00**
1/2-20	1"	534-184	**19.90**
5/8-18	1-1/4"	534-186	**22.60**
3/4-16	1-1/2"	534-188	**36.40**
1-14	2"	534-190	**51.40**

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: .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.	Morse Taper	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	410-405	**221.80**	410-305	**284.10**
MT4–3/4	4	3/4	1-3/4 to 2	410-410	**233.60**	410-310	**288.10**
MT4–1	4	1	2-1/4 to 2-3/4	410-415	**248.70**	410-315	**307.70**
MT4–1-1/4	4	1-1/4	3 to 3-1/2	410-420•	**140.20**	410-320	**348.00**
MT4–1-1/2	4	1-1/2	4 to 5	-	-	410-325	**366.30**
MT5–1-1/4	5	1-1/4	3 to 3-1/2	410-435	**321.30**	410-335	**364.70**
MT5–1-1/2	5	1-1/2	4 to 5	410-440	**339.70**	410-340	**389.50**

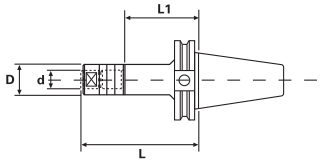
• Available only while supplies last.

CAT Taper Stub Arbors

- Each arbor equipped with 1/8, 1/4, 3/8, 1/2 spacers



Pull Stud pg G116
Arbor Nut pg G18
Arbor Spacer pg G18

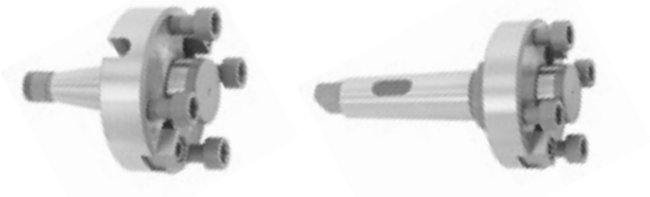


Taper	d	L	D	L1	Code No.	Price $
CAT40						
CT40	1"	6.17"	1.50"	4.00"	531-580	**196.60**
CT40	1-1/4"	6.29"	1.75"	4.00"	531-582	**200.80**
CT40	1-1/2"	6.60"	2.12"	4.00"	531-584	**206.90**
CAT50						
CT50	1"	6.17"	1.50"	4.00"	531-586	**292.60**
CT50	1-1/4"	6.28"	1.75"	4.00"	531-588	**298.60**
CT50	1-1/2"	6.60"	2.12"	4.00"	531-590	**307.80**

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



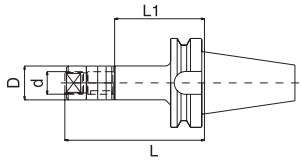
Taper	Fore Bore Dia.	Length of Arbor	Screw Size	Code No.	Price $
ISA40	2	6.20	5/8-11	410-190	**831.00**
ISA40	2-1/2	6.20	5/8-11	410-192	**824.60**
ISA50	2	7.56	5/8-11	410-194	**936.00**
ISA50	2-1/2	7.56	5/8-11	410-196	**929.80**
MT 5	2	9.57	5/8-11	410-202	**1,379.10**
MT 5	2-1/2	9.57	5/8-11	410-204	**1,373.50**
MT 6	2	13.58	5/8-11	410-206	**1,723.40**
MT 6	2-1/2	13.58	5/8-11	410-208	**1,717.90**

BT Taper Stub Arbors

- Each arbor equipped with 1/8, 1/4, 3/8, 1/2 spacers



Pull Stud pg G116
Arbor Nut pg G18
Arbor Spacer pg G18



Taper	d	L	D	L1	Code No.	Price $
BT30						
BT30	1"	5.17"	1.50"	3.00"	532-292	**142.70**
BT40						
BT40	1"	5.18"	1.50"	3.00"	532-294	**188.20**
BT40	1-1/4"	5.32"	1.75"	3.00"	532-296	**192.10**
BT40	1-1/2"	5.60"	2.12"	3.00"	532-298	**162.90**

Replacement Stub Arbor Spacers



Description	Code No.	Price $
1/8" Spacer for 3/4" Holder	534-568	**12.60**
1/4" Spacer for 3/4" Holder	534-570	**12.70**
3/8" Spacer for 3/4" Holder	534-572	**12.70**
1/2" Spacer for 3/4" Holder	534-574	**12.70**
1/8" Spacer for 1" Holder	534-576	**12.90**
1/4" Spacer for 1" Holder	534-578	**12.90**
3/8" Spacer for 1" Holder	534-580	**12.90**
1/2" Spacer for 1" Holder	534-582	**12.90**
1/8" Spacer for 1-1/4" Holder	534-584	**14.20**
1/4" Spacer for 1-1/4" Holder	534-586	**14.20**
3/8" Spacer for 1-1/4" Holder	534-588	**14.20**
1/2" Spacer for 1-1/4" Holder	534-590	**14.20**
1/8" Spacer for 1-1/2" Holder	534-592	**14.50**
1/4" Spacer for 1-1/2" Holder	534-594	**14.50**
3/8" Spacer for 1-1/2" Holder	534-596	**14.50**
1/2" Spacer for 1-1/2" Holder	534-598	**14.50**

Replacement Stub Arbor Nuts



Holder Size	Code No.	Price $
1"	534-562	**35.70**
1-1/4"	534-564	**40.80**
1-1/2"	534-566	**38.50**

R8 Stub Milling Machine Arbors

To fit Bridgeport and other popular machines.
Furnished complete with assorted spacers



R8 Shank

Arbor No.	Arbor Dia. (in.)	Length of Shoulder to Nut (in.)	Thread of Nut	Code No.	Price $
R8S1	1	2	1 - 14	400-350	**398.20**
R8S1-1/4	1-1/4	2	1-1/4 - 12	400-355	**431.60**

Slitting Saw Arbor



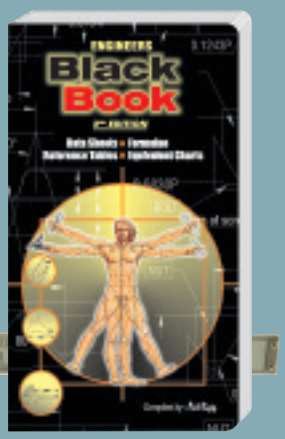
Diameter of Arbor (in.)	Length (in.)	Fits Following Hole Size (in.)	Code No.	Price $
1/2	2-9/16	1/2, 5/8, 3/4, 7/8, 1	400-150	**80.20**

COMBO OFFER

Code No.: 500-016
Price: $ 141.20

6" Digital Caliper
Code No.: 200-540
Resolution: .0005" / 0.01mm
- Large face for easy reading
- Inside, outside, step, and depth measurement
- Inch/Metric conversion
- Auto On/Off





Engineer's Black Book
Code No.: 180-155
Easy to use Pocket Book contains a wealth of up to date, useful, practical, and hard to find information
- Tables
- Formulae
- Standards
- Tapers
- Tapping Drill Sizes
- Speeds and Feeds

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	400-205	**616.40**
41- A8	40	1	8	None	None	400-030*	**838.10**
40-7/8 - B14-3	40	7/8	14	1-7/8 x 3-1/8	1	400-210	**822.00**
40-7/8 - B16-3	40	7/8	16	1-7/8 x 3-1/8	1	400-215	**1,157.90**
41 - B3	40	1	3	None	None	400-220	**592.10**
41 - B14-3	40	1	14	1-7/8 x 3-1/8	1	400-225	**1,311.70**
41 - B20-3	40	1	20	1-7/8 x 3-1/8	1	400-230	**1,479.60**
41-1/4 - B3	40	1-1/4	3	None	None	400-235	**635.90**
41-1/4 - B14-3	40	1-1/4	14	1-7/8 x 3-1/8	1	400-240	**1,301.40**
41-1/4 - B20-3	40	1-1/4	20	1-7/8 x 3-1/8	1	400-245	**1,594.10**
41-1/2 - B20-4	40	1-1/2	20	2-1/8 x 3-3/4	1	400-250	**2,009.40**
51 - B3-1/2	50	1	3-1/2	None	None	400-255	**705.30**
51- B15-4	50	1	15	2-1/8 x 3-3/4	1	400-260	**1,301.40**
51 - B18-4	50	1	18	2-1/8 x 3-3/4	2	400-265	**1,595.50**
51 - B24-4	50	1	24	2-1/8 x 3-3/4	2	400-270	**1,871.40**
51-1/4 - B3-1/2	50	1-1/4	3-1/2	None	None	400-275	**857.80**
51-1/4 - B15-4	50	1-1/4	15	2-1/8 x 3-3/4	1	400-280	**1,615.40**
51-1/4 - B18-4	50	1-1/4	18	2-1/8 x 3-3/4	2	400-285	**1,715.50**
51-1/4 - B24-4	50	1-1/4	24	2-1/8 x 3-3/4	2	400-290	**1,991.40**
51-1/4 - B30-4	50	1-1/4	30	2-1/8 x 3-3/4	2	400-295	**2,503.00**
51-1/2 - B3-1/2	50	1-1/2	3-1/2	None	None	400-300	**878.00**
51-1/2 - B18-4	50	1-1/2	18	2-1/8 x 3-3/4	2	400-305	**1,853.50**
51-1/2 - B24-5	50	1-1/2	24	2-3/4 x 4-1/4	2	400-310	**2,207.20**
51-1/2 - B30-5	50	1-1/2	30	2-3/4 x 4-1/4	2	400-315	**2,691.10**
51-1/2 - B36-5	50	1-1/2	36	2-3/4 x 4-1/4	2	400-320	**1,890.30**
52 - B24-5	50	2	24	2-3/4 x 4-1/4	2	400-325	**2,681.20**
52 - B30-5	50	2	30	2-3/4 x 4-1/4	2	400-330	**2,966.90**
52 - B36-5	50	2	36	2-3/4 x 4-1/4	2	400-335	**2,896.90**
52-1/2 - B36-6	50	2-1/2	36	3-3/8 x 4-1/4	2	400-340	**4,454.40**

* Style A

Arbor Solid Spacers With Keyways



400585 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	400-405	**26.90**	400-490	**27.60**	400-575	**26.80**	400-660	**34.80**	400-745	**17.30**
3/32	400-410	**26.40**	400-495	**28.30**	-	-	400-665	**35.40**	400-750	**17.30**
1/8	400-415	**28.60**	400-500	**28.90**	400-585	**28.40**	400-670	**36.40**	400-755	**48.00**
3/16	400-420	**28.20**	400-505	**30.60**	400-590	**30.00**	400-675	**38.80**	400-760	**51.10**
1/4	400-425	**30.70**	400-510	**33.50**	400-595	**34.40**	400-680	**41.40**	400-765	**54.40**
5/16	400-430	**30.00**	400-515	**34.80**	400-600	**35.40**	400-685	**43.10**	400-770	**63.40**
3/8	400-435	**33.30**	400-520	**36.10**	400-605	**37.20**	400-690	**45.00**	400-775	**59.90**
7/16	400-440	**38.50**	400-525	**37.50**	400-610	**42.90**	400-695	**51.90**	400-780	**58.80**
1/2	400-445	**35.40**	400-530	**38.70**	400-615	**39.50**	400-700	**48.00**	400-785	**65.80**
5/8	400-450	**37.60**	400-535	**40.70**	400-620	**42.00**	400-705	**47.10**	400-790	**54.50**
3/4	400-455	**44.10**	400-540	**46.40**	400-625	**48.60**	400-710	**56.70**	400-795	**77.10**
7/8	400-460	**51.30**	400-545	**53.90**	400-630	**48.70**	-	-	400-800	**64.70**
1	400-465	**47.50**	400-550	**48.80**	400-635	**52.60**	400-720	**62.80**	400-805	**86.80**
1-1/4	400-470	**59.30**	400-555	**59.10**	400-640	**62.40**	400-725	**69.10**	400-810	**108.60**
1-1/2	400-475	**63.00**	400-560	**62.40**	400-645	**61.30**	400-730	**37.50**	400-815	**84.00**
2	400-480	**64.30**	400-565	**69.30**	400-650	**75.90**	400-735	**100.00**	400-820	**129.20**
3	400-485	**37.50**	400-570	**95.10**	400-655	**92.50**	400-740	**134.90**	400-825	**157.80**

Arbor Running Bushings With Keyways



Bushing No.	Bushing O.D.	Hole Dia.	Bushing Length	Code No.	Price $
2 - 7/8	1-5/8	7/8	2-5/8	400-900	**97.10**
2 - 1	1-5/8	1	2-5/8	400-905	**102.10**
2 - 1-1/4	1-7/8	1-1/4	2-5/8	400-910	**123.00**
3 - 1	1-7/8	1	3-1/8	400-920	**128.10**
3 - 1-1/4	1-7/8	1-1/4	3-1/8	400-925	**135.60**
4 - 7/8	2-1/8	7/8	3-3/4	400-930	**162.80**
4 - 1	2 -1/8	1	3-3/4	400-935	**145.30**
4 - 1-1/4	2-1/8	1-1/4	3-3/4	400-940	**145.10**
4 - 1-1/2	2-1/8	1-1/2	3-3/4	400-945	**147.60**
5 - 1	2-3/4	1	4-1/4	400-955	**180.90**
5 - 1-1/4	2-3/4	1-1/4	4-1/4	400-960	**178.50**
5 - 1-1/2	2-3/4	1-1/2	4-1/4	400-965	**191.30**
5 - 2	2-3/4	2	4-1/4	400-970	**184.80**

Arbor Nuts

Arbor nuts are hardened and have a ground thread and shoulder.



Size	Thread Diameter	For Arbor Code No.	Price $
7/8 - 14RH	7/8	405-105	**77.20**
1 - 14RH	1	405-110	**96.70**
1-1/4 - 12RH	1-1/4	405-115	**110.20**
1-1/2 - 12RH	1-1/2	405-120	**190.80**
2 - 12RH	2	405-125	**264.50**
2-1/2 - 12RH	2-1/2	405-130	**384.10**

COLLET CHUCKS

ER Collet Chucks - CAT, BT, HSK, NMTB & R8 Taper	G22-24
Dual Contact ER Collet Chucks	G22
ER Collet Chuck Extensions	G24
ER Collets	G25-31
ER Collet Sets	G32-33
ER Collet Chuck Sets	G34
ER Chuck Nuts, Wrenches, Backup Screws	G34
SA Collet Chucks	G35
SA Collets	G36
TG Collet Chucks	G37
TG 75, 100, 150 Collets & Sets	G38-40
TG Chuck Nuts, Wrenches, Backup Screws	G40
Milling Chucks	G41-42
Dual Contact Milling Chucks	G41
Milling Collets	G43
DA Collet Chucks & Parts	G44-45
DA Collets	G45-47
Type 25 & 32 Collet Sets	G47
Type 25 & Type 32 Collets	G48
5C Collets & Set	G48
Emergency Type Collet	G48
R8 Collets & Set	G48



CAT40 ER Collet Chucks

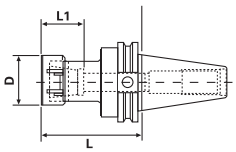
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction
- Factory Balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- Wrench not included



Complete with certificate

CAT 40 Premium Balanced 30x RPM

Pull Stud pg G116 Nut pg G34 Wrench pg G34 ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT40	ER11**	.019-.275"	2.50"	0.65"	0.75"	531-400	**184.10**
CT40	ER11**	.019-.275"	4.00"	0.65"	0.75"	531-402	**184.10**
CT40	ER11**	.019-.275"	6.00"	0.65"	0.75"	531-404	**198.50**
CT40	ER16**	.019-.406"	2.50"	0.87"	1.26"	531-406	**184.10**
CT40	ER16**	.019-.406"	3.50"	0.87"	1.26"	531-408	**184.10**
CT40	ER16**	.019-.406"	4.00"	0.87"	1.26"	531-405	**191.50**
CT40	ER16**	.019-.406"	6.00"	0.87"	1.26"	531-410	**198.50**
CT40	ER16**	.019-.406"	9.00"	0.87"	1.26"	531-411	**311.60**
CT40	ER20**	.039-.511"	2.50"	1.06"	1.38"	531-412	**185.40**
CT40	ER20**	.039-.511"	4.00"	1.06"	1.38"	531-414	**185.40**
CT40	ER20**	.039-.511"	6.00"	1.06"	1.38"	531-416	**203.70**
CT40	ER20**	.039-.511"	9.00"	1.06"	1.38"	531-417	**310.80**
CT40	ER25	.039-.629"	2.50"	1.18"	1.65"	531-418	**192.60**
CT40	ER25	.039-.629"	4.00"	1.18"	1.65"	531-420	**192.60**
CT40	ER25	.039-.629"	6.00"	1.18"	1.65"	531-422	**211.50**
CT40	**ER32**	**.078-.787"**	**.750"**			**531-401***	**277.60**
CT40	ER32	.078-.787"	2.50"	1.34"	1.97"	531-421	**196.20**
CT40	ER32	.078-.787"	3.13"	1.34"	1.97"	531-424	**196.20**
CT40	ER32	.078-.787"	4.00"	1.34"	1.97"	531-423	**203.50**
CT40	ER32	.078-.787"	5.00"	1.34"	1.97"	531-426	**210.70**
CT40	ER32	.078-.787"	6.00"	1.34"	1.97"	531-425	**217.80**
CT40	ER32	.078-.787"	9.00"	1.34"	1.97"	531-419	**352.40**
CT40	ER40	.118-1.023"	2.50"	1.50"	2.48"	531-427	**205.60**
CT40	ER40	.118-1.023"	3.13"	1.50"	2.48"	531-428	**205.60**
CT40	ER40	.118-1.023"	4.00"	1.50"	2.48"	531-429	**213.00**
CT40	ER40	.118-1.023"	5.00"	1.50"	2.48"	531-430	**220.10**
CT40	ER40	.118-1.023"	6.00"	1.50"	2.48"	531-431	**227.40**

* ER Shorty collet chuck ** Hex Nut

CAT40 DUAL CONTACT ER Collet Chucks

New

FOR DUAL CONTACT SPINDLES

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction
- TIR, 0.0003" at 4xDia.

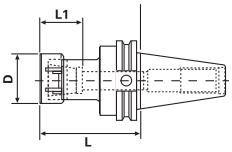


CAT 40 Premium Balanced 30x RPM



Complete with certificate

Pull Stud pg G116 Nut pg G34 Wrench pg G34 ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT40	ER16**	.019-.406"	2.50"	0.87"	1.26"	521-406	**257.60**
CT40	ER16**	.019-.406"	4.00"	0.87"	1.26"	521-405	**268.10**
CT40	ER16**	.019-.406"	6.00"	0.87"	1.26"	521-410	**277.80**
CT40	ER32	.078-.787"	3.13"	1.34"	1.97"	521-424	**274.60**
CT40	ER32	.078-.787"	4.00"	1.34"	1.97"	521-423	**284.80**
CT40	ER32	.078-.787"	6.00"	1.34"	1.97"	521-425	**304.80**

** Hex Nut

CAT50 ER Collet Chucks

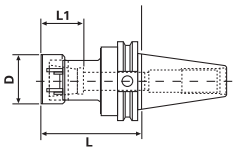
- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction
- Factory Balanced to save spindle life, tool life and increased productivity
- Threaded through holes for a back-up screw (tool stop) or coolant through when removed
- TIR, 0.0003" at 4xDia.
- Wrench not included



Complete with certificate

CAT 50 Premium Balanced 25x RPM

Pull Stud pg G116 Nut pg G34 Wrench pg G34 ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT50	ER16**	.019-.406"	4.12"	0.87"	1.26"	531-432	**274.00**
CT50	ER16**	.019-.406"	6.00"	0.87"	1.26"	531-434	**296.80**
CT50	ER16**	.019-.406"	8.00"	0.87"	1.26"	531-436	**340.70**
CT50	ER16**	.019-.406"	12.00"	0.87"	1.26"	531-437	**516.50**
CT50	ER20**	.039-.511"	2.50"	1.06"	1.38"	531-438	**275.30**
CT50	ER20**	.039-.511"	4.00"	1.06"	1.38"	531-440	**275.30**
CT50	ER20**	.039-.511"	6.00"	1.06"	1.38"	531-442	**304.00**
CT50	ER20**	.039-.511"	8.00"	1.06"	1.38"	531-444	**342.50**
CT50	ER20**	.039-.511"	12.00"	1.06"	1.38"	531-445	**516.50**
CT50	ER25	.039-.629"	2.50"	1.18"	1.65"	531-446	**282.20**
CT50	ER25	.039-.629"	4.00"	1.18"	1.65"	531-448	**282.20**
CT50	ER25	.039-.629"	6.00"	1.18"	1.65"	531-450	**304.30**
CT50	ER25	.039-.629"	8.00"	1.18"	1.65"	531-452	**348.90**
CT50	**ER32**	**.078-.787"**	**.750"**			**531-403***	**439.50**
CT50	ER32	.078-.787"	4.00"	1.34"	1.97"	531-454	**286.10**
CT50	ER32	.078-.787"	6.00"	1.34"	1.97"	531-456	**294.50**
CT50	ER32	.078-.787"	8.00"	1.34"	1.97"	531-458	**354.40**
CT50	ER32	.078-.787"	12.00"	1.34"	1.97"	531-459	**641.10**
CT50	ER40	.118-1.023"	4.00"	1.50"	2.48"	531-460	**295.60**
CT50	ER40	.118-1.023"	6.00"	1.50"	2.48"	531-462	**318.50**
CT50	ER40	.118-1.023"	8.00"	1.50"	2.48"	531-464	**365.20**
CT50	ER40	.118-1.023"	12.00"	1.50"	2.48"	531-465	**710.40**

* ER Shorty collet chuck ** Hex Nut

CAT50 DUAL CONTACT ER Collet Chucks

New

FOR DUAL CONTACT SPINDLES

- 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.
- 100% Forged Construction

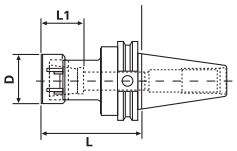


CAT 50 Premium Balanced 25x RPM



Complete with certificate

Pull Stud pg G116 Nut pg G34 Wrench pg G34 ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT50	ER16**	.019-.406"	4.12"	0.87"	1.26"	521-432	**383.40**
CT50	ER16**	.019-.406"	6.00"	0.87"	1.26"	521-434	**415.60**
CT50	ER16**	.019-.406"	8.00"	0.87"	1.26"	521-436	**476.90**
CT50	ER32	.078-.787"	4.00"	1.34"	1.97"	521-454	**400.30**
CT50	ER32	.078-.787"	6.00"	1.34"	1.97"	521-456	**412.30**
CT50	ER32	.078-.787"	8.00"	1.34"	1.97"	521-458	**495.90**

** Hex Nut

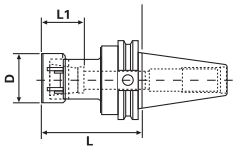
G3 TOOLING

BT Taper ER Collet Chucks

- DIN Coolant option - standard
- All Ground Body
- 100% Forged Construction
- 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



Complete with certificate



BT 30 Premium Balanced 20x RPM | **BT 40 Premium Balanced 30x RPM** | **BT 50 Premium Balanced 25x RPM**

Pull Stud pg G116 | Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
BT30							
BT30	ER11**	.019-.275”	2.00”	0.65”	0.75”	532-150*	**175.10**
BT30	ER11**	.019-.275”	4.00”	0.65”	0.75”	532-152*	**175.10**
BT30	ER16**	.019-.406”	2.36”	0.87”	1.26”	532-154*	**175.10**
BT30	ER16**	.019-.406”	4.00”	0.87”	1.26”	532-156*	**175.10**
BT30	ER16**	.019-.406”	5.00”	0.87”	1.26”	532-158*	**183.70**
BT30	ER16**	.019-.406”	6.00”	0.87”	1.26”	532-160*	**183.70**
BT30	ER20**	.039-.511”	2.50”	1.06”	1.38”	532-162*	**176.40**
BT30	ER20**	.039-.511”	4.00”	1.06”	1.38”	532-164*	**176.40**
BT30	ER25	.039-.629”	2.00”	1.18”	1.65”	532-166*	**183.00**
BT30	ER25	.039-.629”	4.00”	1.18”	1.65”	532-168*	**183.00**
BT30	ER32	.078-.787”	3.00”	1.34”	1.97”	532-170*	**186.60**
BT30	ER32	.078-.787”	5.00”	1.34”	1.97”	532-172*	**200.20**
BT40							
BT40	ER11**	.019-.275”	2.50”	0.65”	0.75”	532-174	**184.10**
BT40	ER11**	.019-.275”	4.00”	0.65”	0.75”	532-176	**184.10**
BT40	ER11**	.019-.275”	6.00”	0.65”	0.75”	532-178	**198.50**
BT40	ER16**	.019-.406”	3.50”	0.87”	1.26”	532-180	**184.10**
BT40	ER16**	.019-.406”	5.00”	0.87”	1.26”	532-182	**198.50**
BT40	ER20**	.039-.511”	2.50”	1.06”	1.38”	532-184	**185.40**
BT40	ER20**	.039-.511”	4.00”	1.06”	1.38”	532-186	**208.60**
BT40	ER20**	.039-.511”	6.00”	1.06”	1.38”	532-188	**203.70**
BT40	ER25	.039-.629”	2.25”	1.18”	1.65”	532-190	**192.60**
BT40	ER25	.039-.629”	4.00”	1.18”	1.65”	532-192	**192.60**
BT40	ER25	.039-.629”	6.00”	1.18”	1.65”	532-194	**216.70**
BT40	**ER32**	**.078-.787”**	**1.06”**			**532-191 ‡**	**277.60**
BT40	ER32	.078-.787”	3.13”	1.34”	1.97”	532-196	**196.20**
BT40	ER32	.078-.787”	5.00”	1.34”	1.97”	532-198	**210.70**
BT40	ER40	.118-1.023”	3.13”	1.50”	2.50”	532-200	**205.60**
BT40	ER40	.118-1.023”	5.00”	1.50”	2.50”	532-202	**220.10**
BT50							
BT50	ER16**	.019-.406”	2.50”	0.87”	1.26”	532-203	**274.00**
BT50	ER16**	.019-.406”	4.00”	0.87”	1.26”	532-204	**296.80**
BT50	ER25	.039-.629”	2.75”	1.18”	1.65”	532-205	**282.20**
BT50	ER25	.039-.629”	4.00”	1.18”	1.65”	532-206	**282.20**

* Not DIN Coolant
** Hex Nut
‡ ER SHorty collet chuck

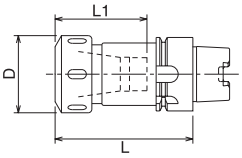
HSK63 ER Collet Chucks

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission
- Wrench not included



HSK 63 Premium Balanced 30x RPM

Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
HSK63A	ER16**	.019-.393”	3.00”	0.866"	1.260"	536-114	**275.40**
HSK63A	ER16**	.019-.393”	5.00”	0.866"	1.260"	536-116	**319.90**
HSK63A	ER20**	.039-.511”	3.00”	1.062"	1.378"	536-118	**275.40**
HSK63A	ER20**	.039-.511”	5.00”	1.062"	1.378"	536-120	**319.90**
HSK63A	ER25	.039-.629”	3.00”	1.181"	1.654"	536-122	**275.40**
HSK63A	ER25	.039-.629”	5.00”	1.181"	1.654"	536-124	**319.90**
HSK63A	ER32	.078-.787”	4.00”	1.260"	1.969"	536-126	**314.10**
HSK63A	ER32	.078-.787”	6.00”	1.260"	1.969"	536-128	**438.40**
HSK63A	ER40	.118-1.023”	4.00”	1.496"	2.480"	536-130	**336.00**
HSK63A	ER40	.118-1.023”	6.00”	1.496"	2.480"	536-132	**469.90**

** Hex Nut

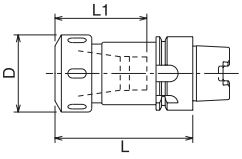
HSK100 ER Collet Chucks

- All Ground Body
- 100% Forged Construction
- High rigidity & torque transmission
- Wrench not included



HSK 100 Premium Balanced 25x RPM

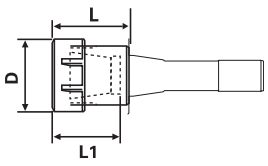
Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31



Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
HSK100A	ER16**	.019-.393”	4.00”	0.866"	1.260"	536-134	**364.70**
HSK100A	ER16**	.019-.393”	6.00”	0.866"	1.260"	536-136	**536.70**
HSK100A	ER20**	.039-.511”	4.00”	1.062"	1.378"	536-138	**364.70**
HSK100A	ER20**	.039-.511”	6.00”	1.062"	1.378"	536-140	**536.70**
HSK100A	ER25	.039-.629”	4.00”	1.181"	1.654"	536-142	**364.70**
HSK100A	ER25	.039-.629”	6.00”	1.181"	1.654"	536-144	**536.70**
HSK100A	ER32	.078-.787”	4.00”	1.260"	1.969"	536-146	**364.70**
HSK100A	ER32	.078-.787”	6.00”	1.260"	1.969"	536-148	**571.70**
HSK100A	ER40	.118-1.023”	4.00”	1.496"	2.480"	536-150	**392.20**
HSK100A	ER40	.118-1.023”	6.00”	1.496"	2.480"	536-152	**577.10**

** Hex Nut

R8 Taper ER Collet Chucks

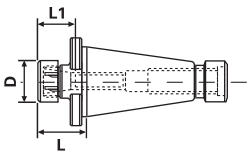




Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
R8	ER16	.019-.406"	1.25"	2.83"	1.25"	534-360	**134.10**
R8	ER20	.039-.511"	2.00"	1.50"	1.38"	534-362	**134.10**
R8	ER25	.039-.629"	2.50"	1.64"	1.66"	534-364	**138.90**

NMTB Taper ER Collet Chucks





• Wrench not included

Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31

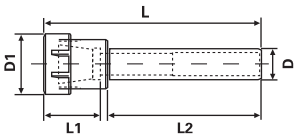
Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
NMTB40							
NMTB40	ER11	.019-.275"	2.00"	0.65"	0.75"	534-350	**175.10**
NMTB40	ER16	.019-.406"	1.77"	0.87"	1.26"	534-352	**175.10**
NMTB40	ER25	.039-.629"	2.00"	1.18"	1.65"	534-354	**183.00**
NMTB40	ER32	.078-.787"	2.00"			534-260	**167.10**
NMTB50							
NMTB50	ER16	.019-.406"	2.00"	0.87"	1.26"	534-356	**210.70**
NMTB50	ER25	.039-.629"	2.00"	1.18"	1.65"	534-358	**264.00**
NMTB50	ER32	.078-.787"	2.50"			534-262	**246.40**

ER Collet Chuck Extensions

• Wrench not included



Nut pg G34 | Wrench pg G34 | ER Collet pg G25-31



Collet Series	Collet Range	Shank Dia. (D)	D1	L	L1	L2	Code No.	Price $
ER11	.019-.275"	1/2	.740"	6.11"	.091"	5.00"	534-368	**183.40**
ER11	.019-.275"	5/8	.740"	6.11"	.091"	5.00"	534-370	**183.40**
ER11	.019-.275"	3/4	.740"	5.65"	.091"	5.00"	534-372	**183.40**
ER16	.019-.406"	5/8	1.26"	6.48"	1.28"	5.00"	534-374	**183.40**
ER16	.019-.406"	3/4	1.26"	6.48"	1.28"	5.00"	534-376	**183.40**
ER16	.019-.406"	1	1.26"	5.89"	1.28"	5.00"	534-378	**196.30**
ER20	.039-.511"	3/4	1.38"	6.67"	1.48"	5.00"	534-380	**183.40**
ER20	.039-.511"	1	1.38"	6.40"	1.48"	5.00"	534-382	**196.30**
ER20	.039-.511"	1-1/4	1.38"	6.40"	1.48"	5.00"	534-384	**196.30**
ER25	.039-.629"	3/4	1.65"	6.85"	1.65"	5.00"	534-386	**196.90**
ER25	.039-.629"	1	1.65"	6.85"	1.65"	5.00"	534-388	**196.90**
ER25	.039-.629"	1-1/4	1.65"	6.00"	1.65"	5.00"	534-390	**196.90**
ER32	.078-.787"	1	1.97"	7.09"	1.85"	5.00"	534-392	**205.50**
ER32	.078-.787"	1-1/4	1.97"	6.30"	2.13"	4.00"	337-805	**212.30**
ER32	.078-.787"	1-1/4	1.97"	7.09"	1.85"	5.00"	534-394	**208.40**

ER Collet Chuck Sets

• Wrench included





Shank	Collet Set	Code No.	Price $
ER-16			
3/4 x 4	10 collets in set (range .019 - .393)	337-700	**461.80**
3/4 x 6	10 collets in set (range .019 - .393)	337-705	**496.80**
R-8	10 collets in set (range .019- .393)	337-710	**496.80**
ER-20			
3/4 x 4	12 collets in set (range .039 - .511)	337-715	**520.70**
3/4 x 6	12 collets in set (range .039 - .511)	337-720	**555.70**
ER-32			
1-1/4 x 4	11 collets in set (range .080 - .787)	337-730	**597.70**
ISO-30	11 collets in set (range .080 - .787)	337-735	**597.70**
R-8	11 collets in set (range .080 - .787)	337-740	**597.70**
ER-40			
R-8	15 collets in set (range .120 - 1.020)	337-745	**911.40**
ISO-30	15 collets in set (range .120 - 1.020)	337-750	**911.40**
ISO-40	15 collets in set (range .120 - 1.020)	337-755	**916.80**
ISO-50	23 collets in set (range .120 - 1.020)	337-760	**1,347.10**

R8 Taper ER Collet Chucks

• Wrench not included

Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31



Collet Series	Gauge Length	Nose Dia.	Draw Bar	Code No.	Price $
ER32	40mm	50mm	7/16-20 UNF-3	337-815	**212.30**
ER40	70mm	63mm	7/16-20 UNF-3B	337-820	**259.30**

NMTB Taper ER Collet Chucks

• Wrench not included

Nut pg G34 | Wrench pg G34 | ER Collets pg G25-31



Taper	Collet Series	Gauge Length	Nose Dia.	Draw Bar	Code No.	Price $
NMTB30	ER32	55	50	1/2-13	337-825	**212.30**
NMTB30	ER40	85	63	1/2-13	337-830	**259.30**
NMTB40	ER40	55	63	5/8-11	337-835	**264.00**
NMTB50	ER40	58	63	1-8	337-840	**353.50**

ER 11 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: 0.5 mm - 7 mm (0.019" - 0.275")
- ER11 collets collapse approximately 1/64" with full accuracy



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.019-.039"	0.5-1	337-650	**29.60**
.039-.059"	1-1.5	337-652	**29.60**
.059-.078"	1.5-2	337-654	**29.60**
.078-.098"	2-2.5	337-656	**29.60**
.098-.118"	2.5-3	337-658	**29.60**
.118-.137"	3-3.5	337-660	**29.60**
.137-.157"	3.5-4	337-662	**29.60**
.157-.177"	4-4.5	337-664	**29.60**
.177-.196"	4.5-5	337-666	**29.60**
.196-.216"	5-5.5	337-668	**29.60**
.216-.236"	5.5-6	337-670	**29.60**
.236-.255"	6-6.5	337-672	**29.60**
.255-.275"	6.5-7	337-674	**29.60**
Inch Collets			
3/64		337-609	**29.60**
1/16		337-610	**29.60**
5/64		337-611	**29.60**
3/32		337-613	**29.60**
7/64		337-614	**29.60**
1/8		337-615	**29.60**
9/64		337-617	**29.60**
5/32		337-618	**29.60**
11/64		337-619	**29.60**
3/16		337-651	**29.60**
13/64		337-653	**29.60**
7/32		337-655	**29.60**
15/64		337-657	**29.60**
1/4		337-659	**29.60**
17/64		337-661	**29.60**

- **See page G32, G33 for Sets**
- **See page G33 for Dimensional Data**

ER 11 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 500 psi
- Size range: 3/6 - 17/64", 4.0 - 7.0 mm



Size (in/mm)	Code No.	Price $
Inch		
3/16	337-622	**40.30**
13/64	337-624	**40.30**
7/32	337-626	**40.30**
15/64	337-628	**40.30**
1/4	337-630	**40.30**
17/64	337-632	**40.30**
Metric		
4.0	337-634	**40.30**
4.5	337-636	**40.30**
5.0	337-638	**40.30**
5.5	337-640	**40.30**
6.0	337-642	**40.30**
6.5	337-644	**40.30**
7.0	337-646	**40.30**

ASIMETO®

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.

See Section F

Exactly What You Need





ER 16 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")
- ER 16 collets collapse approximately 1/32" with full accuracy



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.019-.039"	0.5-1	337-302	**29.60**
.039-.078"	1-2	337-304	**29.60**
.078-.118"	2-3	337-306	**29.60**
.118-.157"	3-4	337-308	**29.60**
.157-.196"	4-5	337-310	**29.60**
.196-.236	5-6	337-312	**29.60**
.236-.275"	6-7	337-314	**29.60**
.275-.314"	7-8	337-316	**29.60**
.314-.354"	8-9	337-318	**29.60**
.354-.393"	9-10	337-320	**29.60**
Inch Collets			
1/16		337-531	**29.60**
3/32		337-532	**29.60**
1/8		337-533	**29.60**
5/32		337-534	**29.60**
3/16		337-535	**29.60**
7/32		337-536	**29.60**
1/4		337-537	**29.60**
9/32		337-538	**29.60**
5/16		337-540	**29.60**
11/32		337-541	**29.60**
3/8		337-542	**29.60**
13/32		337-543	**29.60**

ER 16 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	337-850	**66.60**
8	M4	.168"	.131"	337-851	**66.60**
10	M4.5, M5	.194"	.152"	337-852	**66.60**
12		.220"	.165"	337-853	**66.60**
1/4	M6, M6.3	.255"	.191"	337-854	**66.60**
5/16	M7, M8	.318"	.238"	337-855	**66.60**

- **See page G32, G33 for Sets**
- **See page G33 for Dimensional Data**

ER 16 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi



Size (in/mm)	Code No.	Price $
Inch		
1/8	337-841	**28.80**
5/32	337-842	**32.80**
3/16	337-843	**32.80**
13/64	337-826	**32.80**
7/32	337-844	**32.80**
15/64	337-827	**32.80**
1/4	337-845	**32.80**
17/64	337-828	**32.80**
9/32	337-846	**32.80**
19/64	337-829	**32.80**
5/16	337-847	**32.80**
21/64	337-831	**32.80**
11/32	337-848	**32.80**
23/64	337-832	**32.80**
3/8	337-849	**32.80**
25/64	337-833	**32.80**
13/32	337-834	**32.80**
Metric		
4.0	338-292	**32.80**
4.5	338-294	**35.90**
5.0	338-296	**32.80**
5.5	338-298	**32.80**
6.0	338-300	**32.80**
6.5	338-302	**32.80**
7.0	338-304	**32.80**
7.5	338-305	**32.80**
8.0	338-306	**32.80**
8.5	338-307	**32.80**
9.0	338-308	**32.80**
9.5	338-309	**32.80**
10.0	338-310	**32.80**

ER 16 Quick Change Floating Tap Collets

New

With Axial Compensation

- For use with any ER collet chuck, these tapping collets help prevent tap breakage on machines requiring axial compensation. Friction-free ball-bearing drive.



ANSI Tap Inch	ANSI Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-750	**149.20**
8	M4	.168"	.131"	338-751	**149.20**
10	M4.5, M5	.194"	.152"	338-752	**149.20**

ER 20 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: 1 mm-13 mm (0.039"-0.511")
- ER 20 collets collapse approximately 1/32" with full accuracy



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.039-.078"	1-2	337-473	**29.60**
.078-.118"	2-3	337-474	**29.60**
.098-.137"	2.5-3.5	337-471	**29.60**
.118-.157"	3-4	337-475	**29.60**
.157-.196"	4-5	337-476	**29.60**
.196-.236"	5-6	337-477	**29.60**
.236-.275"	6-7	337-478	**29.60**
.275-.314"	7-8	337-479	**29.60**
.314-.354"	8-9	337-480	**29.60**
.354-.393"	9-10	337-481	**29.60**
.393-.433"	10-11	337-482	**29.60**
.433-.452"	11-11.5	337-469	**29.60**
.433-.472"	11-12	337-483	**29.60**
.472-.511"	12-13	337-484	**29.60**
Inch Collets			
1/16		337-621	**29.60**
3/32		337-623	**29.60**
1/8		337-663	**29.60**
5/32		337-665	**29.60**
3/16		337-667	**29.60**
7/32		337-669	**29.60**
1/4		337-671	**29.60**
9/32		337-673	**29.60**
5/16		337-675	**29.60**
11/32		337-676	**29.60**
3/8		337-677	**29.60**
13/32		337-678	**29.60**
7/16		337-679	**29.60**
15/32		337-681	**29.60**
1/2		337-682	**29.60**

ER 20 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	337-869	**68.50**
8	M4	.168"	.131"	337-870	**68.50**
10	M4.5, M5	.194"	.152"	337-871	**68.50**
12		.220"	.165"	337-872	**68.50**
1/4	M6, M6.3	.255"	.191"	337-873	**68.50**
5/16	M7, M8	.318"	.238"	337-874	**68.50**
3/8	M10	.381"	.286"	337-875	**68.50**
7/16		.323"	.242"	337-876	**68.50**
1/2	M12, M12.5	.367"	.275"	337-877	**68.50**

- **See page G32, G33 for Sets**
- **See page G33 for Dimensional Data**

ER 20 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi



Size (in/mm)	Code No.	Price $
Inch		
1/8	337-856	**45.70**
5/32	337-857	**32.80**
3/16	337-858	**32.80**
7/32	337-859	**32.80**
1/4	337-860	**32.80**
9/32	337-861	**32.80**
5/16	337-862	**32.80**
11/32	337-863	**32.80**
3/8	337-864	**32.80**
13/32	337-865	**32.80**
7/16	337-866	**32.80**
15/32	337-867	**32.80**
1/2	337-868	**32.80**
Metric		
4.0	338-325	**32.80**
5.0	338-330	**32.80**
5.5	338-334	**35.90**
6.0	338-336	**32.80**
6.5	338-337	**32.80**
7.0	338-338	**32.80**
7.5	338-339	**32.80**
8.0	338-340	**32.80**
8.5	338-341	**32.80**
9.0	338-342	**32.80**
9.5	338-343	**32.80**
10.0	338-344	**32.80**
10.5	338-345	**32.80**
11.0	338-346	**32.80**
11.5	338-347	**32.80**
12.0	338-348	**32.80**
12.5	338-349	**32.80**
13.0	338-350	**32.80**

ER 20 Quick Change Floating Tap Collets

New

With Axial Compensation

- For use with any ER collet chuck, these tapping collets help prevent tap breakage on machines requiring axial compensation. Friction-free ball-bearing drive.



ANSI Tap Inch	ANSI Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-753	**149.20**
8	M4	.168"	.131"	338-754	**149.20**
10	M4.5, M5	.194"	.152"	338-755	**149.20**
12		.220"	.165"	338-756	**149.20**
1/4	M6, M6.3	.255"	.191"	338-757	**149.20**

ER 25 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.



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.039-.078	1-2	337-330	**31.00**
.078-.118	2-3	337-332	**31.00**
.098-.137	2.5-3.5	337-333	**31.00**
.118-.157	3-4	337-334	**31.00**
.157-.196	4-5	337-336	**31.00**
.196-.236	5-6	337-338	**31.00**
.236-.275	6-7	337-340	**31.00**
.275-.314	7-8	337-342	**31.00**
.314-.354	8-9	337-344	**31.00**
.354-.393	9-10	337-346	**31.00**
.393-.433	10-11	337-348	**31.00**
.433-.452	11-11.5	337-349	**31.00**
.433-.472	11-12	337-350	**31.00**
.472-.511	12-13	337-352	**31.00**
.511-.551	13-14	337-354	**31.00**
.551-.590	14-15	337-356	**31.00**
.590-.629	15-16	337-358	**31.00**
Inch Collets			
1/8		337-683	**31.00**
5/32		337-684	**31.00**
3/16		337-685	**31.00**
7/32		337-686	**31.00**
1/4		337-687	**31.00**
9/32		337-688	**31.00**
5/16		337-689	**31.00**
11/32		337-691	**31.00**
3/8		337-692	**31.00**
13/32		337-693	**31.00**
7/16		337-694	**31.00**
15/32		337-696	**31.00**
1/2		337-697	**31.00**
17/32		337-698	**31.00**
9/16		337-699	**31.00**
19/32		337-701	**31.00**
5/8		337-702	**31.00**

ER 25 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	337-895	**69.20**
8	M4	.168"	.131"	337-896	**69.20**
10	M4.5, M5	.194"	.152"	337-897	**69.20**
12		.220"	.165"	337-898	**69.20**
1/4	M6, M6.3	.255"	.191"	337-899	**69.20**
5/16	M7, M8	.318"	.238"	337-900	**69.20**
3/8	M10	.381"	.286"	337-901	**69.20**
7/16		.323"	.242"	337-902	**69.20**
1/2	M12, M12.5	.367"	.275"	337-903	**69.20**
9/16	M14	.429"	.322"	337-904	**69.20**
5/8	M16	.480"	.360"	337-905	**69.20**
NPT					
1/16, 1/8-SS (small shank)		.3125"	.234"	337-909	**69.20**
1/8-LS (large shank)		.4375"	.328"	337-910	**69.20**

• See page G32, G33 for Sets
• See page G33 for Dimensional Data

ER 25 Sealed Collets

- Steel Sealed for coolant through applications
- Pressure resistance tested to 2000 psi



Inch Size	Inch Code No.	Price $	Metric Size	Metric Code No.	Price $
1/8	337-878	**46.40**	4.0	338-327	**34.30**
5/32	337-879	**34.30**	5.0	338-329	**34.30**
3/16	337-880	**34.30**	6.0	338-360	**34.30**
7/32	337-881	**34.30**	6.5	338-362	**37.50**
1/4	337-882	**34.30**	7.0	338-364	**34.30**
17/64	338-352	**34.30**	7.5	338-366	**37.50**
9/32	337-883	**34.30**	8.0	338-368	**34.30**
19/64	338-354	**34.30**	8.5	338-370	**34.30**
5/16	337-884	**34.30**	9.0	338-372	**34.30**
21/64	338-356	**34.30**	9.5	338-374	**37.50**
11/32	337-885	**34.30**	10.0	338-376	**34.30**
23/64	338-358	**34.30**	10.5	338-378	**34.30**
3/8	337-886	**34.30**	11.0	338-380	**34.30**
25/64	337-916	**34.30**	11.5	338-382	**34.30**
13/32	337-887	**34.30**	12.0	338-384	**34.30**
27/64	337-917	**34.30**	12.5	338-386	**34.30**
7/16	337-888	**34.30**	13.0	338-388	**34.30**
29/64	337-918	**34.30**	13.5	338-390	**34.30**
15/32	337-889	**34.30**	14.0	338-392	**34.30**
31/64	337-919	**34.30**	14.5	338-394	**34.30**
1/2	337-890	**34.30**	15.0	338-396	**34.30**
33/64	337-920	**34.30**	15.5	338-398	**34.30**
17/32	337-891	**34.30**	16.0	338-400	**34.30**
35/64	337-921	**34.30**			
9/16	337-892	**34.30**			
37/64	337-922	**34.30**			
19/32	337-893	**34.30**			
39/64	337-923	**34.30**			
5/8	337-894	**34.30**			

ER 25 Quick Change Floating Tap Collets

New

With Axial Compensation

- For use with any ER collet chuck, these tapping collets help prevent tap breakage on machines requiring axial compensation. Friction-free ball-bearing drive.



ANSI Tap Inch	ANSI Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-758	**160.60**
8	M4	.168"	.131"	338-759	**160.60**
10	M4.5, M5	.194"	.152"	338-760	**160.60**
12		.220"	.165"	338-761	**160.60**
1/4	M6, M6.3	.255"	.191"	338-762	**160.60**
5/16	M7, M8	.318"	.238"	338-763	**160.60**
7/16		.323"	.242"	338-764	**160.60**
1/2	M12, M12.5	.367"	.275"	338-765	**160.60**

ER 32 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.



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.078-.118	2-3	337-361	**32.50**
.098-.137	2.5-3.5	337-359	**32.50**
.118-.157	3-4	337-362	**32.50**
.157-.196	4-5	337-363	**32.50**
.196-.236	5-6	337-364	**32.50**
.236-.275	6-7	337-365	**32.50**
.275-.314	7-8	337-366	**32.50**
.314-.354	8-9	337-367	**32.50**
.354-.393	9-10	337-368	**32.50**
.393-.433	10-11	337-369	**32.50**
.413-.452	10.5-11.5	337-357	**32.50**
.433-.472	11-12	337-370	**32.50**
.472-.511	12-13	337-371	**32.50**
.511-.551	13-14	337-372	**32.50**
.551-.590	14-15	337-373	**32.50**
.590-.629	15-16	337-374	**32.50**
.629-.669	16-17	337-375	**32.50**
.669-.708	17-18	337-376	**32.50**
.708-.748	18-19	337-377	**32.50**
.728-.767	18.5-19.5	337-355	**32.50**
.748-.787	19-20	337-378	**32.50**
Inch Collets			
1/8		337-703	**32.50**
5/32		337-704	**32.50**
3/16		337-706	**32.50**
7/32		337-707	**32.50**
1/4		337-708	**32.50**
9/32		337-709	**32.50**
5/16		337-711	**32.50**
11/32		337-712	**32.50**
3/8		337-713	**32.50**
13/32		337-714	**32.50**
7/16		337-716	**32.50**
15/32		337-717	**32.50**
1/2		337-718	**32.50**
17/32		337-719	**32.50**
9/16		337-721	**32.50**
19/32		337-722	**32.50**
5/8		337-723	**32.50**
21/32		337-724	**32.50**
11/16		337-725	**32.50**
23/32		337-726	**32.50**
3/4		337-727	**32.50**

ER 32 Quick Change Floating Tap Collets

New

With Axial Compensation

- For use with any ER collet chuck, these tapping collets help prevent tap breakage on machines requiring axial compensation. Friction-free ball-bearing drive.



ANSI Tap Inch	ANSI Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-766	**168.40**
8	M4	.168"	.131"	338-767	**168.40**
10	M4.5, M5	.194"	.152"	338-768	**168.40**
12		.220"	.165"	338-769	**168.40**
1/4	M6, M6.3	.255"	.191"	338-770	**168.40**
5/16	M7, M8	.318"	.238"	338-771	**168.40**
3/8	M10	.381"	.286"	338-772	**168.40**
7/16		.323"	.242"	338-773	**168.40**
1/2	M12, M12.5	.367"	.275"	338-774	**168.40**
9/16	M14	.429"	.322"	338-775	**168.40**
NPT					
1/16, 1/8-SS (small shank)		.3125"	.234"	338-776	**168.40**
1/8-LS (large shank)		.4375"	.328"	338-777	**168.40**

ER 32 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi



Inch Size	Code No.	Price $	Metric Size	Code No.	Price $
1/8	338-200	**49.10**	4.0	338-353	**35.70**
5/32	338-201	**35.70**	5.0	338-355	**35.70**
3/16	338-202	**35.70**	6.0	338-320	**35.70**
7/32	338-203	**35.70**	7.0	338-357	**35.70**
1/4	338-204	**35.70**	8.0	338-324	**35.70**
17/64	338-301	**35.70**	9.0	338-359	**35.70**
9/32	338-205	**35.70**	10.0	338-328	**35.70**
19/64	338-303	**35.70**	10.5	338-404	**35.70**
5/16	338-206	**35.70**	11.0	338-406	**35.70**
21/64	338-311	**35.70**	12.0	338-332	**35.70**
11/32	338-207	**35.70**	12.5	338-408	**35.70**
23/64	338-312	**35.70**	13.0	338-410	**35.70**
3/8	338-208	**35.70**	13.5	338-412	**39.00**
25/64	338-313	**35.70**	14.0	338-414	**35.70**
13/32	338-209	**35.70**	14.5	338-416	**35.70**
27/64	338-314	**35.70**	15.0	338-418	**35.70**
7/16	338-210	**35.70**	15.5	338-420	**35.70**
29/64	338-315	**35.70**	16.0	338-422	**35.70**
15/32	338-211	**35.70**	16.5	338-424	**35.70**
31/64	338-316	**35.70**	17.0	338-426	**35.70**
1/2	338-212	**35.70**	17.5	338-428	**35.70**
33/64	338-317	**35.70**	18.0	338-430	**35.70**
17/32	338-213	**35.70**	18.5	338-432	**35.70**
35/64	338-318	**35.70**	19.0	338-434	**35.70**
9/16	338-214	**35.70**	19.5	338-436	**35.70**
37/64	338-319	**35.70**	20.0	338-438	**35.70**
19/32	338-215	**35.70**			
39/64	338-321	**35.70**			
5/8	338-216	**35.70**			
41/64	337-924	**35.70**			
21/32	338-217	**35.70**			
43/64	337-925	**35.70**			
11/16	338-218	**35.70**			
45/64	337-926	**35.70**			
23/32	338-219	**35.70**			
47/64	337-927	**35.70**			
3/4	338-220	**35.70**			
49/64	337-928	**35.70**			
25/32	338-322	**35.70**			

ER 32 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-221	**71.90**
8	M4	.168"	.131"	338-222	**71.90**
10	M4.5, M5	.194"	.152"	338-223	**71.90**
12		.220"	.165"	338-224	**71.90**
1/4	M6, M6.3	.255"	.191"	338-225	**71.90**
5/16	M7, M8	.318"	.238"	338-226	**71.90**
3/8	M10	.381"	.286"	338-227	**71.90**
7/16		.323"	.242"	338-228	**71.90**
1/2	M12, M12.5	.367"	.275"	338-229	**71.90**
9/16	M14	.429"	.322"	338-230	**71.90**
5/8	M16	.480"	.360"	338-231	**71.90**
11/16	M18	.542"	.406"	338-232	**71.90**
3/4		.590"	.442"	338-233	**71.90**
13/16	M20	.652"	.489"	338-234	**71.90**
NPT					
1/16, 1/8-SS (small shank)		.3125"	.234"	338-235	**71.90**
1/8-LS (large shank)		.4375"	.328"	338-236	**71.90**
1/4		.5625"	.421"	338-237	**71.90**

ER 40 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.



REGULAR

Size (in.)	Size (mm)	Code No.	Price $
.118-.157	3-4	337-501	**41.40**
.157-.196	4-5	337-502	**41.40**
.196-.236	5-6	337-503	**41.40**
.236-.275	6-7	337-505	**41.40**
.275-.314	7-8	337-506	**41.40**
.314-.354	8-9	337-507	**41.40**
.354-.393	9-10	337-509	**41.40**
.393-.433	10-11	337-510	**41.40**
.413-.452	10.5-11.5	337-498	**41.40**
.433-.472	11-12	337-511	**41.40**
.472-.511	12-13	337-513	**41.40**
.511-.551	13-14	337-514	**41.40**
.551-.590	14-15	337-515	**41.40**
.590-.629	15-16	337-517	**41.40**
.629-.669	16-17	337-518	**41.40**
.669-.708	17-18	337-519	**41.40**
.708-.748	18-19	337-521	**41.40**
.728-767	18.5-19.5	337-496	**41.40**
.748-.787	19-20	337-522	**41.40**
.787-.826	20-21	337-523	**41.40**
.826-.866	21-22	337-524	**41.40**
.866-.905	22-23	337-525	**41.40**
.905-.944	23-24	337-526	**41.40**
.944-.984	24-25	337-527	**41.40**
.984-1.023	25-26	337-528	**41.40**
Inch Collets			
1/8		337-728	**41.40**
5/32		337-729	**41.40**
3/16		337-731	**41.40**
7/32		337-732	**41.40**
1/4		337-733	**41.40**
9/32		337-734	**41.40**
5/16		337-736	**41.40**
11/32		337-737	**41.40**
3/8		337-738	**41.40**
13/32		337-739	**41.40**
7/16		337-741	**41.40**
15/32		337-742	**41.40**
1/2		337-743	**41.40**
17/32		337-744	**41.40**
9/16		337-746	**41.40**
19/32		337-747	**41.40**
5/8		337-748	**41.40**
21/32		337-749	**41.40**
11/16		337-751	**41.40**
23/32		337-752	**41.40**
3/4		337-753	**41.40**
25/32		337-754	**41.40**
13/16		337-756	**41.40**
27/32		337-757	**41.40**
7/8		337-758	**41.40**
29/32		337-759	**41.40**
15/16		337-761	**41.40**
31/32		337-762	**41.40**
1		337-763	**41.40**

• See page G32, G33 for Sets
• See page G33 for Dimensional Data

ER 40 Sealed Collets

- Sealed for coolant through applications
- Pressure resistance tested to 2000 psi



Inch Size	Code No.	Price $	Metric Size	Code No.	Price $
1/8	338-238	**44.50**	6.0	338-441	**44.50**
5/32	338-239	**44.50**	7.0	338-443	**44.50**
3/16	338-240	**44.50**	8.0	338-445	**44.50**
7/32	338-241	**44.50**	9.0	338-447	**44.50**
1/4	338-242	**44.50**	10.0	338-440	**44.50**
9/32	338-243	**44.50**	10.5	338-442	**44.50**
5/16	338-244	**44.50**	11.0	338-444	**44.50**
11/32	338-245	**44.50**	11.5	338-446	**44.50**
3/8	338-246	**44.50**	12.0	338-448	**44.50**
13/32	338-247	**44.50**	12.5	338-450	**44.50**
7/16	338-248	**44.50**	13.0	338-452	**44.50**
15/32	338-249	**44.50**	13.5	338-454	**44.50**
1/2	338-250	**44.50**	14.0	338-456	**44.50**
17/32	338-251	**44.50**	14.5	338-458	**44.50**
9/16	338-252	**44.50**	15.0	338-460	**44.50**
19/32	338-253	**44.50**	15.5	338-462	**44.50**
5/8	338-254	**44.50**	16.0	338-464	**44.50**
21/32	338-255	**44.50**	16.5	338-468	**44.50**
11/16	338-256	**44.50**	17.0	338-470	**44.50**
23/32	338-257	**44.50**	17.5	338-472	**44.50**
3/4	338-258	**44.50**	18.0	338-474	**44.50**
25/32	338-259	**44.50**	18.5	338-476	**44.50**
13/16	338-260	**44.50**	19.0	338-478	**44.50**
27/32	338-261	**44.50**	19.5	338-480	**44.50**
7/8	338-262	**44.50**	20.0	338-482	**44.50**
29/32	338-263	**44.50**	20.5	338-484	**44.50**
15/16	338-264	**44.50**	21.0	338-486	**44.50**
31/32	338-265	**44.50**	21.5	338-488	**44.50**
1	338-266	**44.50**	22.0	338-490	**44.50**
			22.5	338-492	**44.50**
			23.0	338-494	**44.50**
			23.5	338-496	**44.50**
			24.0	338-498	**44.50**
			24.5	338-500	**44.50**
			25.0	338-502	**44.50**
			25.5	338-504	**44.50**
			26.0	338-506	**44.50**

ER 40 Tap Collets

- For synchronous, rigid tapping operations using ER collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	338-267	**76.90**
8	M4	.168"	.131"	338-268	**76.90**
10	M4.5, M5	.194"	.152"	338-269	**76.90**
12		.220"	.165"	338-270	**76.90**
1/4	M6, M6.3	.255"	.191"	338-271	**76.90**
5/16	M7, M8	.318"	.238"	338-272	**76.90**
3/8	M10	.381"	.286"	338-273	**76.90**
7/16		.323"	.242"	338-274	**76.90**
1/2	M12, M12.5	.367"	.275"	338-275	**76.90**
9/16	M14	.429"	.322"	338-276	**76.90**
5/8	M16	.480"	.360"	338-277	**76.90**
11/16	M18	.542"	.406"	338-278	**76.90**
3/4		.590"	.442"	338-279	**76.90**
13/16	M20	.652"	.489"	338-280	**76.90**
7/8	M22	.697"	.523"	338-281	**76.90**
15/16	M24	.760"	.570"	338-282	**76.90**
1	M25	.800"	.600"	338-283	**76.90**
NPT					
1/16, 1/8-SS (small shank)		.3125"	.234"	338-284	**76.90**
1/8-LS (large shank)		.4375"	.328"	338-285	**76.90**
1/4		.5625"	.421"	338-286	**76.90**
3/8		.7000"	.531"	338-287	**76.90**
1/2		.6875"	.515"	338-288	**76.90**

ER 50 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: .394" - 1.339"
- ER50 collets collapse approximately 5/64" with full accuracy

Size (in.)	Size (mm)	Code No.	Price $
.394-.472	10-12	337-450	**71.60**
.472-.551	12-14	337-452	**71.60**
.551-.630	14-16	337-454	**71.60**
.630-.709	16-18	337-456	**71.60**
.709-.789	18-20	337-458	**71.60**
.789-.866	20-22	337-460	**71.60**
.866-.945	22-24	337-461	**71.60**
.945-1.024	24-26	337-462	**71.60**
1.024-1.102	26-28	337-464	**71.60**
1.102-1.181	28-30	337-466	**71.60**
1.181-1.260	30-32	337-468	**71.60**
1.260-1.339	32-34	337-470	**71.60**
Inch Collets			
13/32		337-764	**71.60**
7/16		337-778	**71.60**
15/32		337-779	**71.60**
1/2		337-781	**58.00**
17/32		337-782	**71.60**
9/16		337-783	**58.00**
19/32		337-784	**71.60**
5/8		337-786	**71.60**
21/32		337-787	**71.60**
11/16		337-788	**71.60**
23/32		337-789	**71.60**
3/4		337-794	**76.10**
25/32		337-795	**71.60**
13/16		337-796	**71.60**
27/32		337-797	**71.60**
7/8		337-798	**71.60**
29/32		337-799	**71.60**
15/16		337-801	**71.60**
31/32		337-802	**71.60**
1		337-803	**58.00**
1-1/32		337-804	**71.60**
1-1/16		337-806	**71.60**
1-3/32		337-807	**71.60**
1-3/16		337-808	**71.60**
1-5/32		337-809	**71.60**
1-3/16		337-811	**71.60**
1-7/32		337-812	**71.60**
1-1/4		337-813	**71.60**
1-9/32		337-814	**71.60**
1-5/16		337-816	**71.60**

ER Collet Sets



* Case may not be as shown



ER11 / 13 Pieces		ER16 / 10 Pieces		ER20 / 12 Pieces		ER25 / 15 Pieces	
Code No. 337-379	Price $ 383.40	Code No. 337-380	Price $ 295.10	Code No. 337-382	Price $ 353.90	Code No. 337-383	Price $ 461.60
Code No.	Size	Code No.	Size	Code No.	Size	Code No.	Size
337-650	.019-.039	337-302	.019-.039	337-473	.039-.078	337-330	.039-.078
337-652	.039-.058	337-304	.039-.078	337-474	.078-.118	337-332	.078-.118
337-654	.059-.078	337-306	.078-.118	337-475	.118-.157	337-334	.118-.157
337-656	.078-.098	337-308	.118-.157	337-476	.157-.196	337-336	.157-.196
337-658	.098-.118	337-310	.157-.196	337-477	.196-.236	337-338	.196-.236
337-660	.118-.137	337-312	.196-.236	337-478	.236-.275	337-340	.236-.275
337-662	.137-.157	337-314	.236-.275	337-479	.275-.314	337-342	.275-.314
337-664	.157-.177	337-316	.275-.314	337-480	.314-.354	337-344	.314-.354
337-666	.177-.196	337-318	.314-.354	337-481	.354-.393	337-346	.354-.393
337-668	.196-.216	337-320	.354-.393	337-482	.393-.433	337-348	.393-.433
337-670	.216-.236			337-483	.433-.472	337-350	.433-.472
337-672	.236-.255			337-484	.472-.511	337-352	.472-.511
337-674	.255-.275					337-354	.511-.551
						337-356	.551-.590
						337-358	.590-.629

ER32 / 18 Pieces		ER40 / 23 Pieces		ER50 / 12 Pieces	
Code No. 337-384	Price $ 581.60	Code No. 337-386	Price $ 943.40	Code No. 337-387	Price $ 855.30
Code No.	Size	Code No.	Size	Code No.	Size
337-361	.078-.118	337-501	.118-157	337-450	.394-.472
337-362	.118-.157	337-502	.157-.196	337-452	.472-.551
337-363	.157-.196	337-503	.196-.236	337-454	.551-.630
337-364	.196-.236	337-505	.236-.275	337-456	.630-.709
337-365	.236-.275	337-506	.275-.314	337-458	.709-.789
337-366	.275-.314	337-507	.314-.354	337-460	.789-.866
337-367	.314-.354	337-509	.354-.393	337-461	.866-.945
337-368	.354-.393	337-510	.393-.433	337-462	.945-1.024
337-369	.393-.433	337-511	.433-.472	337-464	1.024-1.102
337-370	.433-.472	337-513	.472-.511	337-466	1.102-1.181
337-371	.472-.511	337-514	.511-.551	337-468	1.181-1.260
337-372	.511-.551	337-515	.551-.590	337-470	1.260-1.339
337-373	.551-.590	337-517	.590-.629		
337-374	.590-.629	337-518	.629-.669		
337-375	.629-.669	337-519	.669-.708		
337-376	.669-.708	337-521	.708-.748		
337-377	.708-.748	337-522	.748-.787		
337-378	.748-.787	337-523	.787-.826		
		337-524	.826-.866		
		337-525	.866-.905		
		337-526	.905-.944		
		337-527	.944-.984		
		337-528	.984-1.023		

ER Collet Sets

QUALITY IMPORT

- Shipped as set, no plastic container



Collet	Description	Range	Code No.	Price $
ER16	Inch 11pc Collet Set	1/16"-3/8" x 32nds	337-440	158.20
ER25	Inch 17pc Collet Set	1/8"-5/8" x 32nds	337-442	263.20
ER32	Inch 21pc Collet Set	1/8"-3/4" x 32nds	337-444	348.30

ER Inch Collet Sets



ER11 / 7 Pieces		ER16 / 11 Pieces		ER20 / 15 Pieces		ER25 / 17 Pieces		ER32 / 21 Pieces		ER40 / 29 Pieces	
Code No. 337-401	Price $ 206.70	Code No. 337-403	Price $ 324.50	Code No. 337-404	Price $ 442.40	Code No. 337-405	Price $ 523.00	Code No. 337-407	Price $ 678.50	Code No. 337-409	Price $ 1,189.60
Code No.	**Size**	**Code No.**	**Size**	**Code No.**	**Size**	**Code No.**	**Size**	**Code No.**	**Size**	**Code No.**	**Size**
337-610	1/16	337-531	1/16	337-621	1/16	337-683	1/8	337-703	1/8	337-728	1/8
337-613	3/32	337-532	3/32	337-623	3/32	337-684	5/32	337-704	5/32	337-729	5/32
337-615	1/8	337-533	1/8	337-663	1/8	337-685	3/16	337-706	3/16	337-731	3/16
337-618	5/32	337-534	5/32	337-665	5/32	337-686	7/32	337-707	7/32	337-732	7/32
337-651	3/16	337-535	3/16	337-667	3/16	337-687	1/4	337-708	1/4	337-733	1/4
337-655	7/32	337-536	7/32	337-669	7/32	337-688	9/32	337-709	9/32	337-734	9/32
337-659	1/4	337-537	1/4	337-671	1/4	337-689	5/16	337-711	5/16	337-736	5/16
		337-538	9/32	337-673	9/32	337-691	11/32	337-712	11/32	337-737	11/32
		337-540	5/16	337-675	5/16	337-692	3/8	337-713	3/8	337-738	3/8
		337-541	11/32	337-676	11/32	337-693	13/32	337-714	13/32	337-739	13/32
		337-542	3/8	337-677	3/8	337-694	7/16	337-716	7/16	337-741	7/16
				337-678	13/32	337-696	15/32	337-717	15/32	337-742	15/32
				337-679	7/16	337-697	1/2	337-718	1/2	337-743	1/2
				337-681	15/32	337-698	17/32	337-719	17/32	337-744	17/32
				337-682	1/2	337-699	9/16	337-721	9/16	337-746	9/16
						337-701	19/32	337-722	19/32	337-747	19/32
						337-702	5/8	337-723	5/8	337-748	5/8
								337-724	21/32	337-749	21/32
								337-725	11/16	337-751	11/16
								337-726	23/32	337-752	23/32
								337-727	3/4	337-753	3/4
										337-754	25/32
										337-756	13/16
										337-757	27/32
										337-758	7/8
										337-759	29/32
										337-761	15/16
										337-762	31/32
										337-763	1

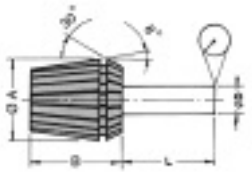
ER Sealed Collet Sets



Collet	Description	Range	Code No.	Price $
ER11	Inch 6pc Sealed Collet Set	3/16-17/64 x 64ths	337-929	**199.80**
ER11	Metric 7pc Sealed Collet Set	3.9-7.0mm x 0.5mm	337-930	**233.10**
ER16	Inch 10pc Sealed Collet Set	1/8-13/32 x 32nds	337-931	**325.80**
ER16	Metric 13pc Sealed Collet Set	4.0-10.0mm x 0.5mm	337-932	**442.00**
ER20	Inch 12pc Sealed Collet Set	5/32-1/2 x 32nds	337-933	**390.90**
ER20	Metric 17pc Sealed Collet Set	5.0-13.0mm x 0.5mm	337-935	**578.20**
ER25	Inch 13pc Sealed Collet Set	1/4-5/8 x 32nds	337-938	**440.10**
ER25	Metric 21pc Sealed Collet Set	6.0-16.0mm x 0.5mm	337-939	**744.00**
ER32	Inch 17pc Sealed Collet Set	1/4-3/4 x 32nds	337-940	**601.60**
ER32	Metric 20pc Sealed Collet Set	10.0-20.0mm x 0.5mm	337-942	**737.60**
ER40	Metric 33pc Sealed Collet Set	10.0-26.0mm x 0.5mm	337-944	**1,533.20**

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
ER-11	11.5	18			0.02	0.010
ER-16	17	27	6	1.0-1.4	0.02	0.010
ER-20	21	31	10	1.5-2.9	0.02	0.010
ER-25	26	35	16	3.0-5.9	0.02	0.010
ER-32	33	40	25	6.0-9.9	0.02	0.010
ER-40	41	46	40	10.0-17.9	0.03	0.010
ER-50	52	60	50	18.0-26.9	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 12-11 mm collet to clamp a 12 mm diameter, but rather use a 13-12 mm collet

G3 TOOLING

Replacement ER Chuck Nuts





Collet Nut for ER32 Shorty Collet Chuck

Description	Steam Oxide Code No.	Steam Oxide Price $	Balanced & Bright Code No.	Balanced & Bright Price $
ER11 Nut (Hex)	337-680	**32.50**	534-790	**75.60**
ER16 Nut (Hex)	337-389	**32.50**	534-792	**79.10**
ER20 Nut (Hex)	337-391	**33.70**	534-794	**82.80**
ER25 Nut (Notched)	337-390	**45.90**	534-796	**85.10**
ER32 Nut (Notched)	337-392	**49.90**	534-798	**88.20**
ER40 Nut (Notched)	337-393	**59.40**	534-800	**92.30**
ER50 Nut (Notched)	337-385	**94.40**		
ER32 Shorty Collet Nut				
Fits ER32 Shorty Chucks (M40 x 1.5 Thread)			337-411	**114.90**

ER Chuck Nut Wrenches





Wrench for ER32 Shorty Collet Chuck

Description	Code No.	Price $
Fits ER11 Chucks (Hex)	337-388	**18.90**
Fits ER16 Chucks (Hex)	337-395	**18.90**
Fits ER20 Chucks (Hex)	337-397	**18.90**
Fits ER25 Chucks (Notched)	337-396	**41.20**
Fits ER32 Chucks (Notched)	337-398	**47.40**
Fits ER40 Chucks (Notched)	337-399	**50.20**
ER32 Shorty Chuck Wrench		
Fits ER32 Shorty Chucks	337-381	**103.70**

Replacement Backup Screws



Description	Code No.	Price $
ER11 Backup Screws	534-814	**12.60**
ER16 Backup Screws	534-816	**12.60**
ER20 Backup Screws	534-818	**12.00**
ER25 Backup Screws	534-820	**12.60**
ER32 Backup Screws	534-822	**12.60**
ER40 Backup Screws	534-824	**13.30**

SOWA

215pc TiAlN TIP DRILL SET WITH DISPLAY CASE



Code No.: 500-747
Price: $ 1,013.90

215pc Set includes:

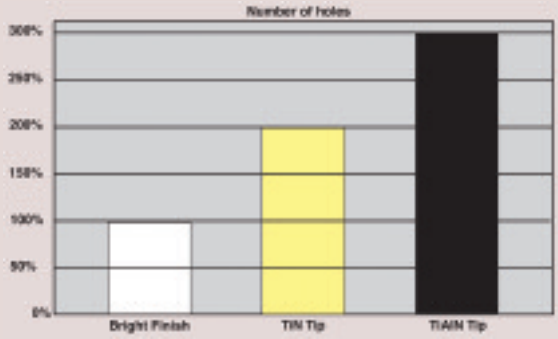
1/16" - 1/2" x 64th in the following quantities

- 10 pcs - 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 11/64", 3/16", 13/64", 7/32", 15/64", 1/4", 17/64"
- 5 pcs - 9/32", 19/64", 5/16", 21/64", 11/32", 23/64", 3/8", 25/64", 13/32", 27/64", 7/16", 29/64", 15/32", 31/64", 1/2"

(see pg B10 for the full range of the TiAlN Tip Drills)



50% more holes drilled compared to TiN tip,
200% more holes compared to bright finish



Empty drill display also available



- Labeled for inch drills
- 1/16" - 1/2" by 64ths
- Metal construction
- Lockable

Code No.: 113-843
Price: $ 89.60

CAT Taper SA High Precision Collet Chucks

FEATURES:
- DIN Coolant thru 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



Complete with certificate

CAT 40 *Premium Balanced* **20x** RPM

CAT 50 *Premium Balanced* **15x** RPM

Pull Stud	Nut	Wrench	SA Collet
pg G116	pg G35	pg G35	pg G36

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Price $
CAT40					
CT40	SA6	.028-.236"	3.54"	531-752	**236.10**
CT40	SA6	.028-.236"	4.72"	531-754	**282.80**
CT40	SA10	.069-.394"	3.54"	531-756	**279.20**
CT40	SA10	.069-.394"	4.72"	531-758	**294.00**
CT40	SA10	.069-.394"	5.91"	531-760	**285.70**
CT40	SA16	.108-.630"	3.54"	531-762	**294.00**
CT40	SA16	.108-.630"	4.72"	531-764	**322.00**
CT40	SA16	.108-.630"	5.91"	531-766	**305.30**
CT40	SA25	.630-1.00"	3.54"	531-768	**319.30**
CT40	SA25	.630-1.00"	4.72"	531-770	**307.80**
CAT50					
CT50	SA6	.028-.236"	4.13"	531-772	**323.90**
CT50	SA6	.028-.236"	6.5"	531-774	**508.80**
CT50	SA10	.069-.394"	4.13"	531-776	**385.90**
CT50	SA10	.069-.394"	5.31"	531-778	**404.80**
CT50	SA10	.069-.394"	6.5"	531-780	**485.80**
CT50	SA16	.108-.630"	4.13"	531-782	**387.90**
CT50	SA16	.108-.630"	5.31"	531-784	**404.80**
CT50	SA16	.108-.630"	6.5"	531-786	**485.80**
CT50	SA25	.630-1.00"	4.13"	531-788	**430.30**
CT50	SA25	.630-1.00"	5.31"	531-790	**439.60**
CT50	SA25	.630-1.00"	6.5"	531-792	**520.40**

Replacement SA Collet Nuts



Description	Code No.	Price $
SA6 Nut (Hex)	536-586	**71.90**
SA10 Nut (Hex)	536-588	**75.40**
SA16 Nut (Notched)	536-590	**81.10**
SA25 Nut (Notched)	536-592	**84.00**

BT Taper SA High Precision Collet Chucks

FEATURES:
- DIN Coolant thru 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



Complete with certificate

BT 30/40 *Premium Balanced* **20x** RPM

Pull Stud	Nut	Wrench	SA Collet
pg G116	pg G35	pg G35	pg G36

Taper	Collet Series	Collet Range	Gauge Length	Code No.	Price $
BT30					
BT30	SA6	.028-.236"	60mm	532-500	**224.40**
BT30	SA6	.028-.236"	90mm	532-502	**249.90**
BT30	SA10	.069-.394"	45mm	532-504	**229.00**
BT30	SA10	.069-.394"	60mm	532-506	**240.70**
BT30	SA10	.069-.394"	90mm	532-508	**254.50**
BT30	SA16	.108-.630"	60mm	532-510	**245.30**
BT30	SA16	.108-.630"	90mm	532-512	**264.90**
BT30	SA25	.630-1.00"	90mm	532-514	**308.90**
BT40					
BT40	SA6	.028-.236"	90mm	532-516	**236.10**
BT40	SA6	.028-.236"	120mm	532-518	**282.80**
BT40	SA10	.069-.394"	90mm	532-520	**241.80**
BT40	SA10	.069-.394"	120mm	532-522	**254.50**
BT40	SA10	.069-.394"	150mm	532-524	**323.90**
BT40	SA16	.108-.630"	90mm	532-526	**235.20**
BT40	SA16	.108-.630"	120mm	532-528	**278.80**
BT40	SA16	.108-.630"	150mm	532-530	**323.90**
BT40	SA25	.630-1.00"	90mm	532-532	**276.50**

SA Collet Chuck Wrenches



Description	Code No.	Price $
Fits SA6	536-578	**32.00**
Fits SA10	536-580	**32.00**
Fits SA16	536-582	**32.00**
Fits SA25	536-584	**32.00**

SA Collet Extractors



Description	Code No.	Price $
SA6	536-570	**10.90**
SA10	536-572	**13.70**
SA16	536-574	**17.30**
SA25	536-576	**23.70**

SA6 Collets



Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Inch				
1/8	-	-	338-528	**69.40**
3/16	-	-	338-530	**69.40**
Metric				
1.0mm	0.9-1.0	0.035-0.039	338-532	**69.40**
1.25mm	1.15-1.25	0.045-0.049	338-534	**69.40**
1.5mm	1.3-1.5	0.051-0.059	338-536	**69.40**
1.75mm	1.5-1.75	0.059-0.068	338-538	**69.40**
2.0mm	1.8-2.0	0.070-0.078	338-540	**64.40**
2.25mm	2.05-2.25	0.080-0.088	338-542	**69.40**
2.5mm	2.3-2.5	0.090-0.098	338-544	**69.40**
2.75mm	2.55-2.75	0.100-0.108	338-546	**69.40**
3.0mm	2.8-3.0	0.110-0.118	338-548	**61.90**
3.5mm	3.0-3.5	0.118-0.137	338-550	**61.90**
4.0mm	3.5-4.0	0.137-0.157	338-552	**61.90**
4.5mm	4.0-4.5	0.157-0.177	338-554	**61.90**
5.0mm	4.5-5.0	0.177-0.196	338-556	**61.90**
5.5mm	5.0-5.5	0.196-0.216	338-558	**61.90**
6.0mm	5.5-6.0	0.216-0.236	338-560	**61.90**

SA16 Collets



Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Inch				
1/8	-	-	338-674	**64.40**
3/16	-	-	338-676	**64.40**
1/4	-	-	338-678	**64.40**
5/16	-	-	338-680	**64.40**
3/8	-	-	338-682	**64.40**
7/16	-	-	338-684	**64.40**
1/2	-	-	338-686	**64.40**
9/16	-	-	338-688	**64.40**
5/8	-	-	338-690	**64.40**
Metric				
2.0mm			338-614	**69.40**
2.5mm			338-616	**69.40**
3.0mm	2.75-3.0	0.108-0.118	338-618	**69.40**
3.5mm	3.0-3.5	0.118-0.137	338-620	**69.40**
4.0mm	3.5-4.0	0.137-0.157	338-622	**69.40**
4.5mm	4.0-4.5	0.157-0.177	338-624	**69.40**
5.0mm	4.5-5.0	0.177-0.196	338-626	**69.40**
5.5mm	5.0-5.5	0.196-0.216	338-628	**69.40**
6.0mm	5.5-6.0	0.216-0.236	338-630	**69.40**
6.5mm	6.0-6.5	0.236-0.255	338-632	**69.40**
7.0mm	6.5-7.0	0.255-0.275	338-634	**69.40**
7.5mm	7.0-7.5	0.275-0.295	338-636	**69.40**
8.0mm	7.5-8.0	0.295-0.314	338-638	**64.40**
8.5mm	8.0-8.5	0.314-0.334	338-640	**69.40**
9.0mm	8.5-9.0	0.334-0.354	338-642	**69.40**
9.5mm	9.0-9.5	0.354-0.374	338-644	**69.40**
10.0mm	9.5-10.0	0.374-0.393	338-646	**69.40**
10.5mm	10.0-10.5	0.393-0.413	338-648	**69.40**
11.0mm	10.5-11.0	0.413-0.433	338-650	**69.40**
11.5mm	11.0-11.5	0.433-0.452	338-652	**69.40**
12.0mm	11.5-12.0	0.452-0.472	338-654	**69.40**
12.5mm	12.0-12.5	0.472-0.492	338-656	**69.40**
13.0mm	12.5-13.0	0.492-0.511	338-658	**64.40**
13.5mm	13.0-13.5	0.511-0.531	338-660	**69.40**
14.0mm	13.5-14.0	0.531-0.551	338-662	**69.40**
14.5mm	14.0-14.5	0.551-0.570	338-664	**69.40**
15.0mm	14.5-15.0	0.570-0.590	338-666	**69.40**
15.5mm	15.0-15.5	0.590-0.610	338-668	**69.40**
16.0mm	15.5-16.0	0.610-0.629	338-670	**69.40**

SA10 Collets



Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Inch				
1/8	-	-	338-602	**56.70**
3/16	-	-	338-604	**56.70**
1/4	-	-	338-606	**56.70**
5/16	-	-	338-608	**56.70**
3/8	-	-	338-610	**56.70**
Metric				
2.0mm	1.75-2.0	0.068-0.078	338-564	**69.40**
2.25mm	2.0-2.25	0.078-0.088	338-566	**69.40**
2.5mm	2.25-2.5	0.088-0.098	338-568	**69.40**
3.0mm	2.75-3.0	0.108-0.118	338-572	**61.90**
3.5mm	3.0-3.5	0.118-0.137	338-574	**61.90**
4.0mm	3.5-4.0	0.137-0.157	338-576	**56.70**
4.5mm	4.0-4.5	0.157-0.177	338-578	**61.90**
5.0mm	4.5-5.0	0.177-0.196	338-580	**61.90**
5.5mm	5.0-5.5	0.196-0.216	338-582	**61.90**
6.0mm	5.5-6.0	0.216-0.236	338-583	**56.70**
6.5mm	6.0-6.5	0.236-0.255	338-584	**61.90**
7.0mm	6.5-7.0	0.255-0.275	338-586	**61.90**
7.5mm	7.0-7.5	0.275-0.295	338-588	**61.90**
8.0mm	7.5-8.0	0.295-0.314	338-590	**56.70**
8.5mm	8.0-8.5	0.314-0.334	338-592	**61.90**
9.0mm	8.5-9.0	0.334-0.354	338-594	**61.90**
9.5mm	9.0-9.5	0.354-0.374	338-596	**61.90**
10.0mm	9.5-10.0	0.374-0.393	338-598	**56.70**

SA25 Collets



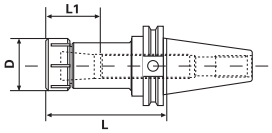
Size	Collapse Range (mm)	Collapse Range (in.)	Code No.	Price $
Inch				
1/4	-	-	338-736	**77.20**
5/16	-	-	338-738	**77.20**
3/8	-	-	338-740	**77.20**
7/16	-	-	338-742	**77.20**
1/2	-	-	338-744	**77.20**
5/8	-	-	338-746	**77.20**
3/4	-	-	338-748	**77.20**
Metric				
16.5mm	16.0-16.5	0.629-0.649	338-694	**84.90**
17.0mm	16.5-17.0	0.649-0.669	338-696	**84.90**
17.5mm	17.0-17.5	0.669-0.688	338-698	**84.90**
18.0mm	17.5-18.0	0.688-0.708	338-700	**84.90**
18.5mm	18.0-18.5	0.708-0.728	338-702	**84.90**
19.0mm	18.5-19.0	0.728-0.748	338-704	**84.90**
19.5mm	19.0-19.5	0.748-0.767	338-706	**84.90**
20.0mm	19.5-20.0	0.767-0.787	338-708	**84.90**
20.5mm	20.0-20.5	0.787-0.807	338-710	**84.90**
21.0mm	20.5-21.0	0.807-0.826	338-712	**84.90**
21.5mm	21.0-21.5	0.826-0.846	338-714	**84.90**
22.0mm	21.5-22.0	0.846-0.866	338-716	**84.90**
22.5mm	22.0-22.5	0.866-0.885	338-718	**84.90**
23.0mm	22.5-23.0	0.885-0.905	338-720	**84.90**
23.5mm	23.0-23.5	0.905-0.925	338-722	**84.90**
24.0mm	23.5-24.0	0.925-0.944	338-724	**84.90**
24.5mm	24.0-24.5	0.944-0.964	338-726	**84.90**
25.0mm	24.5-25.0	0.964-0.984	338-728	**84.90**
25.4mm	25.0-25.4	0.984-1.000	338-730	**84.90**

CAT Taper TG Collet Chucks

- DIN coolant thru 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”



Complete with certificate



CAT 40 *Premium Balanced* **20x** RPM

CAT 50 *Premium Balanced* **15x** RPM

Pull Stud	Nut	Wrench	TG Collet
pg G116	pg G40	pg G40	pg G38-40

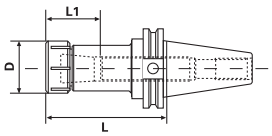
Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CAT40							
CT40	75TG	3/64-3/4”	3.00”	1.61”	1.89”	531-284	**161.90**
CT40	75TG	3/64-3/4”	5.00”	1.61”	1.89”	531-286	**210.80**
CT40	100TG	3/64-1”	3.00”	2.13”	2.50”	531-288	**162.50**
CT40	100TG	3/64-1”	3.50”	2.13”	2.50”	531-290	**162.50**
CT40	100TG	3/64-1”	5.50”	2.13”	2.50”	531-292	**210.80**
CT40	150TG	1/2-1-1/2”	6.00”	2.88”	3.50”	531-294	**242.30**
CAT50							
CT50	75TG	3/64-3/4”	3.50”	1.61”	1.89”	531-296	**199.10**
CT50	75TG	3/64-3/4”	5.50”	1.61”	1.89”	531-298	**262.80**
CT50	100TG	3/64-1”	3.50”	2.13”	2.50”	531-300	**199.10**
CT50	100TG	3/64-1”	5.50”	2.13”	2.50”	531-302	**262.90**
CT50	100TG	3/64-1”	7.50”	2.13”	2.50”	531-304	**288.40**
CT50	100TG	3/64-1”	10.00”	2.13”	3.50”	531-306	**314.30**
CT50	150TG	1/2-1-1/2”	3.50”	2.88”	3.50”	531-308	**271.00**
CT50	150TG	1/2-1-1/2”	6.00”	2.88”	3.50”	531-310	**298.10**

BT Taper TG Collet Chucks

- DIN coolant thru 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”



Complete with certificate



BT 40 *Premium Balanced* **20x** RPM

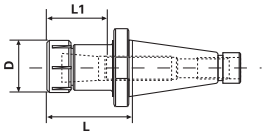
BT 50 *Premium Balanced* **15x** RPM

Pull Stud	Nut	Wrench	TG Collet
pg G116	pg G40	pg G40	pg G38-40

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
BT30							
BT30	75TG	3/64-3/4”	2.50”	1.61”	1.89”	532-128•	**146.70**
BT30	100TG	3/64-1”	3.94”	2.24”	2.50”	532-130•	**146.70**
BT40							
BT40	75TG	3/64-3/4”	3.00”	1.61”	1.89”	532-132	**162.50**
BT40	100TG	3/64-1”	3.50”	2.13”	2.50”	532-134	**162.50**
BT40	100TG	3/64-1”	5.50”	2.13”	2.50”	532-136	**210.80**
BT40	150TG	1/2-1-1/2”	5.50”	2.87”	3.50”	532-138	**252.70**
BT50							
BT50	100TG	3/64-1”	4.00”	2.13”	2.50”	532-139	**199.10**
BT50	100TG	3/64-1”	6.00”	2.13”	2.50”	532-140	**262.90**
BT50	150TG	1/2-1-1/2”	4.00”	2.87”	2.87”	532-141	**234.80**

• Not DIN Coolant

NMTB Taper TG Collet Chucks

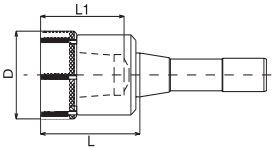




Nut	Wrench	TG Collet
pg G40	pg G40	pg G38-40

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
NMTB40	75TG	3/64-3/4”	2.50”	1.61”	1.89”	534-302	**154.40**
NMTB40	100TG	3/64-1”	3.00”	2.12”	2.50”	534-304	**154.40**
NMTB40	150TG	1/2-1-1/2”	5.00”	2.87”	3.50”	534-306	**126.00**
NMTB50	75TG	3/64-3/4”	3.00”	1.61”	1.89”	534-308	**169.70**
NMTB50	100TG	3/64-1”	3.50”	2.12”	2.50”	534-310	**246.60**
NMTB50	150TG	1/2-1-1/2”	5.00”	2.87”	3.50”	534-312	**272.10**

R8 Taper TG Collet Chuck

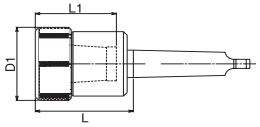




Nut	Wrench	TG Collet
pg G40	pg G40	pg G38-40

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
R8	100TG	3/64-1”	3.25”	2.17”	2.50”	534-314	**167.50**

Morse Taper TG Collet Chucks

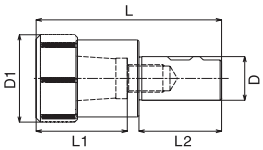




Nut	Wrench	TG Collet
pg G40	pg G40	pg G38-40

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
MT3	100TG	3/64-1”	3.25”	2.73”	2.50”	534-322	**223.00**
MT4	100TG	3/64-1”	3.25”	2.73”	2.50”	534-324	**221.20**

Straight Shank TG Collet Chucks





Nut	Wrench	TG Collet
pg G40	pg G40	pg G38-40

Shank Dia.	Collet Series	Collet Range	L	L1	L2	D1	Code No.	Price $
1”	75TG	3/64-3/4”	7.50”	2.08”	5.00”	1.89”	534-316	**149.50**
1-1/4”	100TG	3/64-1”	5.33”	2.73”	2.28”	2.50”	534-318	**162.50**
1-1/2”	100TG	3/64-1”	9.00”	2.73”	6.00”	2.50”	534-320	**198.70**

TG 75 Standard & Sealed Collets

- 1/64" collapse per collet
- 0.0005" in T.I.R. 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	334-790	**40.00**		
1/16	334-791	**40.00**		
5/64	334-792	**40.00**		
3/32	334-800	**40.00**		
7/64	334-801	**40.00**		
1/8	334-802	**40.00**	334-843	**73.10**
9/64	334-803	**40.00**	334-844	**73.10**
5/32	334-804	**40.00**	334-845	**73.10**
11/64	334-805	**40.00**	334-846	**73.10**
3/16	334-806	**40.00**	334-847	**73.10**
13/64	334-807	**40.00**	334-848	**73.10**
7/32	334-808	**40.00**	334-849	**73.10**
15/64	334-809	**40.00**	334-850	**73.10**
1/4	334-810	**40.00**	334-851	**50.20**
17/64	334-811	**40.00**	334-852	**73.10**
9/32	334-812	**40.00**	334-853	**50.20**
19/64	334-813	**40.00**	334-854	**50.20**
5/16	334-814	**40.00**	334-855	**50.20**
21/64	334-815	**40.00**	334-856	**73.10**
11/32	334-816	**40.00**	334-857	**50.20**
23/64	334-817	**40.00**	334-858	**73.10**
3/8	334-818	**40.00**	334-859	**50.20**
25/64	334-819	**40.00**	334-860	**73.10**
13/32	334-820	**40.00**	334-861	**50.20**
27/64	334-821	**40.00**	334-862	**73.10**
7/16	334-822	**40.00**	334-863	**73.10**
29/64	334-823	**40.00**	334-864	**73.10**
15/32	334-824	**40.00**	334-865	**50.20**
31/64	334-825	**40.00**	334-866	**73.10**
1/2	334-826	**40.00**	334-867	**50.20**
33/64	334-827	**40.00**	334-868	**73.10**
17/32	334-828	**40.00**	334-869	**50.20**
35/64	334-829	**40.00**	334-870	**73.10**
9/16	334-830	**40.00**	334-871	**50.20**
37/64	334-831	**40.00**	334-872	**73.10**
19/32	334-832	**40.00**	334-873	**50.20**
39/64	334-833	**40.00**	334-874	**73.10**
5/8	334-834	**40.00**	334-875	**50.20**
41/64	334-835	**40.00**	334-876	**73.10**
21/32	334-836	**40.00**	334-877	**73.10**
43/64	334-837	**40.00**	334-878	**73.10**
11/16	334-838	**40.00**	334-879	**50.20**
45/64	334-839	**40.00**	334-880	**73.10**
23/32	334-840	**40.00**	334-881	**50.20**
47/64	334-841	**40.00**	334-882	**73.10**
3/4	334-842	**40.00**	334-883	**50.20**

TG 75 Tapping Collets

- For synchronous, rigid tapping operations using TG collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	334-884	**84.40**
8	M4	.168"	.131"	334-885	**84.40**
10	M4.5, M5	.194"	.152"	334-886	**73.10**
12		.220"	.165"	334-887	**73.10**
1/4	M6, M6.3	.255"	.191"	334-888	**84.40**
5/16	M7, M8	.318"	.238"	334-889	**73.10**
3/8	M10	.381"	.286"	334-890	**73.10**
7/16		.323"	.242"	334-891	**84.40**
1/2	M12, M12.5	.367"	.275"	334-892	**73.10**
9/16	M14	.429"	.322"	334-893	**84.40**
5/8	M16	.480"	.360"	334-894	**73.10**
11/16	M18	.542"	.406"	334-895	**84.40**
3/4		.590"	.442"	334-896	**84.40**
NPT					
1/16, 1/8 NPT-ss*		.3125"	.234"	334-897	**73.10**
1/8 NPT-LS*		.4375"	.328"	334-898	**73.10**
1/4 NPT		.5625"	.421"	334-899	**73.10**

*ss = small shank
*LS = large shank

Standard TG 75 Collet Sets



No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
43	3/32-3/4	1/64	334-900	**1,708.50**
41	1/8-3/4	1/64	334-901	**1,629.10**
33	1/4-3/4	1/64	334-902	**1,311.20**
25	3/8-3/4	1/64	334-903	**993.40**
22	3/32-3/4	1/32	334-904	**874.30**
13	3/8-3/4	1/32	334-905	**516.70**
11	1/8-3/4	1/16	334-906	**437.30**

• See page 40 for Dimensional Data

TG 100 Standard & Sealed Collets

- 1/64" collapse per collet
- 0.0005" in T.I.R. 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	334-418	**41.60**		
5/64	334-423	**41.60**		
3/32	334-425N	**41.60**		
7/64	334-426	**41.60**		
1/8	334-427N	**41.60**		
9/64	334-428	**41.60**		
5/32	334-429N	**41.60**	334-907	**58.30**
11/64	334-430	**41.60**	334-908	**58.30**
3/16	334-431N	**41.60**	334-909	**58.30**
13/64	334-432	**41.60**	334-910	**58.30**
7/32	334-433N	**41.60**	334-911	**58.30**
15/64	334-434	**41.60**	334-912	**58.30**
1/4	334-435N	**41.60**	334-913	**58.30**
17/64	334-436	**41.60**	334-914	**58.30**
9/32	334-437N	**41.60**	334-915	**58.30**
19/64	334-438	**41.60**	334-916	**58.30**
5/16	334-439N	**41.60**	334-917	**58.30**
21/64	334-440	**41.60**	334-918	**58.30**
11/32	334-441N	**41.60**	334-919	**58.30**
23/64	334-442	**41.60**	334-920	**58.30**
3/8	334-443N	**41.60**	334-921	**58.30**
25/64	334-444	**41.60**	334-922	**58.30**
13/32	334-445N	**41.60**	334-923	**58.30**
27/64	334-446	**41.60**	334-924	**58.30**
7/16	334-447N	**41.60**	334-925	**58.30**
29/64	334-448	**41.60**	334-926	**58.30**
15/32	334-449N	**41.60**	334-927	**58.30**
31/64	334-450	**41.60**	334-928	**58.30**
1/2	334-451N	**41.60**	334-929	**58.30**
33/64	334-452	**41.60**	334-930	**58.30**
17/32	334-453N	**41.60**	334-931	**58.30**
35/64	334-454	**41.60**	334-932	**58.30**
9/16	334-455N	**41.60**	334-933	**58.30**
37/64	334-456	**41.60**	334-934	**58.30**
19/32	334-457N	**41.60**	334-935	**58.30**
39/64	334-458	**41.60**	334-936	**58.30**
5/8	334-459N	**41.60**	334-937	**58.30**
41/64	334-460	**41.60**	334-938	**58.30**
21/32	334-461N	**41.60**	334-939	**58.30**
43/64	334-462	**41.60**	334-940	**58.30**
11/16	334-463N	**41.60**	334-941	**58.30**
45/64	334-464	**41.60**	334-942	**58.30**
23/32	334-465N	**41.60**	334-943	**58.30**
47/64	334-466	**41.60**	334-944	**58.30**
3/4	334-467N	**41.60**	334-945	**58.30**
49/64	334-468	**41.60**	334-946	**58.30**
25/32	334-469N	**41.60**	334-947	**58.30**
51/64	334-470	**41.60**	334-948	**58.30**
13/16	334-471N	**41.60**	334-949	**58.30**
53/64	334-472	**41.60**	334-950	**58.30**
27/32	334-473N	**41.60**	334-951	**58.30**
55/64	334-474	**41.60**	334-952	**58.30**
7/8	334-475N	**41.60**	334-953	**58.30**
57/64	334-476	**41.60**	334-954	**58.30**
29/32	334-477N	**41.60**	334-955	**58.30**
59/64	334-478	**41.60**	334-956	**58.30**
15/16	334-479N	**41.60**	334-957	**58.30**
61/64	334-480	**41.60**	334-958	**58.30**
31/32	334-481N	**41.60**	334-959	**58.30**
63/64	334-482	**41.60**	334-960	**58.30**
1	334-483N	**41.60**	334-961	**58.30**

TG 100 Tapping Collets

- For synchronous, rigid tapping operations using TG collet chuck
- Collet bore is exact tool diameter with square drive for accuracy and rigidity



ANSI Tap Inch	Ansi Tap Metric	Shank Dia.	Size of Square	Code No.	Price $
0-6	M1.6-M3.5	.141"	.110"	334-963	**81.10**
8	M4	.168"	.131"	334-964	**81.10**
10	M4.5, M5	.194"	.152"	334-965	**81.10**
12		.220"	.165"	334-966	**81.10**
1/4	M6, M6.3	.255"	.191"	334-967	**81.10**
5/16	M7, M8	.318"	.238"	334-968	**81.10**
3/8	M10	.381"	.286"	334-969	**81.10**
7/16		.323"	.242"	334-970	**81.10**
1/2	M12, M12.5	.367"	.275"	334-971	**81.10**
9/16	M14	.429"	.322"	334-972	**81.10**
5/8	M16	.480"	.360"	334-973	**81.10**
11/16	M18	.542"	.406"	334-974	**81.10**
3/4		.590"	.442"	334-975	**81.10**
13/16	M20	.652"	.489"	334-976	**81.10**
7/8	M22	.697"	.523"	334-977	**81.10**
15/16	M24	.760"	.570"	334-978	**81.10**
1	M25	.800"	.600"	334-979	**81.10**
NPT					
1/16, 1/8 NPT-ss*		.3125"	.234"	334-980	**81.10**
1/8 NPT-LS*		.4375"	.328"	334-981	**81.10**
1/4 NPT		.5625"	.421"	334-982	**81.10**
3/8 NPT		.7000"	.531"	334-983	**81.10**
1/2 NPT		.6875"	.515"	334-984	**81.10**

*ss = small shank
*LS = large shank

Standard TG 100 Collet Sets



No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
59	3/32-1	1/64	334-575	**2,435.00**
41	3/8-1	1/64	334-570	**1,692.30**
30	3/32-1	1/32	334-565	**1,238.30**
21	3/8-1	1/32	334-560	**866.80**
15	1/8-1	1/16	334-561	**619.30**

• See page 40 for Dimensional Data

TG 150 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 $
1/2	334-485N	111.00
33/64	334-486	111.00
17/32	334-487N	111.00
35/64	334-488	111.00
9/16	334-489N	111.00
37/64	334-490	111.00
19/32	334-491N	111.00
39/64	334-492	111.00
5/8	334-493N	111.00
41/64	334-494	111.00
21/32	334-495N	111.00
43/64	334-496	111.00
11/16	334-497N	111.00
45/64	334-498	111.00
23/32	334-499N	111.00
47/64	334-500	111.00
3/4	334-501N	111.00
49/64	334-502	111.00
25/32	334-503N	111.00
51/64	334-504	111.00
13/16	334-505N	111.00
53/64	334-506	111.00
27/32	334-507N	111.00
55/64	334-508	111.00
7/8	334-509N	111.00
57/64	334-510	111.00
29/32	334-511N	111.00
59/64	334-512	111.00
15/16	334-513N	111.00
61/64	334-514	111.00
31/32	334-515N	111.00
63/64	334-516	111.00
1	334-517N	111.00
1-1/64	334-518	111.00
1-1/32	334-519N	111.00
1-3/64	334-520	111.00
1-1/16	334-521N	111.00
1-5/64	334-522	111.00
1-3/32	334-523N	111.00
1-7/64	334-524	111.00
1-1/8	334-525N	111.00
1-9/64	334-526	111.00
1-5/32	334-527N	111.00
1-11/64	334-528	111.00
1-3/16	334-529N	111.00
1-13/64	334-530	111.00
1-7/32	334-531N	111.00
1-15/64	334-532	111.00
1-1/4	334-533N	111.00
1-17/64	334-534	111.00
1-9/32	334-535N	111.00
1-19/64	334-536	111.00
1-5/16	334-537N	111.00
1-21/64	334-538	111.00
1-11/32	334-539N	111.00
1-23/64	334-540	111.00
1-3/8	334-541N	111.00
1-25/64	334-542	111.00
1-13/32	334-543N	111.00
1-27/64	334-544	111.00
1-7/16	334-545N	111.00
1-29/64	334-546	111.00
1-15/32	334-547N	111.00
1-31/64	334-548	111.00
1-1/2	334-549N	111.00

Standard TG 150 Collet Sets



No. of Pieces	Range (in.)	Increment (in.)	Code No.	Price $
17	1/2-1-1/2	1/16	334-580	1,882.10
33	1/2-1-1/2	1/32	334-585	3,654.10

See page G40 for Dimensional Data

Replacement TG Chuck Nuts



Description	Code No.	Price $
*75TG Nut	534-760	88.20
*100TG Nut	534-762	92.30
*150TG Nut	534-764	113.70
75TG Nut, Solid	534-830	55.90
100TG Nut, Solid	534-832	55.90
150TG Nut, Solid	534-834	55.90

* Photo Shown / This style is supplied with chuck

TG Chuck Wrenches



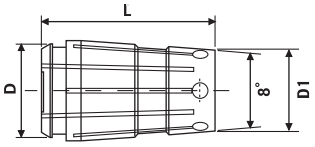
Description	Code No.	Price $
Fits 75TG Chuck	534-772	45.60
Fits 100TG Chuck	534-774	48.80
Fits 150TG Chuck	534-776	61.10

Replacement TG Backup Screws



Description	Code No.	Price $
75TG	534-778	10.30
75TG Coolant	534-780	11.30
100TG	534-782	10.30
100TG Coolant	534-784	11.30
150TG	534-786	11.60
150TG Coolant	534-788	13.20

TG Collet Dimensional Data

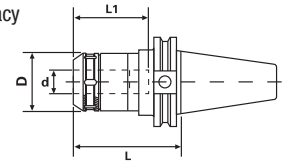


Style	D	D1	L	Collet Range
25TG	0.425"	0.325"	0.709"	3/64-1/4"
50TG	0.760"	0.594"	1.437"	1/8-1/2"
75TG	1.063"	0.871"	1.844"	3/64-3/4"
100TG	1.278"	1.121"	2.386"	3/64-1"
150TG	1.875"	1.678"	3.000"	1/2-1-1/2"

CAT40 Milling Chucks

- DIN coolant thru 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
- 0.0002" TIR for maximum tool life and accuracy





Pull Stud pg G116 | Wrench pg G43 | Collets pg G43

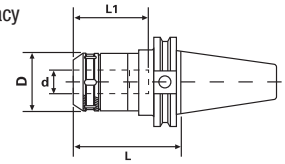
Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
CT40	GS 3/4"	.125-.750"	.750"	3.54"	3.15"	2.05"	531-253	**365.90**
CT40	GS 3/4"	.125-.750"	.750"	4.14"	3.15"	2.05"	531-250	**365.90**
CT40	GS 3/4"	.125-.750"	.750"	4.73"	3.15"	2.05"	531-252	**365.90**
CT40	GS 1"	.125-1.00"	1.00"	3.54"	3.15"	2.41"	531-255•	**365.90**
CT40	GS 1"	.125-1.00"	1.00"	4.14"	3.15"	2.41"	531-254	**365.90**
CT40	GS 1-1/4"	.187-1.25"	1.25"	3.54"	3.34"	2.88"	531-257•	**365.90**
CT40	GS 1-1/4"	.187-1.25"	1.25"	4.14"	3.34"	2.88"	531-256	**365.90**
CT40	GS 1-1/4"	.187-1.25"	1.25"	5.32"	4.73"	2.88"	531-258	**451.70**

• Not DIN Coolant

CAT50 Milling Chucks

- DIN coolant thru 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
- 0.0002" TIR for maximum tool life and accuracy





Pull Stud pg G116 | Wrench pg G43 | Collets pg G43

Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
CT50	GS 3/4"	.125-.750"	.750"	4.14"	3.15"	2.05"	531-260	**457.10**
CT50	GS 3/4"	.125-.750"	.750"	5.32"	3.15"	2.05"	531-262	**457.10**
CT50	GS 3/4"	.125-.750"	.750"	6.49"	3.15"	2.05"	531-263	**524.00**
CT50	GS 1"	.125-1.00"	1.00"	4.14"	3.15"	2.41"	531-264	**457.10**
CT50	GS 1-1/4"	.187-1.25"	1.25"	3.54"	4.73"	2.88"	531-265	**529.80**
CT50	GS 1-1/4"	.187-1.25"	1.25"	4.14"	4.73"	2.88"	531-266	**457.10**
CT50	GS 1-1/4"	.187-1.25"	1.25"	5.32"	4.73"	2.88"	531-268	**479.60**
CT50	GS 1-1/4"	.187-1.25"	1.25"	6.49"	4.73"	2.88"	531-269	**552.00**

CAT40 DUAL CONTACT Milling Chucks

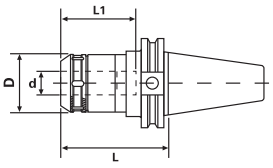
New

FOR DUAL CONTACT SPINDLES

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- DIN coolant thru 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
- 0.0002" TIR for maximum tool life and accuracy







Pull Stud pg G116 | Wrench pg G43 | Collets pg G43

Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
CT40	GS 3/4"	.125-.750"	.750"	3.54"	3.15"	2.05"	521-253	**512.00**
CT40	GS 1"	.125-1.00"	1.00"	3.54"	3.15"	2.41"	521-255•	**512.00**
CT40	GS 1-1/4"	.187-1.25"	1.25"	3.54"	3.34"	2.88"	521-257•	**512.00**

• Not DIN Coolant

CAT50 DUAL CONTACT Milling Chucks

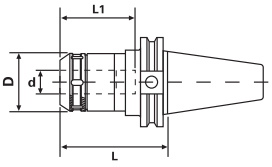
New

FOR DUAL CONTACT SPINDLES

- Improves rigidity and reduces vibration allowing for increased feed rates and increased tool life.
- DIN coolant thru 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
- 0.0002" TIR for maximum tool life and accuracy







Pull Stud pg G116 | Wrench pg G43 | Collets pg G43

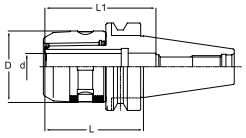
Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
CT50	GS 3/4"	.125-.750"	.750"	4.14"	3.15"	2.05"	521-260	**639.70**
CT50	GS 1"	.125-1.00"	1.00"	4.14"	3.15"	2.41"	521-264	**639.70**
CT50	GS 1-1/4"	.187-1.25"	1.25"	4.14"	4.73"	2.88"	521-266	**639.70**

BT Taper Milling Chucks

- TIR 0.0004”



Pull Stud pg G116 Wrench pg G43 Collets pg G43



Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
BT30								
BT30	GS 3/4”	.125-.750”	.750”	3.55”	3.15”	2.05”	532-096•	**347.60**
BT40								
BT40	GS 3/4”	.125-.750”	.750”	4.14”	3.15”	2.05”	532-098	**365.90**
BT40	GS 3/4”	.125-.750”	.750”	4.73”	3.15”	2.05”	532-100	**365.90**
BT40	GS 1”	.125-1.00”	1.00”	2.85”	3.15”	2.41”	532-123	**393.80**
BT40	GS 1”	.125-1.00”	1.00”	4.14”	3.15”	2.41”	532-102	**365.90**
BT40	GS 1-1/4”	.187-1.25”	1.25”	4.14”	3.34”	2.88”	532-104	**365.90**
BT40	GS 1-1/4”	.187-1.25”	1.25”	5.32”	4.73”	2.88”	532-106	**300.90**
BT50								
BT50	GS 3/4”	.125-.750”	.750”	3.60”	3.15”	2.05”	532-109	**427.70**
BT50	GS 1-1/4”	.187-1.25”	1.25”	4.20”	3.34”	2.88”	532-113	**434.70**

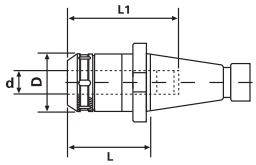
• Not DIN Coolant

NMTB Taper Milling Chucks

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- .0002” or better ensures the best possible cutting tool life



Wrench pg G43 Collets pg G43



Taper	Collet Series	Collet Range	d	L	L1	D	Code No.	Price $
NMTB40	GS 3/4	.125-.750”	.750”	3.55”	3.15”	2.05”	534-200	**287.40**
NMTB40	GS 1-1/4	.187-1.25”	1.25”	3.55”	3.00”	2.88”	534-202	**342.90**
NMTB50	GS 3/4	.125-.750”	.750”	4.14”	3.15”	2.05”	534-204	**351.80**
NMTB50	GS 1-1/4	.187-1.25”	1.25”	3.35”	4.72”	2.88”	534-206	**434.70**

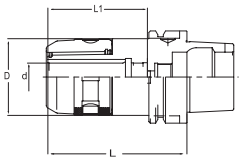
HSK Milling Chucks

HSK Advantages:

- High rigidity and torque transmission (almost double the rigidity of V-flange holders)
- Extreme concentricity enhance tool life performance
- Coolant thru capabilities
- TIR 0.0004”



Wrench pg G43 Collets pg G43



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”	536-154	**948.90**
HSK63A	GS3/4	0.125-0.750"	0.750"	4.331”	3.150”	2.047”	536-156	**948.90**
HSK63A	GS1	0.125-1.000"	1.000"	3.937”	2.972”	2.362”	536-158	**948.90**
HSK63A	GS1	0.125-1.000"	1.000"	5.118”	3.150”	2.362”	536-160	**948.90**
HSK63A	GS1-1/4	0.187-1.250"	1.250"	4.331”	3.268”	2.717”	536-162	**948.90**
HSK63A	GS1-1/4	0.187-1.250"	1.250"	5.118”	3.189”	2.717”	536-164	**948.90**
HSK63A	GS32	3mm - 32mm	32mm	5.118”	4.055"	2.717”	536-166	**948.90**
HSK100A								
HSK100A	GS3/4	0.125-0.750"	0.750"	4.528”	3.150”	2.047”	536-168	**1,176.50**
HSK100A	GS3/4	0.125-0.750"	0.750"	5.315”	3.150”	2.047”	536-170	**1,176.50**
HSK100A	GS1	0.125-1.000"	1.000"	4.528”	3.150”	2.362”	536-172	**1,176.50**
HSK100A	GS1	0.125-1.000"	1.000"	5.315”	3.150”	2.362”	536-174	**1,176.50**
HSK100A	GS1-1/4	0.187-1.250"	1.250"	4.528”	3.268”	2.717”	536-176	**1,176.50**
HSK100A	GS1-1/4	0.187-1.250"	1.250"	6.496”	3.189”	2.717”	536-178	**1,303.20**
HSK100A	GS32	3mm - 32mm	32mm	5.315"	4.055"	2.717”	536-180	**1,176.50**
HSK100A	GS2	1.000-2.000"	2.000"	4.921”	3.543”	4.134”	536-182	**1,518.30**

GS Milling Collets



I.D.	GS 3/4" Code No.	Price $	GS 1" Code No.	Price $	GS 1-1/4" Code No.	Price $
Inch						
1/8"	534-650	**31.90**	534-682	**35.40**		
3/16"	331-469N	**31.90**	534-684	**35.40**	331-481N	**41.40**
1/4"	331-470N	**31.90**	534-686	**35.40**	331-482N	**41.40**
5/16"	331-472N	**31.90**	534-688	**35.40**	331-484N	**41.40**
3/8"	331-474N	**31.90**	534-690	**35.40**	331-486N	**41.40**
7/16"	534-660	**31.90**	534-692	**35.40**	534-726	**41.40**
1/2"	331-476N	**31.90**	534-694	**35.40**	331-488N	**41.40**
9/16"	331-477N	**31.90**			331-489N	**41.40**
5/8"	331-478N	**31.90**	534-696	**35.40**	331-490N	**41.40**
3/4"			534-698	**35.40**	331-492N	**41.40**
7/8"			534-700	**35.40**	331-494N	**41.40**
1"					331-496N	**41.40**
Metric						
6mm	534-668	**31.90**	534-702	**35.40**	534-740	**41.40**
7mm	534-670	**31.90**				
8mm	534-672	**31.90**	534-704	**35.40**	534-742	**41.40**
10mm	534-674	**31.90**	534-706	**35.40**	534-744	**41.40**
12mm	534-676	**31.90**	534-708	**35.40**	534-746	**41.40**
14mm	534-678	**31.90**	534-710	**35.40**	534-748	**41.40**
16mm	534-680	**31.90**	534-712	**35.40**	534-750	**41.40**
18mm			534-714	**35.40**		
20mm			534-716	**35.40**	534-752	**41.40**
25mm					534-754	**41.40**

Milling Chuck Wrenches



Chuck Cap.	Code No.	Price $
3/4"	534-208	**52.30**
1"	534-210	**52.30**
1-1/4"	534-212	**52.30**

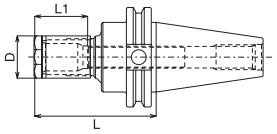
CAT40 DA Collet Chucks

- DIN coolant thru the flange
- All Ground Body
- 100% Forged Construction
- TIR 0.0010”

CAT 40 Premium Balanced 20x RPM



Complete with certificate



Pull Stud pg G116 | Nut pg G45 | DA Collet pg G45-47

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT40	DA100	3/64-9/16”	3.50”	1.15”	1.06”	531-270	**185.90**
CT40	DA100	3/64-9/16”	6.00”	1.15”	1.06”	531-272	**200.20**
CT40	DA180	3/64-3/4”	4.00”	1.50”	1.44”	531-273	**185.90**
CT40	DA180	3/64-3/4”	6.00”	1.50”	1.44”	531-274	**200.20**
CT40	DA200	3/64-3/8”	3.00”	1.03”	0.86”	531-275	**185.90**
CT40	DA300	3/64-1/4”	3.00”	0.84”	0.55”	531-276	**222.00**

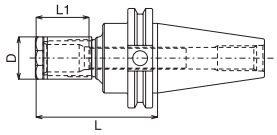
CAT50 DA Collet Chucks

- DIN coolant thru the flange
- All Ground Body
- 100% Forged Construction
- TIR 0.0010”

CAT 50 Premium Balanced 15x RPM



Complete with certificate



Pull Stud pg G116 | Nut pg G45 | DA Collet pg G45-47

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
CT50	DA180	3/64-3/4”	4.00”	1.50”	1.44”	531-278	**261.30**
CT50	DA180	3/64-3/4”	6.00”	1.50”	1.44”	531-280	**261.30**

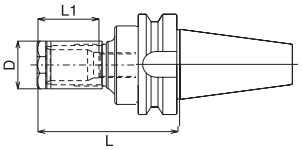
BT30 DA Collet Chucks

- All Ground Body
- 100% Forged Construction
- TIR 0.0010”

BT 30 Premium Balanced 20x RPM



Complete with certificate



Pull Stud pg G116 | Nut pg G45 | DA Collet pg G45-47

Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
BT30	DA100	3/64-9/16”	3.00”	1.15”	1.06”	532-108	**176.80**
BT30	DA180	3/64-3/4”	3.00”	1.51”	1.44”	532-110	**176.80**
BT30	DA200	3/64-3/8”	3.00”	1.03”	0.86”	532-112	**176.80**
BT30	DA300	3/64-1/4”	3.00”	1.04”	0.55”	532-125	**221.50**

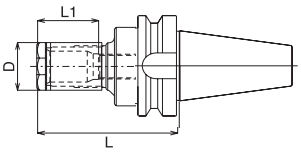
BT40 DA Collet Chucks

- DIN coolant thru the flange
- All Ground Body
- 100% Forged Construction
- TIR 0.0010”

BT 40 Premium Balanced 20x RPM



Complete with certificate



Pull Stud pg G116 | Nut pg G45 | DA Collet pg G45-47

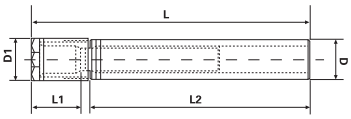
Taper	Collet Series	Collet Range	L	L1	D	Code No.	Price $
BT40	DA100	3/64-9/16”	3.50”	1.15”	1.06”	532-116	**185.90**
BT40	DA100	3/64-9/16”	6.00”	1.15”	1.06”	532-118	**200.20**
BT40	DA180	3/64-3/4”	4.00”	1.51”	1.44”	532-120	**185.90**
BT40	DA180	3/64-3/4”	6.00”	1.51”	1.44”	532-122	**200.20**
BT40	DA200	3/64-3/8”	3.00”	1.03”	0.86”	532-124	**185.90**
BT40	DA300	3/64-1/4”	3.00”	1.04”	0.55”	532-126	**221.50**

DA Collet Chuck Extensions



Nut pg G45

DA Collet pg G45-47



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"	534-220	**184.00**
DA100	3/64-9/16"	1"	7.50"	1.66"	5.50"	1.06"	534-222	**202.40**
DA180	3/64-3/4"	1-1/4"	5.00"	1.83"	3.00"	1.44"	534-224	**184.00**
DA180	3/64-3/4"	1-1/4"	7.50"	1.83"	5.50"	1.44"	534-226	**202.40**
DA200	3/64-3/8"	3/4"	4.50"	1.34"	3.00"	0.86"	534-228	**185.90**
DA200	3/64-3/8"	3/4"	7.00"	1.34"	5.50"	0.86"	534-230	**213.50**

Replacement DA Chuck Nuts



Description	Code No.	Price $
DA100, Complete Replacement	534-264	**82.50**
DA180 Nut, Complete Replacement	534-270	**85.70**
DA200 Nut, Complete Replacement	534-276	**82.20**
DA300 Nut, Complete Replacement	534-277	**85.70**

Backup Screws For DA Collet Chucks

Description	Code No.	Price $
All CAT, BT, NMTB DA100 chucks	534-284	**14.40**
DA100 Chuck Extensions	534-286	**15.90**
All CAT, BT, NMTB DA180 chucks	534-288	**17.30**
DA180 Chuck Extensions	534-290	**18.80**
All 40-taper DA200 chucks	534-292	**14.40**
DA200 Chuck Extensions	534-294	**18.80**
BT30 DA200 Chucks	534-296	**14.30**
CAT, BT DA300 chucks	534-297	**18.00**

DA 100 Collets

- Collapse - 1/32"
- .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	.047	331-323	**27.10**
1/16	.062	331-325	**27.10**
5/64	.078	331-327	**27.10**
3/32	.094	331-329	**27.10**
7/64	.109	331-333	**27.10**
1/8	.125	331-335	**25.60**
9/64	.141	331-337	**25.60**
5/32	.156	331-339	**25.60**
11/64	.172	331-341	**25.60**
3/16	.188	331-343	**25.60**
13/64	.203	331-345	**25.60**
7/32	.219	331-347	**25.60**
15/64	.234	331-349	**25.60**
1/4	.250	331-351	**25.60**
17/64	.266	331-353	**25.60**
9/32	.281	331-355	**25.60**
19/64	.297	331-357	**25.60**
5/16	.312	331-359	**25.60**
21/64	.328	331-503	**25.60**
11/32	.344	331-505	**25.60**
23/64	.359	331-507	**25.60**
3/8	.375	331-322	**25.60**
25/64	.391	331-509	**25.60**
13/32	.406	331-324	**25.60**
27/64	.422	331-511	**25.60**
7/16	.438	331-326	**25.60**
29/64	.453	331-513	**25.60**
15/32	.469	331-328	**25.60**
31/64	.484	331-515	**25.60**
1/2	.500	331-330	**25.60**
33/64	.516	331-517	**25.60**
17/32	.531	331-332	**25.60**
35/64	.547	331-519	**25.60**
9/16	.562	331-521	**25.60**

DA 100 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA100	8pc	1/8-9/16 x 16ths	331-356	**203.40**
DA100	11pc	1/4-9/16 x 32nds	331-358	**279.30**
DA100	15pc	1/8-9/16 x 32nds	331-362	**380.90**
DA100	17pc	1/16-9/16 x 32nds	331-384	**434.70**
DA100	21pc	1/4-9/16 x 64ths	331-385	**533.10**
DA100	29pc	1/8-9/16 x 64ths	331-386	**736.10**
DA100	33pc	1/16-9/16 x 64ths	331-387	**843.60**

DA 180 Collets

- Collapse - 1/32"
- .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	.046	331-523	**29.60**
1/16	.062	331-525	**29.60**
5/64	.078	331-527	**29.60**
3/32	.094	331-529	**29.60**
7/64	.109	331-533	**29.60**
1/8	.125	331-535	**28.40**
9/64	.141	331-537	**28.40**
5/32	.156	331-539	**28.40**
11/64	.172	331-541	**28.40**
3/16	.188	331-543	**28.40**
13/64	.203	331-545	**28.40**
7/32	.219	331-547	**28.40**
15/64	.234	331-549	**28.40**
1/4	.250	331-551	**28.40**
17/64	.266	331-553	**28.40**
9/32	.281	331-555	**28.40**
19/64	.297	331-557	**28.40**
5/16	.312	331-559	**28.40**
21/64	.328	331-561	**27.10**
11/32	.344	331-563	**28.40**
23/64	.359	331-565	**28.40**
3/8	.375	331-567	**28.40**
25/64	.391	331-569	**28.40**
13/32	.406	331-571	**28.40**
27/64	.422	331-573	**28.40**
7/16	.438	331-575	**28.40**
29/64	.453	331-577	**28.40**
15/32	.469	331-579	**28.40**
31/64	.484	331-581	**28.40**
1/2	.500	331-583	**28.40**
33/64	.516	331-585	**28.40**
17/32	.531	331-587	**28.40**
35/64	.547	331-589	**28.40**
9/16	.562	331-334	**28.40**
37/64	.578	331-595	**28.40**
19/32	.594	331-336	**28.40**
39/64	.609	331-597	**28.40**
5/8	.625	331-338	**28.40**
41/64	.641	331-601	**28.40**
21/32	.656	331-340	**28.40**
43/64	.672	331-603	**28.40**
11/16	.688	331-342	**28.40**
45/64	.703	331-605	**28.40**
23/32	.719	331-344	**28.40**
47/64	.734	331-607	**28.40**
3/4	.750	331-346	**28.40**

DA 180 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA180	9pc	1/4-3/4 x 16ths	331-388	**254.10**
DA180	17pc	1/4-3/4 x 32nds	331-389	**479.60**
DA180	21pc	1/8-3/4 x 32nds	331-390	**592.40**
DA180	33pc	1/4-3/4 x 64ths	331-391	**930.70**
DA180	41pc	1/8-3/4 x 64ths	331-392	**1,156.20**

DA 200 Collets

- Collapse - 1/32"
- .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	.047	331-297	**25.60**
1/16	.062	331-299	**25.60**
5/64	.078	331-301	**25.60**
3/32	.094	331-303	**25.60**
7/64	.109	331-305	**25.60**
1/8	.125	331-307	**24.40**
9/64	.141	331-309	**24.40**
5/32	.156	331-311	**24.40**
11/64	.172	331-313	**24.40**
3/16	.188	331-315	**24.40**
13/64	.203	331-302	**24.40**
7/32	.219	331-304	**24.40**
15/64	.234	331-306	**24.40**
1/4	.250	331-308	**24.40**
17/64	.266	331-310	**24.40**
9/32	.281	331-312	**24.40**
19/64	.297	331-314	**24.40**
5/16	.312	331-316	**24.40**
21/64	.328	331-318	**24.40**
11/32	.344	331-320	**24.40**
23/64	.359	331-317	**24.40**
3/8	.375	331-319	**24.40**
25/64	.391	331-321	**24.40**

DA 200 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA200	9pc	1/8-3/8 x 32nds	331-393	**217.10**
DA200	11pc	1/16-3/8 x 32nds	331-394	**267.90**
DA200	17pc	1/8-3/8 x 64ths	331-395	**409.90**
DA200	21pc	1/16-3/8 x 64ths	331-396	**511.50**

DA 300 Collets

- Collapse - 1/32"
- .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.

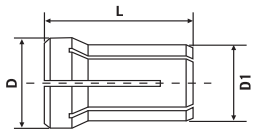


Fractional Inch	Decimal (in.)	Code No.	Price $
3/64	.047	331-277	**25.60**
1/16	.062	331-283	**25.60**
5/64	.078	331-285	**25.60**
3/32	.094	331-287	**25.60**
7/64	.109	331-290	**25.60**
1/8	.125	331-292	**24.40**
9/64	.141	331-294	**24.40**
5/32	.156	331-296	**24.40**
11/64	.172	331-298	**24.40**
3/16	.188	331-300	**24.40**
13/64	.203	331-289	**24.40**
7/32	.219	331-291	**24.40**
15/64	.234	331-293	**24.40**
1/4	.250	331-295	**24.40**

DA 300 Collet Sets

Collet	Pieces	Range	Code No.	Price $
DA300	7pc	1/16-1/4 x 32nds	331-397	**171.40**
DA300	9pc	1/8-1/4 x 64ths	331-398	**217.10**
DA300	13pc	1/16-1/4 x 64ths	331-399	**318.60**
DA300	14pc	3/64-1/4 x 64ths	331-400	**344.10**

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	334-600	**529.90**
ISA-40	334-605	**529.90**
ISA-50	334-608	**621.80**
M.T.3	334-610	**529.90**
M.T.4	334-615	**529.90**
R-8	334-620	**529.90**
COLLET SETS CONSIST OF 15 COLLETS 1/4" - 1-1/4" (TYPE 32)		
ISA-40	334-625	**1,208.10**
ISA-50	334-630	**1,269.30**
M.T.5	334-635	**1,254.20**

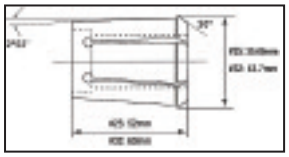
Component Parts For 1" Type 25 Sets

Description	Type 25	Code No.	Price $
Wrench	1" (Type 25)	334-650	**13.90**
Nuts	1" (Type 25)	334-645	**82.60**
Fitted Case	1" (Type 25)	334-640	**24.00**
Chuck ISA-30	1" (Type 25)	334-655	**245.20**
Chuck ISA-40	1" (Type 25)	334-660	**245.20**
Chuck ISA-50	1" (Type 25)	334-663	**336.80**
Chuck MT 3	1" (Type 25)	334-665	**245.20**
Chuck MT 4	1" (Type 25)	334-670	**245.20**
Chuck R-8	1" (Type 25)	334-675	**245.20**

Component Parts For 1-1/4" Type 32 Sets

Description	Type 25	Code No.	Price $
Wrench	1-1/4" (Type 32)	334-690	**37.60**
Nuts	1-1/4" (Type 32)	334-685	**106.10**
Fitted Case	1-1/4" (Type 32)	334-680	**47.70**
Chuck ISA-40	1-1/4" (Type 32)	334-695	**336.80**
Chuck ISA-50	1-1/4" (Type 32)	334-700	**398.10**
Chuck MT 5	1-1/4" (Type 32)	334-705	**382.80**

Type 25 & Type 32 Collets





Size (in.)	Type 25 Code No.	Price $	Type 32 Code No.	Price $
Inch				
1/8”	336-400	**28.60**		
3/16”	336-402	**28.60**		
1/4”	336-404	**28.60**	336-430	**58.30**
5/16”	336-406	**28.60**	336-432	**58.30**
3/8”	336-408	**28.60**	336-434	**58.30**
7/16”	336-409	**28.60**	336-436	**58.30**
1/2”	336-410	**28.60**	336-438	**58.30**
9/16”	336-411	**28.60**	336-440	**58.30**
5/8”	336-412	**28.60**	336-442	**58.30**
11/16”			336-444	**58.30**
3/4”	336-414	**28.60**	336-446	**58.30**
13/16”			336-448	**58.30**
7/8”	336-416	**28.60**	336-450	**58.30**
15/16”			336-452	**58.30**
1”	336-418	**28.60**	336-454	**58.30**
1-1/8”			336-456	**58.30**
1-1/4”			336-458	**58.30**
Metric				
3 mm	336-504	**28.60**		
4 mm	336-506	**28.60**		
5 mm	336-508	**28.60**	336-549	**58.30**
6 mm	336-510	**28.60**	336-550	**58.30**
7 mm	336-512	**28.60**	336-552	**58.30**
8 mm	336-514	**28.60**	336-554	**58.30**
9 mm	336-516	**28.60**	336-556	**58.30**
10 mm	336-518	**28.60**	336-560	**58.30**
11 mm	336-520	**28.60**	336-562	**58.30**
12 mm	336-522	**28.60**	336-564	**58.30**
13 mm	336-524	**28.60**	336-566	**58.30**
14 mm	336-526	**28.60**	336-568	**58.30**
15 mm	336-528	**28.60**	336-570	**58.30**
16 mm	336-530	**28.60**	336-572	**58.30**
17 mm	336-532	**28.60**	336-574	**58.30**
18 mm	336-534	**28.60**	336-576	**58.30**
19 mm	336-536	**28.60**	336-578	**58.30**
20 mm	336-538	**28.60**	336-580	**58.30**
21 mm	336-540	**28.60**	336-582	**58.30**
22 mm	336-542	**28.60**	336-584	**58.30**
23 mm	336-544	**28.60**	336-586	**58.30**
24 mm	336-546	**28.60**	336-588	**58.30**
25 mm	336-548	**28.60**	336-590	**58.30**
26 mm			336-592	**58.30**
28 mm			336-596	**58.30**
29 mm			336-597	**58.30**
30 mm			336-598	**58.30**
32 mm			336-600	**58.30**

Collet Rack

- Holds 5C, C32, or OZ25 collets
- 220x110x6mm
- Plastic

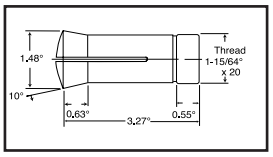
* Collets not included



Model	Code No.	Price $
VMS-5	325-305	**32.50**

5C Collets

- Made of tool steel, hardened and ground to maintain original accuracy



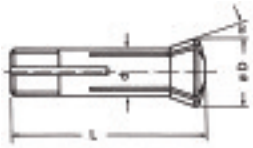


Inch

Size	GS Code No.	Price $	STM Code No.	Price $
1/8	325-317	**29.60**	325-315	**17.30**
3/16	325-322	**29.60**	325-320	**17.30**
1/4	325-327	**29.60**	325-325	**17.30**
5/16	325-332	**29.60**	325-330	**17.30**
3/8	325-337	**29.60**	325-335	**17.30**
7/16	325-342	**29.60**	325-340	**17.30**
1/2	325-347	**29.60**	325-345	**17.30**
9/16	325-354	**29.60**	325-350	**17.30**
5/8	325-357	**29.60**	325-355	**17.30**
11/16	325-362	**29.60**	325-360	**17.30**
3/4	325-367	**29.60**	325-365	**17.30**
13/16	325-372	**29.60**	325-370	**17.30**
7/8	325-377	**29.60**	325-375	**17.30**
15/16	325-382	**29.60**	325-380	**17.30**
1	325-387	**29.60**	325-385	**17.30**
5C Collet Set 1/8-1”			325-310	**198.80**

Emergency Type Collet

- Nylon
- Can be bored to custom internal diameters to hold unusual sized workpieces

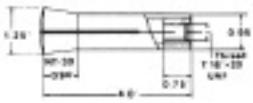




Model	Length (mm)	D (mm)	d (mm)	Head Angle α	Code No.	Price $
VE-5CN	87	37.5	31.75	10°	325-312	**44.70**

R8 Collets & Set

Manufactured of hardened and ground tool steel, these collets can be recommended for their accuracy and fine finish.





Inch

Size	GS Code No.	Price $	STM Code No.	Price $
1/8	325-167	**29.60**	325-165	**15.30**
5/32	325-172	**29.60**	325-170	**15.30**
3/16	325-177	**29.60**	325-175	**15.30**
7/32	325-182	**29.60**	325-180	**15.30**
1/4	325-187	**29.60**	325-185	**15.30**
9/32	325-192	**29.60**	325-190	**15.30**
5/16	325-197	**29.60**	325-195	**15.30**
11/32	325-202	**29.60**	325-200	**15.30**
3/8	325-207	**29.60**	325-205	**15.30**
13/32	325-212	**29.60**	325-210	**15.30**
7/16	325-217	**29.60**	325-215	**15.30**
15/32	325-222	**29.60**	325-220	**15.30**
1/2	325-227	**29.60**	325-225	**15.30**
9/16	325-232	**29.60**	325-230	**15.30**
19/32	325-237	**29.60**	325-235	**15.30**
5/8	325-242	**29.60**	325-240	**15.30**
21/32	325-247	**29.60**	325-245	**15.30**
11/16	325-252	**29.60**	325-250	**15.30**
23/32	325-257	**29.60**	325-255	**15.30**
3/4	325-262	**29.60**	325-260	**15.30**
R8 Collet Set 1/8-3/4			325-300	**221.90**

SHRINK FIT TOOLING

Introduction to GS Shrink Fit Tooling	G50
Shrink Fit Machines	G50
CAT40 Shrink Fit Holders	G51
CAT50 Shrink Fit Holders	G51
BT30 Shrink Fit Holders	G52
BT40 Shrink Fit Holders	G52
HSK63 Shrink Fit Holders	G53
HSK100 Shrink Fit Holders	G53



BALANCEABLE SHRINK FIT TOOLING

FEATURES AND BENEFITS

Requires using a balancing machine

New



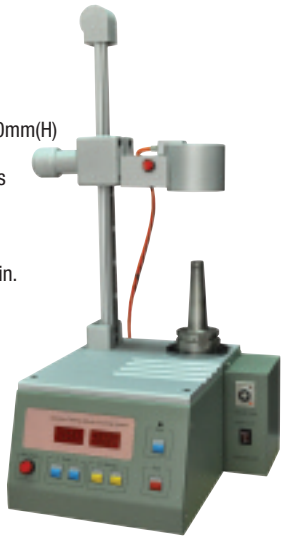


- **With threaded holes in order to balance with supplied balancing screws**
- Improved concentricity
- Improved balance design with no moving pieces
- Low Centrifugal Forces due to low holder mass
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Chip load distributed evenly along cutting edge of tool which results in longer tool life.
- Constructed of double tempered 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 interference fit between the ID of the tool holder and cutting tool shank forms the seal, preventing the coolant from flowing anywhere else except through the coolant grooves. 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.

Shrink Fit Machines

Model GTS-306 LUXE

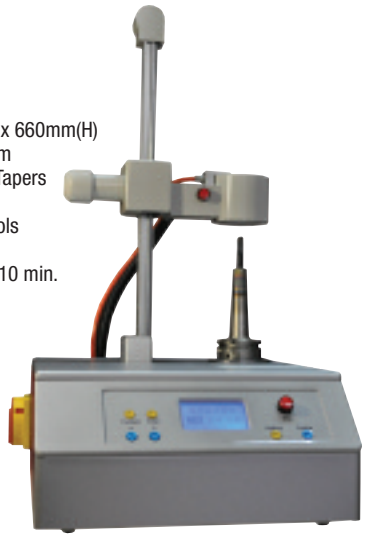
- Heating: Induction
- Shrinking Time: 6-15 seconds
- Power: 220VAC 50/60HZ single phase
- Rated Ampere: 20A
- Power Consumption: 4KW
- Dimensions: 292mm(W) x 302mm(D) x 660mm(H)
- Induction Head Inside Diameter: 35mm
- Taper support: All HSK, BT, CAT & SK Tapers
- Display: LED
- For use with Carbide tools only
- Max. Tool Diameter 25mm
- Cooling: Shop air attached to head 0-10 min.



Model	Code No.	Price $
GTS306MC	536-650	12,145.70

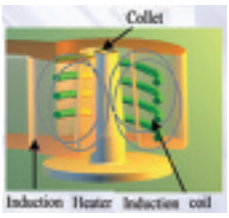
Model GTS-9000M

- Heating: Induction
- Shrinking Time: 3-5 seconds
- Power: 220VAC 50/60HZ 3 phase
- Rated Ampere: 27A
- Power Consumption: 10KW
- Dimensions: 350mm(W) x 400mm(D) x 660mm(H)
- Induction Head Inside Diameter: 35mm
- Taper support: All HSK, BT, CAT & SK Tapers
- Display: LCD
- For use with Carbide, HSCO & HSS tools
- Max. Tool Diameter 25mm
- Cooling: Shop air attached to head 0-10 min.



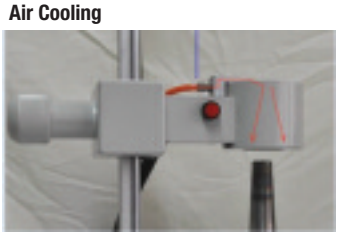
Model	Code No.	Price $
GTS9000M	536-655	22,232.20

Heat generated by high frequency magnetic field





Air Cooling





CAT 40 Balanceable Shrink Fit Holders

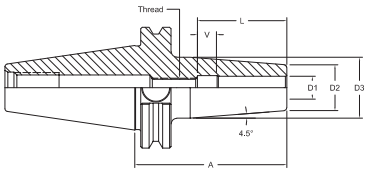
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 30,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

CAT 40 Premium Balanced 30x RPM



Complete with certificate



Pull Stud



pg G116

Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
CAT40	1/8	3.15"	0.39"	0.75"	0.35"	531-838	**528.70**
CAT40	3/16	3.15"	0.39"	0.75"	0.47"	531-840	**528.70**
CAT40	1/4	3.15"	0.83"	1.06"	1.42"	531-842	**440.80**
CAT40	1/4	6.30"	0.83"	1.06"	1.42"	531-844	**647.50**
CAT40	5/16	3.15"	0.83"	1.06"	1.42"	531-846	**440.80**
CAT40	5/16	6.30"	0.83"	1.06"	1.42"	531-848	**647.50**
CAT40	3/8	3.15"	0.94"	1.26"	1.65"	531-850	**440.80**
CAT40	3/8	6.30"	0.94"	1.26"	1.65"	531-852	**647.50**
CAT40	1/2	3.15"	0.94"	1.26"	1.65"	531-854	**440.80**
CAT40	1/2	6.30"	0.94"	1.26"	1.65"	531-856	**647.50**
CAT40	5/8	3.15"	1.06"	1.34"	1.97"	531-858	**440.80**
CAT40	5/8	6.30"	1.06"	1.34"	1.97"	531-860	**647.50**
CAT40	3/4	3.15"	1.30"	1.65"	2.05"	531-862	**440.80**
CAT40	3/4	6.30"	1.30"	1.65"	2.05"	531-864	**647.50**
CAT40	1	3.94"	1.73"	2.09"	2.28"	531-866	**440.80**
CAT40	1	6.30"	1.73"	2.09"	2.28"	531-868	**647.50**
CAT40	1-1/4	3.94"	1.73"	2.09"	2.28"	531-870	**440.80**
CAT40	1-1/4	6.30"	1.73"	2.09"	2.28"	531-872	**647.50**
Metric							
CAT40	3	80	10	19.6	9	531-800	**528.70**
CAT40	4	80	10	19.6	12	531-802	**528.70**
CAT40	5	80	10	19.6	15	531-804	**528.70**
CAT40	6	80	21	27	36	531-806	**440.80**
CAT40	6	160	21	27	36	531-808	**647.50**
CAT40	8	80	21	27	36	531-810	**440.80**
CAT40	8	160	21	27	36	531-812	**647.50**
CAT40	10	80	24	32	42	531-814	**440.80**
CAT40	10	160	24	32	42	531-816	**647.50**
CAT40	12	80	24	32	47	531-818	**440.80**
CAT40	12	160	24	32	47	531-820	**647.50**
CAT40	16	80	27	34	50	531-822	**440.80**
CAT40	16	160	27	34	50	531-824	**647.50**
CAT40	20	80	33	42	52	531-826	**440.80**
CAT40	20	160	33	42	52	531-828	**647.50**
CAT40	25	80	44	53	58	531-830	**440.80**
CAT40	25	160	44	53	58	531-832	**647.50**
CAT40	32	80	44	53	58	531-834	**440.80**
CAT40	32	160	44	53	58	531-836	**647.50**

CAT 50 Balanceable Shrink Fit Holders

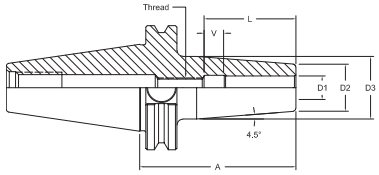
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 25,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

CAT 50 Premium Balanced 25x RPM



Complete with certificate



Pull Stud



pg G116

Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
CAT50	1/4	3.15"	0.83"	1.06"	1.42"	531-932	**710.40**
CAT50	1/4	6.30"	0.83"	1.06"	1.42"	531-934	**879.30**
CAT50	5/16	3.15"	0.83"	1.06"	1.42"	531-936	**710.40**
CAT50	5/16	6.30"	0.83"	1.06"	1.42"	531-938	**879.30**
CAT50	3/8	3.15"	0.94"	1.26"	1.65"	531-940	**676.60**
CAT50	3/8	6.30"	0.94"	1.26"	1.65"	531-942	**879.30**
CAT50	1/2	3.15"	0.94"	1.26"	1.65"	531-944	**710.40**
CAT50	1/2	6.30"	0.94"	1.26"	1.65"	531-946	**879.30**
CAT50	5/8	3.15"	1.06"	1.34"	1.97"	531-948	**710.40**
CAT50	5/8	6.30"	1.06"	1.34"	1.97"	531-950	**879.30**
CAT50	3/4	3.15"	1.30"	1.65"	2.05"	531-952	**710.40**
CAT50	3/4	6.30"	1.30"	1.65"	2.05"	531-954	**879.30**
CAT50	1	3.94"	1.73"	2.09"	2.28"	531-956	**710.40**
CAT50	1	6.30"	1.73"	2.09"	2.28"	531-958	**879.30**
CAT50	1-1/4	3.94"	1.73"	2.09"	2.28"	531-960	**710.40**
CAT50	1-1/4	6.30"	1.73"	2.09"	2.28"	531-962	**879.30**
Metric							
CAT50	6	80	21	27	36	531-900	**710.40**
CAT50	6	160	21	27	36	531-902	**879.30**
CAT50	8	80	21	27	36	531-904	**710.40**
CAT50	8	160	21	27	36	531-906	**879.30**
CAT50	10	80	24	32	42	531-908	**710.40**
CAT50	10	160	24	32	42	531-910	**879.30**
CAT50	12	80	24	32	47	531-912	**710.40**
CAT50	12	160	24	32	47	531-914	**879.30**
CAT50	16	80	27	34	50	531-916	**710.40**
CAT50	16	160	27	34	50	531-918	**879.30**
CAT50	20	80	33	42	52	531-920	**710.40**
CAT50	20	160	33	42	52	531-922	**879.30**
CAT50	25	100	44	53	58	531-924	**710.40**
CAT50	25	160	44	53	58	531-926	**879.30**
CAT50	32	100	44	53	58	531-928	**710.40**
CAT50	32	160	44	53	58	531-930	**879.30**

G3 TOOLING

BT 30 Balanceable Shrink Fit Holders

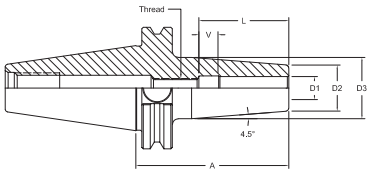
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 20,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

BT 30 Premium Balanced 20x RPM



Complete with certificate



Pull Stud



pg G116

Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
BT30	1/8	3.15"	0.39"		0.35"	532-414	**528.70**
BT30	3/16	3.15"	0.39"		0.47"	532-416	**528.70**
BT30	1/4	3.15"	0.83"	1.06"	1.42"	532-418	**440.80**
BT30	5/16	3.15"	0.83"	1.06"	1.42"	532-420	**440.80**
BT30	3/8	3.15"	0.94"	1.26"	1.65"	532-422	**440.80**
BT30	1/2	3.15"	0.94"	1.26"	1.65"	532-424	**440.80**
Metric							
BT30	3	80	10		9	532-400	**528.70**
BT30	4	80	10		12	532-402	**528.70**
BT30	5	80	10		15	532-404	**528.70**
BT30	6	80	21	27	36	532-406	**440.80**
BT30	8	80	21	27	36	532-408	**440.80**
BT30	10	80	24	32	42	532-410	**440.80**
BT30	12	80	24	32	47	532-412	**440.80**

BT 40 Balanceable Shrink Fit Holders

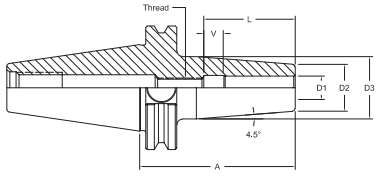
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 30,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

BT 40 Premium Balanced 30x RPM



Complete with certificate



Pull Stud



pg G116

Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
BT40	1/8	3.54"	0.39"		0.35"	532-464	**528.70**
BT40	3/16	3.54"	0.39"		0.47"	532-466	**528.70**
BT40	1/4	3.54"	0.83"	1.06"	1.42"	532-468	**440.80**
BT40	1/4	6.30"	0.83"	1.06"	1.42"	532-470	**647.50**
BT40	5/16	3.54"	0.83"	1.06"	1.42"	532-472	**440.80**
BT40	5/16	6.30"	0.83"	1.06"	1.42"	532-474	**647.50**
BT40	3/8	3.54"	0.94"	1.26"	1.65"	532-476	**440.80**
BT40	3/8	6.30"	0.94"	1.26"	1.65"	532-478	**647.50**
BT40	1/2	3.54"	0.94"	1.26"	1.65"	532-480	**440.80**
BT40	1/2	6.30"	0.94"	1.26"	1.65"	532-482	**647.50**
BT40	5/8	3.54"	1.06"	1.34"	1.97"	532-484	**440.80**
BT40	5/8	6.30"	1.06"	1.34"	1.97"	532-486	**647.50**
BT40	3/4	3.54"	1.30"	1.65"	2.05"	532-488	**440.80**
BT40	3/4	6.30"	1.30"	1.65"	2.05"	532-490	**647.50**
BT40	1	3.94"	1.73"	2.09"	2.28"	532-492	**440.80**
BT40	1	6.30"	1.73"	2.09"	2.28"	532-494	**647.50**
BT40	1-1/4	3.94"	1.73"	2.09"	2.28"	532-496	**440.80**
BT40	1-1/4	6.30"	1.73"	2.09"	2.28"	532-498	**647.50**
Metric							
BT40	3	90	10		9	532-426	**528.70**
BT40	4	90	10		12	532-428	**528.70**
BT40	5	90	10		15	532-430	**528.70**
BT40	6	90	21	27	36	532-432	**440.80**
BT40	6	160	21	27	36	532-434	**647.50**
BT40	8	90	21	27	36	532-436	**440.80**
BT40	8	160	21	27	36	532-438	**647.50**
BT40	10	90	24	32	42	532-440	**440.80**
BT40	10	160	24	32	42	532-442	**647.50**
BT40	12	90	24	32	47	532-444	**440.80**
BT40	12	160	24	32	47	532-446	**647.50**
BT40	16	90	27	34	50	532-448	**440.80**
BT40	16	160	27	34	50	532-450	**647.50**
BT40	20	90	33	42	52	532-452	**440.80**
BT40	20	160	33	42	52	532-454	**647.50**
BT40	25	100	44	53	58	532-456	**440.80**
BT40	25	160	44	53	58	532-458	**647.50**
BT40	32	100	44	53	58	532-460	**440.80**
BT40	32	160	44	53	58	532-462	**647.50**

HSK 63A Balanceable Shrink Fit Holders

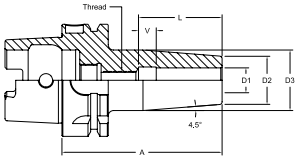
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 30,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

HSK 63 Premium Balanced 30x RPM



Complete with certificate



Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
HSK63A	1/8	3.15"	0.39"		0.35"	536-338	**641.70**
HSK63A	3/16	3.15"	0.39"		0.47"	536-340	**641.70**
HSK63A	1/4	3.15"	0.83"	1.06"	1.42"	536-342	**534.80**
HSK63A	1/4	6.30"	0.83"	1.06"	1.42"	536-344	**744.40**
HSK63A	5/16	3.15"	0.83"	1.06"	1.42"	536-346	**534.80**
HSK63A	5/16	6.30"	0.83"	1.06"	1.42"	536-348	**744.40**
HSK63A	3/8	3.35"	0.94"	1.26"	1.65"	536-350	**534.80**
HSK63A	3/8	6.30"	0.94"	1.26"	1.65"	536-352	**744.40**
HSK63A	1/2	3.54"	0.94"	1.26"	1.65"	536-354	**534.80**
HSK63A	1/2	6.30"	0.94"	1.26"	1.65"	536-356	**744.40**
HSK63A	5/8	3.74"	1.06"	1.34"	1.97"	536-358	**534.80**
HSK63A	5/8	6.30"	1.06"	1.34"	1.97"	536-360	**744.40**
HSK63A	3/4	3.94"	1.30"	1.65"	2.05"	536-362	**534.80**
HSK63A	3/4	6.30"	1.30"	1.65"	2.05"	536-364	**744.40**
HSK63A	1	4.53"	1.73"	2.09"	2.28"	536-366	**534.80**
HSK63A	1	6.30"	1.73"	2.09"	2.28"	536-368	**744.40**
HSK63A	1-1/4	4.72"	1.73"	2.09"	2.28"	536-370	**659.10**
HSK63A	1-1/4	6.30"	1.73"	2.09"	2.28"	536-372	**744.40**
Metric							
HSK63A	3	80	10		9	536-300	**641.70**
HSK63A	4	80	10		12	536-302	**641.70**
HSK63A	5	80	10		15	536-304	**641.70**
HSK63A	6	80	21	27	36	536-306	**534.80**
HSK63A	6	160	21	27	36	536-308	**744.40**
HSK63A	8	80	21	27	36	536-310	**534.80**
HSK63A	8	160	21	27	36	536-312	**744.40**
HSK63A	10	85	24	32	42	536-314	**534.80**
HSK63A	10	160	24	32	42	536-316	**744.40**
HSK63A	12	90	24	32	47	536-318	**534.80**
HSK63A	12	160	24	32	47	536-320	**744.40**
HSK63A	16	95	27	34	50	536-322	**534.80**
HSK63A	16	160	27	34	50	536-324	**744.40**
HSK63A	20	100	33	42	52	536-326	**534.80**
HSK63A	20	160	33	42	52	536-328	**744.40**
HSK63A	25	115	44	53	58	536-330	**534.80**
HSK63A	25	160	44	53	58	536-332	**744.40**
HSK63A	32	120	44	53	58	536-334	**659.10**
HSK63A	32	160	44	53	58	536-336	**744.40**

HSK 100A Balanceable Shrink Fit Holders

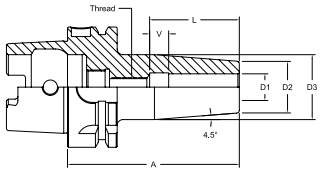
New

- **With threaded holes in order to balance with supplied balancing screws**
- Coolant thru the spindle capability
- Pre-Balanced up to 25,000 rpm
- For maximum gripping power with exceptional concentricity.
- Concentricity of ≤.0001" with tool shrunk in holder.
- Tool is gripped 360° along the entire length of bore resulting in an evenly distributed clamping force.
- Back up screws are available on request

HSK 100 Premium Balanced 25x RPM



Complete with certificate



Taper	Hole Dia. (d)	Gauge Length (A)	D2	D3	L	Code No.	Price $
Inch							
HSK100A	1/4	3.35"	0.83"	1.06"	1.42"	536-432	**927.40**
HSK100A	1/4	6.30"	0.83"	1.06"	1.42"	536-434	**1,086.00**
HSK100A	5/16	3.35"	0.83"	1.06"	1.42"	536-436	**927.40**
HSK100A	5/16	6.30"	0.83"	1.06"	1.42"	536-438	**1,086.00**
HSK100A	3/8	3.54"	0.94"	1.26"	1.65"	536-440	**927.40**
HSK100A	3/8	6.30"	0.94"	1.26"	1.65"	536-442	**1,086.00**
HSK100A	1/2	3.74"	0.94"	1.26"	1.65"	536-444	**927.40**
HSK100A	1/2	6.30"	0.94"	1.26"	1.65"	536-446	**1,086.00**
HSK100A	5/8	3.94"	1.06"	1.34"	1.97"	536-448	**927.40**
HSK100A	5/8	6.30"	1.06"	1.34"	1.97"	536-450	**1,086.00**
HSK100A	3/4	4.13"	1.30"	1.65"	2.05"	536-452	**927.40**
HSK100A	3/4	6.30"	1.30"	1.65"	2.05"	536-454	**1,086.00**
HSK100A	1	4.53"	1.73"	2.09"	2.28"	536-456	**927.40**
HSK100A	1	6.30"	1.73"	2.09"	2.28"	536-458	**1,086.00**
HSK100A	1-1/4	4.72"	1.73"	2.09"	2.28"	536-460	**927.40**
HSK100A	1-1/4	6.30"	1.73"	2.09"	2.28"	536-462	**1,086.00**
Metric							
HSK100A	6	85	21	27	36	536-400	**927.40**
HSK100A	6	160	21	27	36	536-402	**1,086.00**
HSK100A	8	85	21	27	36	536-404	**927.40**
HSK100A	8	160	21	27	36	536-406	**1,086.00**
HSK100A	10	90	24	32	42	536-408	**927.40**
HSK100A	10	160	24	32	42	536-410	**1,086.00**
HSK100A	12	95	24	32	47	536-412	**927.40**
HSK100A	12	160	24	32	47	536-414	**1,086.00**
HSK100A	16	100	27	34	50	536-416	**927.40**
HSK100A	16	160	27	34	50	536-418	**1,086.00**
HSK100A	20	105	33	42	52	536-420	**927.40**
HSK100A	20	160	33	42	52	536-422	**1,086.00**
HSK100A	25	115	44	53	58	536-424	**927.40**
HSK100A	25	160	44	53	58	536-426	**1,086.00**
HSK100A	32	120	44	53	58	536-428	**927.40**
HSK100A	32	160	44	53	58	536-430	**1,086.00**

GS MODULAR & MACHINE VISES



GS 675 / GS 890 (Blue)
- Interchangeable soft jaws
- Jaws interchangeable with most major brands
- Available in 7.5” & 8.9” openings
- 10 Year warranty

See section H for more details

GS MODULAR (Silver)
- High Accuracy
- Unlimited clamping range
- High quality alloy steel
- High clamping pressure

See section H for complete listing

GS TOOLING

Right Angle Heads & Spindle Speeders

RIGHT ANGLE HEADS

Right Angle Head (VRA-Type) G56

GS Fixed Heads

GFX07 ER 11 Fixed 90° Right Angle Heads G58
GFX07L ER 11 Fixed 90° Right Angle Heads G59
GFX10 ER 16 Fixed 90° Right Angle Heads G60
GFX10L ER 16 Fixed 90° Right Angle Heads G61
GFX16 ER 25 Fixed 90° Right Angle Heads G62
GFX16L ER 25 Fixed 90° Right Angle Heads G63
GFX20 ER 32 Fixed 90° Right Angle Heads G64
GFX20L ER 32 Fixed 90° Right Angle Heads G65
GFX S40 Fixed 90° Right Angle Heads G66

GS Pivoting Heads

GPV13 ER 20 Pivoting Angle Heads G67
GPV16 ER 25 Pivoting Angle Heads G68
GPV20 ER 32 Pivoting Angle Heads G69

SPINDLE SPEEDERS

CAT Taper Spindle Speeders G71
BT Taper Spindle Speeders G72
HSK Spindle Speeders G73
NMTB Taper Spindle Speeders G74



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 $
85.725 mm - 86 mm	12 kgs	VRA-R8	326-200	**1,534.50**
85.725 mm - 86 mm	13 kgs	VRA-NT 30	326-202	**1,621.00**
105 mm	20 kgs	VRA-NT 40	326-204	**2,174.60**

SOWA INDEXABLE CUTTING TOOLS

New Grade PT22C

For Steel Turning New CVD Grade (P20)

- Coating with good surface roughness and welding resistance
- Coating with oxidation resistance at high temperature and plastic deformation resistance
- Coating with excellent chipping resistance due to improved adhesion



For more information see pg E188-189

ANGLE HEADS
MADE IN ITALY

ATC Series

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 antirotation group

Standard 10Bar coolant through pin

Graduated ring

Treated steel head body with 360° position and internal 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



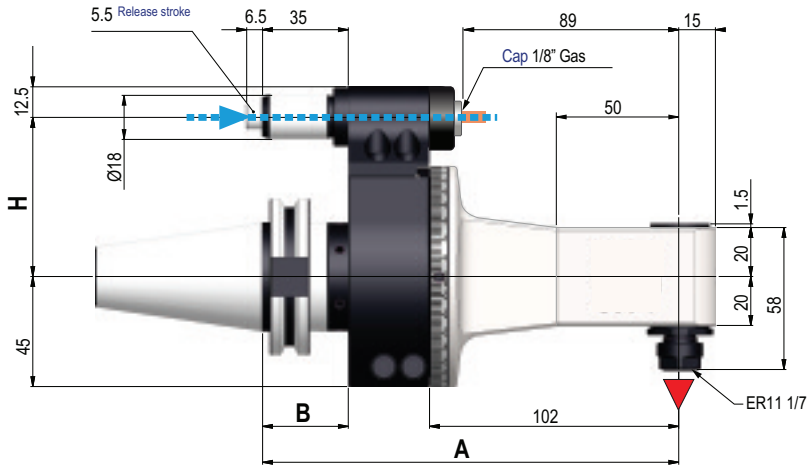
Gleason ground spiral bevel gears for maximum performance and minimum vibration



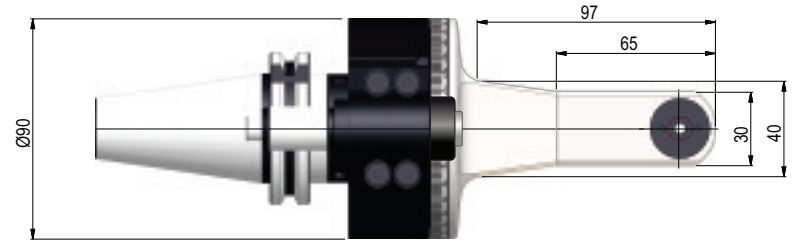
ANGLE HEADS
MADE IN ITALY

ATC Series

GFX07









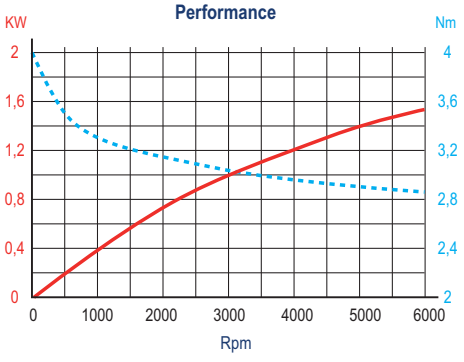
▼ Direction of rotation is opposite to the machine spindle

GFX07 ER 11 Fixed 90° Right Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX07	ER 11	170	35	65-80 (110)*	7	M5	6,000	4	381-002	**11,594.70**
CAT 50	GFX07	ER 11	170	35	80 (110)*	7	M5	6,000	4	381-004	**11,594.70**
BT 40	GFX07	ER 11	170	35	65-80 (110)*	7	M5	6,000	4	381-006	**13,197.30**
BT 50	GFX07	ER 11	176	41	80 (110)*	7	M5	6,000	4	381-008	**13,197.30**
HSK63	GFX07	ER 11	177	42	65-80 (110)*	7	M5	6,000	4	381-010	**13,833.40**
HSK100	GFX07	ER 11	180	45	80 (110)*	7	M5	6,000	4	381-012	**14,151.40**

Other tapers available please inquire ( )* Optional

Technical Data		GFX 7
Ratio		1:1
RPM Max	g/min	6,000
Max axial load	N	120
Torque	Nm	5
Weight	Kg.	4
Collet	mm	ER-11 0.5mm - 7mm



Standard Features & Equipment Included:

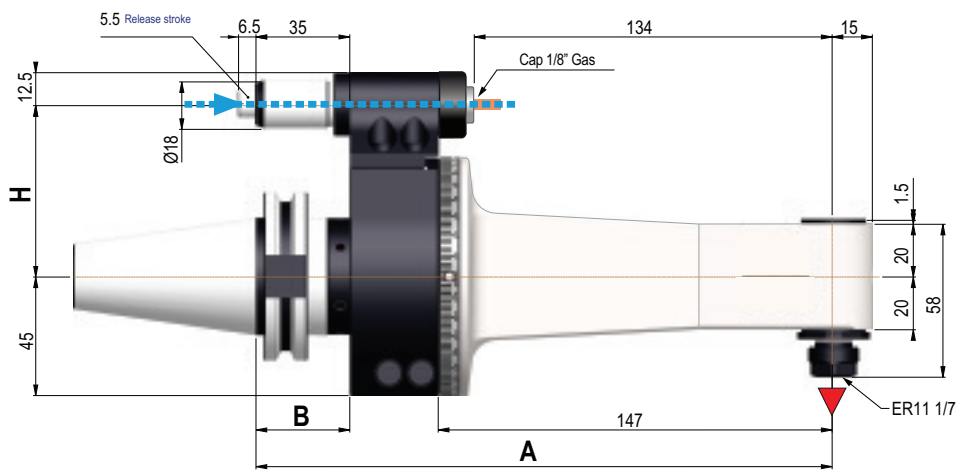
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



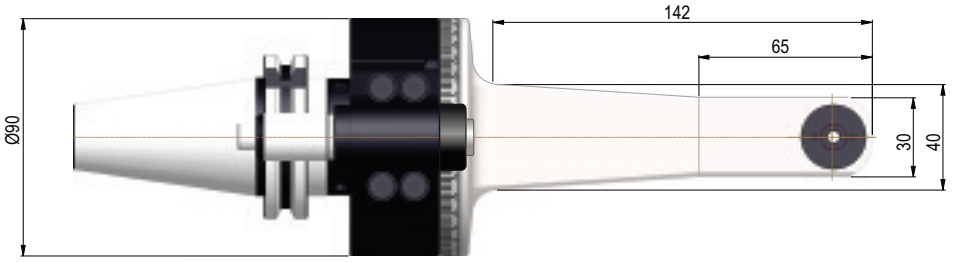
ANGLE HEADS
MADE IN ITALY

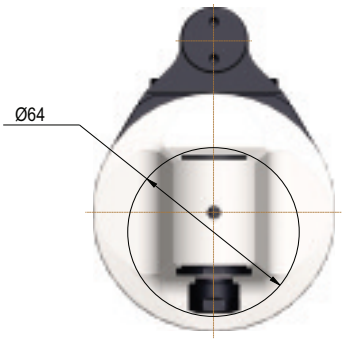
ATC Series

GFX07L









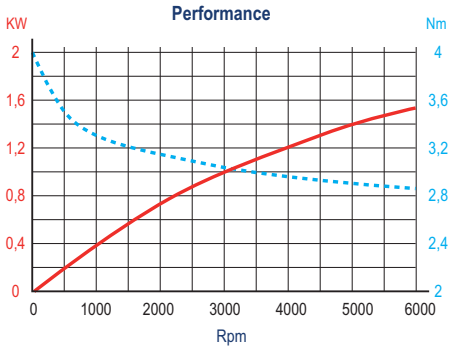
▼ Direction of rotation is opposite to the machine spindle

GFX07L ER 11 Long Fixed 90º Right Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX07L	ER 11	215	35	65-80 (110)*	7	M5	6,000	4.3	381-302	**13,884.30**
CAT 50	GFX07L	ER 11	215	35	80 (110)*	7	M5	6,000	4.3	381-304	**13,884.30**
BT 40	GFX07L	ER 11	215	35	65-80 (110)*	7	M5	6,000	4.3	381-306	**13,884.30**
BT 50	GFX07L	ER 11	221	41	80 (110)*	7	M5	6,000	4.3	381-308	**13,884.30**
HSK63	GFX07L	ER 11	222	42	65-80 (110)*	7	M5	6,000	4.3	381-310	**14,666.70**
HSK100	GFX07L	ER 11	225	45	80 (110)*	7	M5	6,000	4.3	381-312	**14,832.00**

Other tapers available please inquire ( )* Optional

Technical Data		GFX 7L
Ratio		1:1
RPM Max	g/min	6,000
Max axial load	N	120
Torque	Nm	5
Weight	Kg.	4.3
Collet	mm	ER-11 0.5mm - 7mm



Standard Features & Equipment Included:

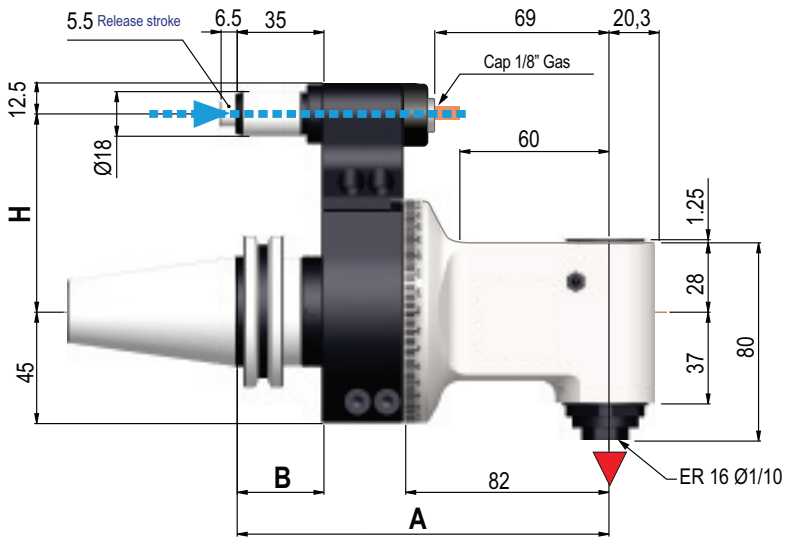
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



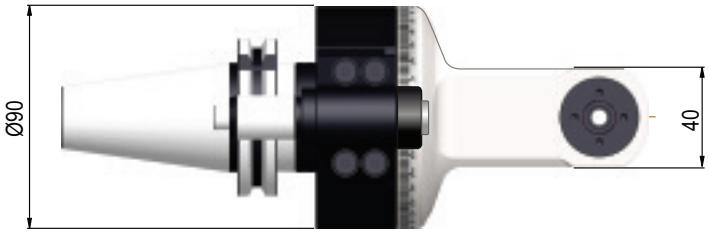
ANGLE HEADS
MADE IN ITALY

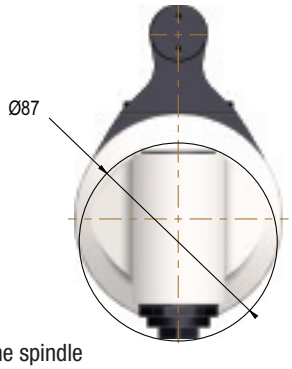
ATC Series

GFX10









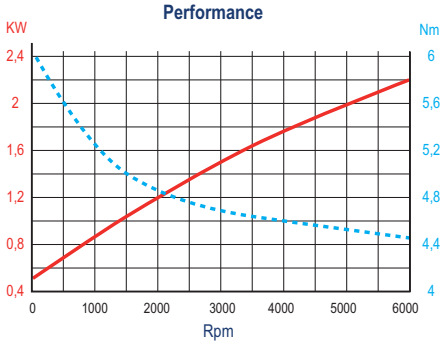
▼ Direction of rotation is opposite to the machine spindle

GFX10 ER 16 Fixed 90º Right Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX10	ER 16	150	35	65-80 (110)*	10	M8	4,000	4.3	381-020	**8,904.30**
CAT 50	GFX10	ER 16	150	35	80 (110)*	10	M8	4,000	4.3	381-022	**8,904.30**
BT 40	GFX10	ER 16	150	35	65-80 (110)*	10	M8	4,000	4.3	381-024	**8,904.30**
BT 50	GFX10	ER 16	156	41	80 (110)*	10	M8	4,000	4.3	381-026	**8,904.30**
HSK63	GFX10	ER 16	157	42	65-80 (110)*	10	M8	4,000	4.3	381-028	**9,540.30**
HSK100	GFX10	ER 16	160	45	80 (110)*	10	M8	4,000	4.3	381-030	**9,858.40**

Other tapers available please inquire ( )* Optional

Technical Data		GFX10L
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	250
Torque	Nm	7
Weight	Kg.	4.3
Collet	mm	ER-16 1mm - 10mm



Standard Features & Equipment Included:

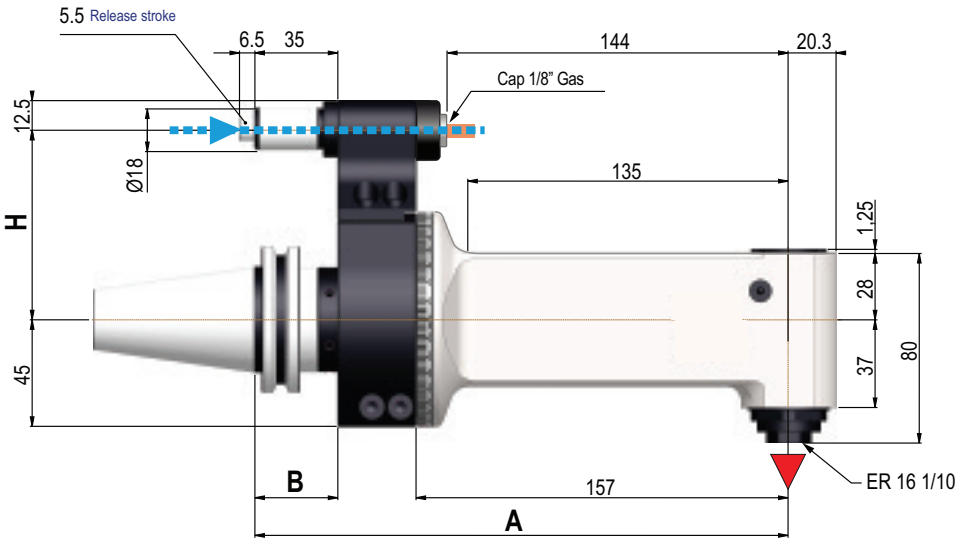
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



ANGLE HEADS
MADE IN ITALY

ATC Series

GFX10L





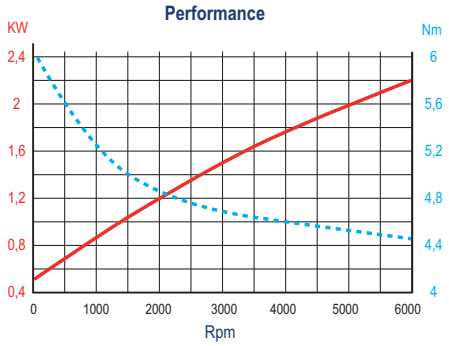
▼ Direction of rotation is opposite to the machine spindle

GFX10L ER 16 Long Fixed 90° Right Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX10L	ER 16	225	35	65-80 (110)*	10	M8	6,000	5.2	381-320	**14,513.90**
CAT 50	GFX10L	ER 16	225	35	80 (110)*	10	M8	6,000	5.2	381-322	**14,513.90**
BT 40	GFX10L	ER 16	225	35	65-80 (110)*	10	M8	6,000	5.2	381-324	**14,513.90**
BT 50	GFX10L	ER 16	231	41	80 (110)*	10	M8	6,000	5.2	381-326	**14,513.90**
HSK63	GFX10L	ER 16	232	42	65-80 (110)*	10	M8	6,000	5.2	381-328	**15,296.20**
HSK100	GFX10L	ER 16	235	45	80 (110)*	10	M8	6,000	5.2	381-330	**15,461.50**

Other tapers available please inquire ( )* Optional

Technical Data		GFX10L
Ratio		1:1
RPM Max	g/min	6,000
Max axial load	N	250
Torque	Nm	7
Weight	Kg.	5.2
Collet	mm	ER-16 1mm - 10mm



Standard Features & Equipment Included:

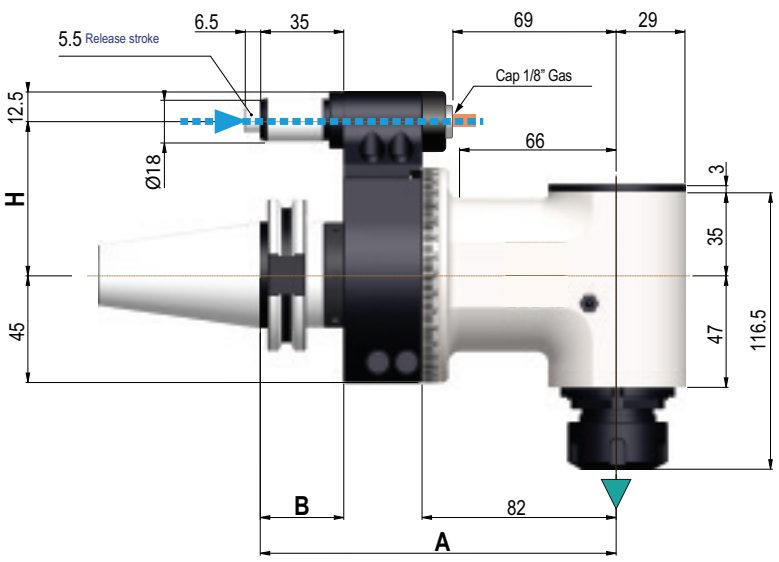
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



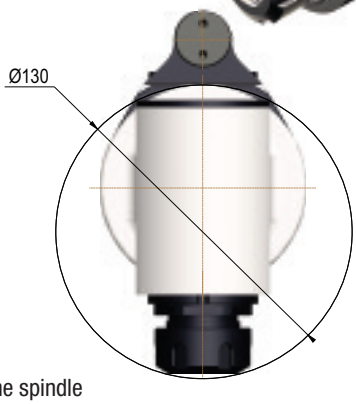
ANGLE HEADS
MADE IN ITALY

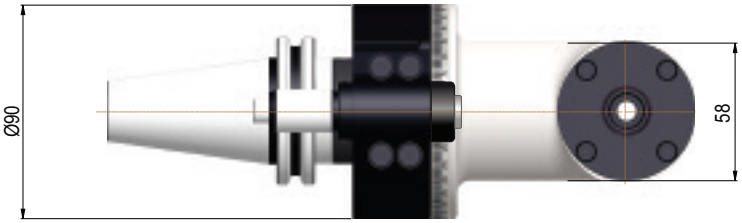
ATC Series

GFX16









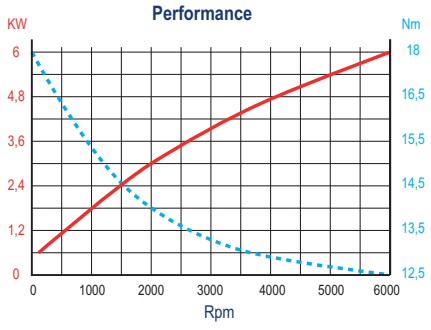
▼ Direction of rotation is the same as the machine spindle

GFX16 ER 25 Fixed 90° Right Angle Heads

Taper	Model	System Collet	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX16	ER 25	150	35	65-80 (110)*	16	M12	4,000	5.4	381-100	**10,888.70**
CAT 50	GFX16	ER 25	150	35	80 (110)*	16	M12	4,000	5.4	381-102	**10,888.70**
BT 40	GFX16	ER 25	150	35	65-80 (110)*	16	M12	4,000	5.4	381-104	**10,888.70**
BT 50	GFX16	ER 25	156	41	80 (110)*	16	M12	4,000	5.4	381-106	**10,888.70**
HSK63	GFX16	ER 25	157	42	65-80 (110)*	16	M12	4,000	5.4	381-108	**11,492.90**
HSK100	GFX16	ER 25	160	45	80 (110)*	16	M12	4,000	5.4	381-110	**11,620.20**

Other tapers available please inquire ( )* Optional

Technical Data		GFX16
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	510
Torque	Nm	20
Weight	Kg.	5.4
Collet	mm	ER-25 2mm - 16mm



Standard Features & Equipment Included:

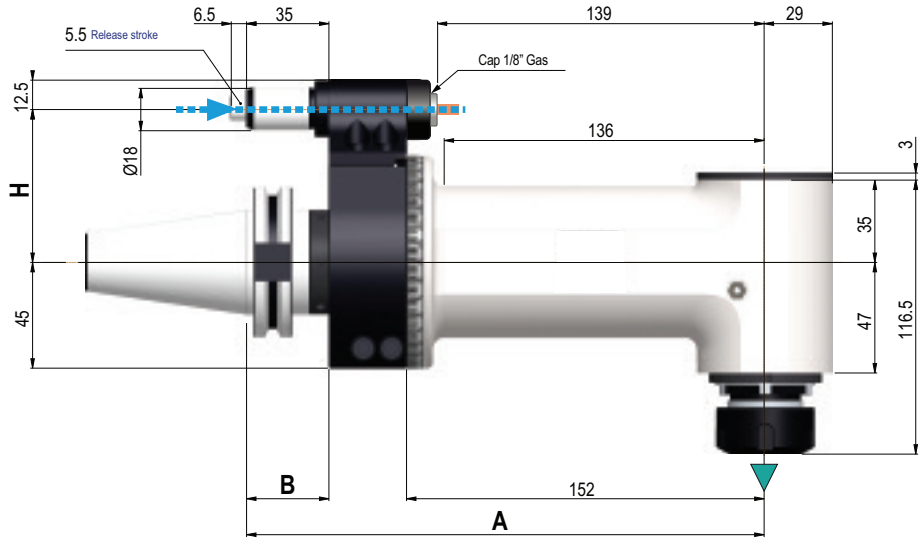
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



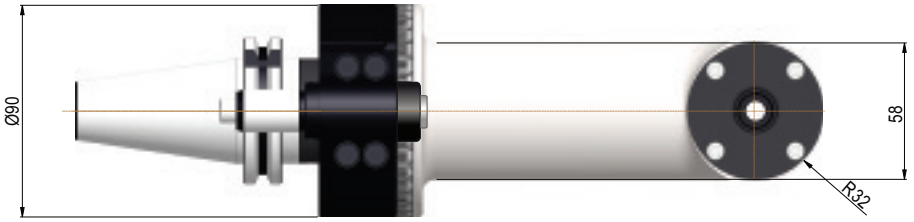
ANGLE HEADS
MADE IN ITALY

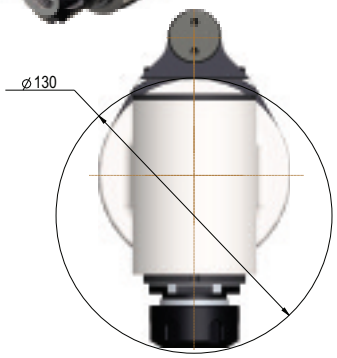
ATC Series

GFX16L









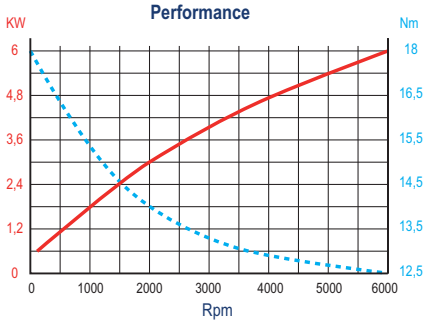
▼ Direction of rotation is the same as the machine spindle

GFX16L ER 25 Long Fixed 90º Right Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GFX16L	ER 25	220	35	65-80 (110)*	16	M12	4,000	6.7	381-400	**17,445.90**
CAT 50	GFX16L	ER 25	220	35	80 (110)*	16	M12	4,000	6.7	381-402	**17,445.90**
BT 40	GFX16L	ER 25	220	35	65-80 (110)*	16	M12	4,000	6.7	381-404	**17,445.90**
BT 50	GFX16L	ER 25	226	41	80 (110)*	16	M12	4,000	6.7	381-406	**17,445.90**
HSK63	GFX16L	ER 25	227	42	65-80 (110)*	16	M12	4,000	6.7	381-408	**18,234.70**
HSK100	GFX16L	ER 25	230	45	80 (110)*	16	M12	4,000	6.7	381-410	**18,400.00**

Other tapers available please inquire ( )* Optional

Technical Data		GFX16L
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	510
Torque	Nm	20
Weight	Kg.	6.7
Collet	mm	ER-25 2mm - 16mm



Standard Features & Equipment Included:

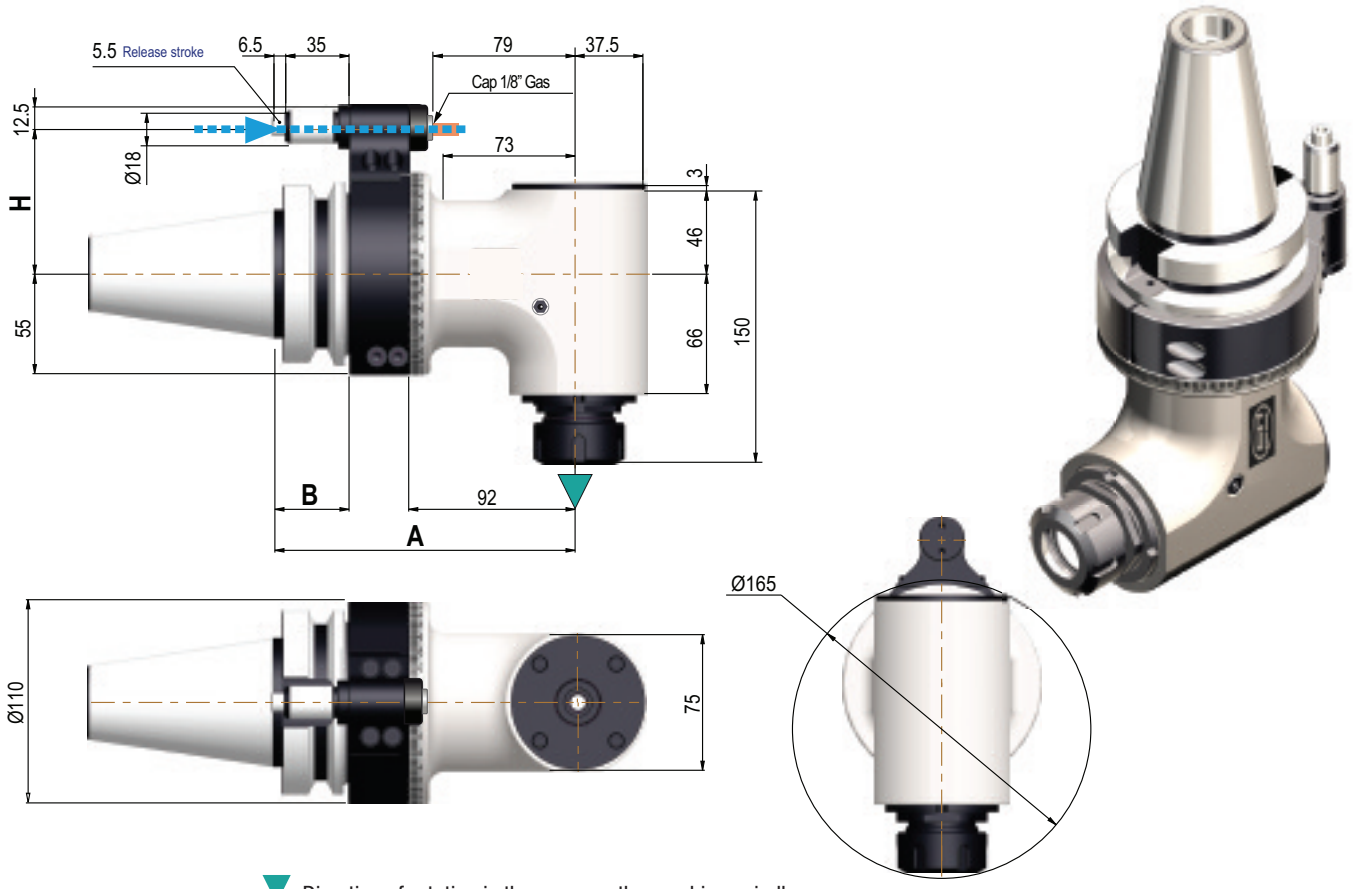
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



ANGLE HEADS
MADE IN ITALY

ATC Series

GFX20



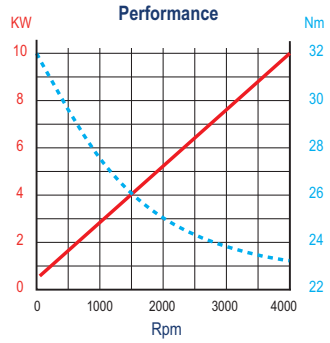
▼ Direction of rotation is the same as the machine spindle

GFX20 ER 32 Fixed 90º Right Angle Head

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 50	GFX20	ER 32	160	35	80 (110)*	20	M14	4,000	11	381-148	**11,524.80**

Other tapers available please inquire ( )* Optional

Technical Data		GFX20
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	1250
Torque	Nm	35
Weight	Kg.	11
Collet	mm	ER-32 3mm - 20mm



Standard Features & Equipment Included:

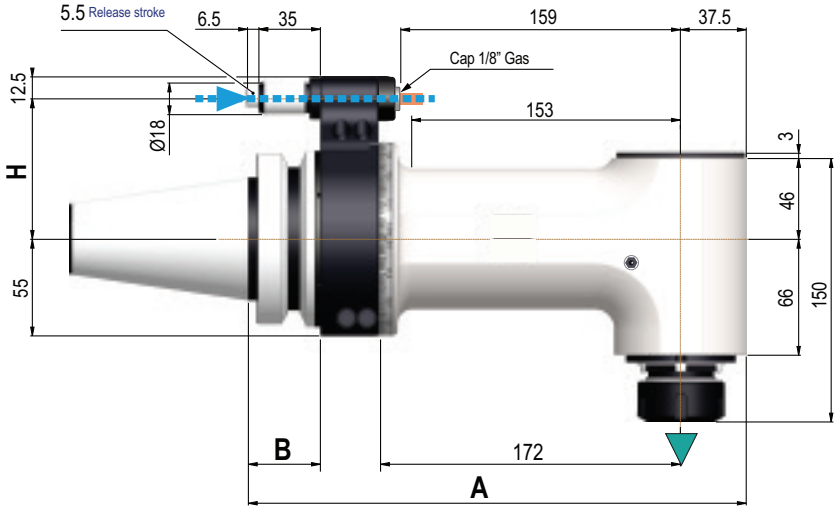
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



ANGLE HEADS
MADE IN ITALY

ATC Series

GFX20L







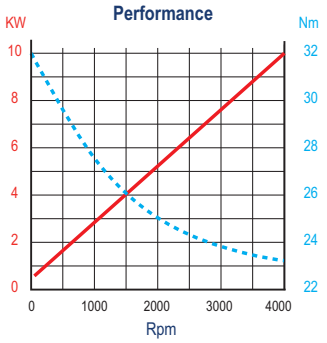
▼ Direction of rotation is the same as the machine spindle

GFX20L ER 32 Long Fixed 90º Right Angle Head

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 50	GFX20L	ER 32	240	35	80 (110)*	20	M14	4,000	13.2	381-448	**18,705.40**

Other tapers available please inquire ( )* Optional

Technical Data		GFX20L
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	1250
Torque	Nm	35
Weight	Kg.	13.2
Collet	mm	ER-32 3mm - 20mm



Standard Features & Equipment Included:

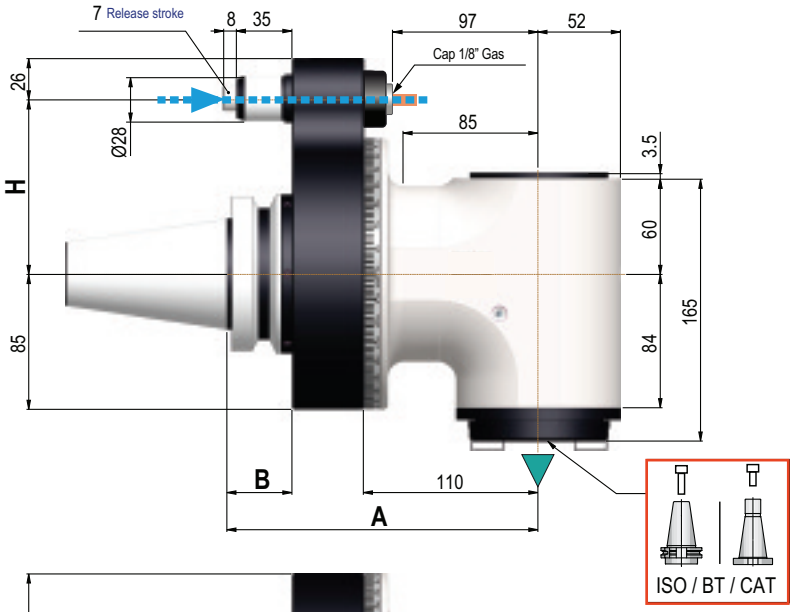
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



ANGLE HEADS
MADE IN ITALY

ATC Series

GFXS40





Note: Accepts CAT40, BT40, SK40 and NMTB 40 Taper Tooling

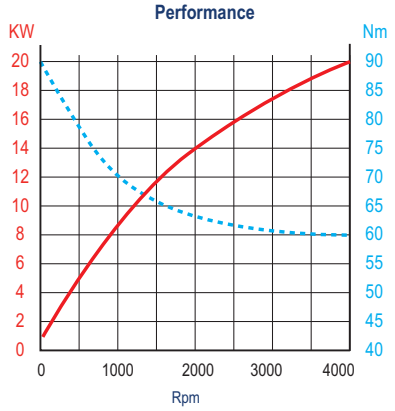
▼ Direction of rotation is the same as the machine spindle

GFX S40 Fixed 90º Right Angle Heads

Taper	Model	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 50	GFX S40	190	35	110	26	M20	3,000	22	381-121	**16,587.30**
BT 50	GFX S40	196	41	110	26	M20	3,000	22	381-123	**16,587.30**
HSK100	GFX S40	200	45	110	26	M20	3,000	22	381-125	**17,318.70**

Other tapers available please inquire

Technical Data		GFX S40
Ratio		1:1
RPM Max	g/min	3,000
Max axial load	N	1800
Torque	Nm	90
Weight	Kg.	22
Drill / Tap	mm	26mm / M20



Standard Features & Equipment Included:

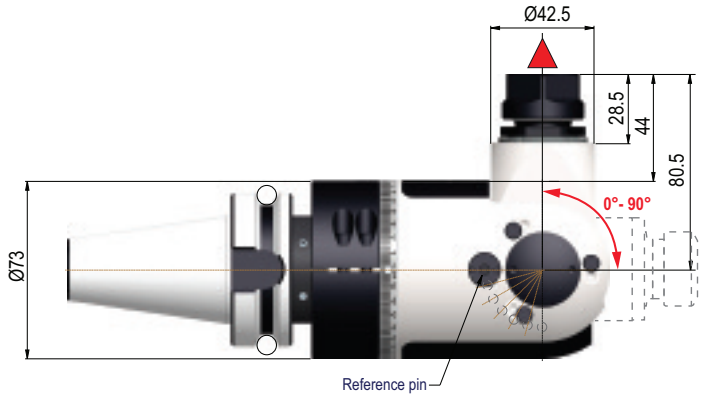
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report

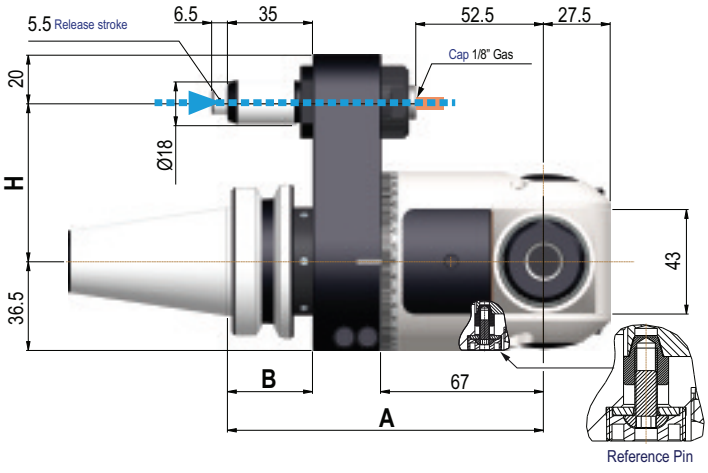


ANGLE HEADS
MADE IN ITALY

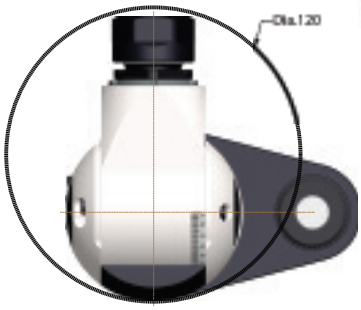
ATC Series

GPV13









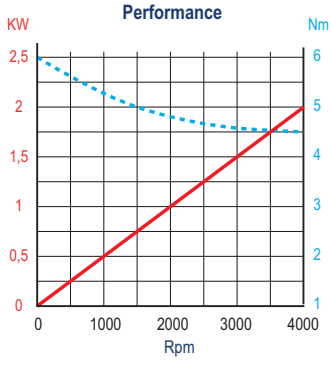
▼ Direction of rotation is opposite to the machine spindle

GPV13 ER 20 Pivoting Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GPV13	ER 20	130	35	65-80 (110)*	13	M10	4,000	4.2	381-198	**12,128.90**
CAT 50	GPV13	ER 20	130	35	80 (110)*	13	M10	4,000	4.2	381-200	**12,128.90**
BT 40	GPV13	ER 20	130	35	65-80 (110)*	13	M10	4,000	4.2	381-202	**12,128.90**
BT 50	GPV13	ER 20	136	41	80 (110)*	13	M10	4,000	4.2	381-204	**12,128.90**
HSK63	GPV13	ER 20	137	42	65-80 (110)*	13	M10	4,000	4.2	381-206	**12,733.10**
HSK100	GPV13	ER 20	140	45	80 (110)*	13	M10	4,000	4.2	381-208	**12,860.30**

Other tapers available please inquire ( )* Optional

Technical Data		GPV13
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	450
Torque	Nm	6
Weight	Kg.	4.2
Collet	mm	ER-20 1mm-13mm



Standard Features & Equipment Included:

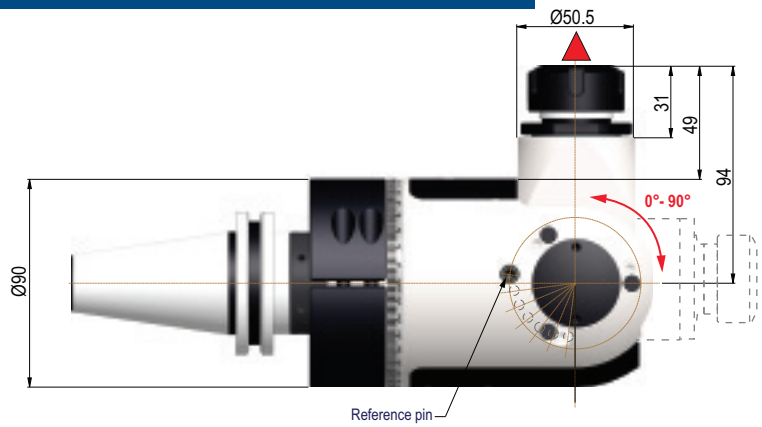
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report

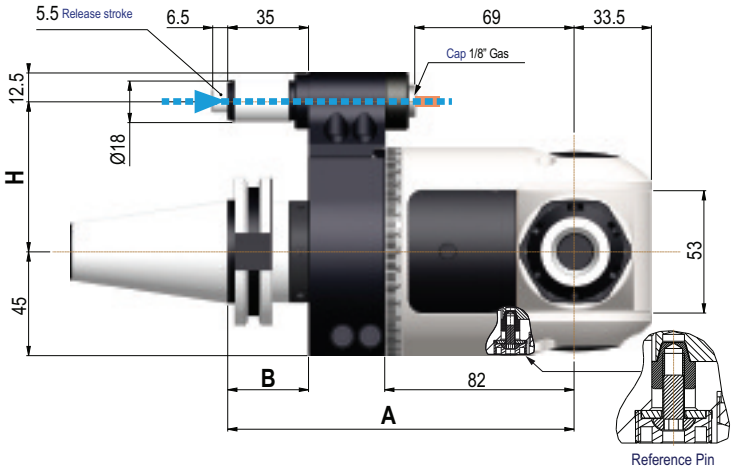


ANGLE HEADS
MADE IN ITALY

ATC Series

GPV16







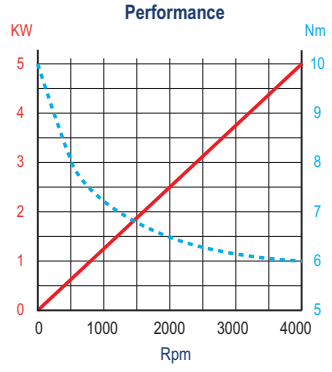
▼ Direction of rotation is opposite to the machine spindle

GPV16 ER 25 Pivoting Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 40	GPV16	ER 25	150	35	65-80 (110)*	16	M12	4,000	6.8	381-270	**12,758.70**
CAT 50	GPV16	ER 25	150	35	80 (110)*	16	M12	4,000	6.8	381-272	**12,758.70**
BT 40	GPV16	ER 25	150	35	65-80 (110)*	16	M12	4,000	6.8	381-274	**12,758.70**
BT 50	GPV16	ER 25	156	41	80 (110)*	16	M12	4,000	6.8	381-276	**12,758.70**
HSK63	GPV16	ER 25	157	42	65-80 (110)*	16	M12	4,000	6.8	381-278	**13,362.80**
HSK100	GPV16	ER 25	160	45	80 (110)*	16	M12	4,000	6.8	381-280	**13,490.00**

Other tapers available please inquire ( )* Optional

Technical Data		GPV16
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	480
Torque	Nm	18
Weight	Kg.	6.8
Collet	mm	ER-25 2mm-16mm



Standard Features & Equipment Included:

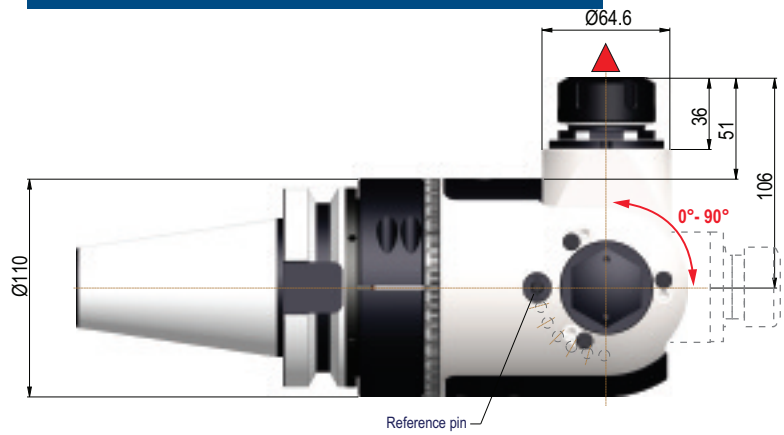
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report

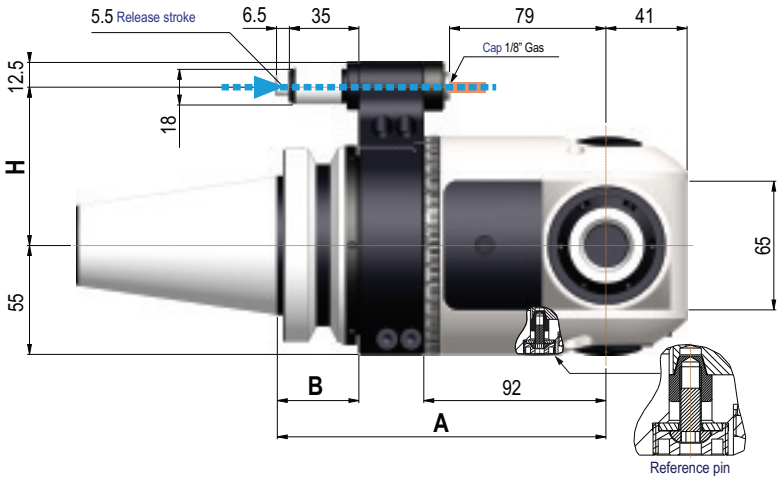


ANGLE HEADS
MADE IN ITALY

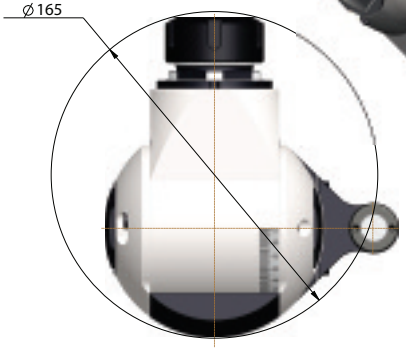
ATC Series

GPV20









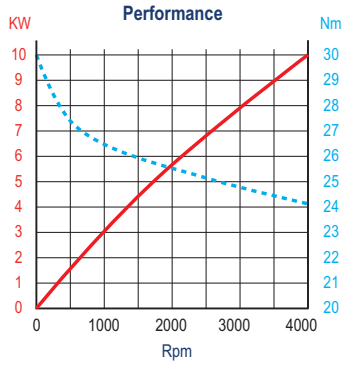
▼ Direction of rotation is opposite to the machine spindle

GPV20 ER 32 Pivoting Angle Heads

Taper	Model	Collet System	A (mm)	B (mm)	H (mm)	End Mill & Drill Cap. (mm)	Tap Size Capacity	Max R.P.M.	Weight (Kg.)	Code No.	Price $
CAT 50	GPV20	ER 32	160	35	80 (110)*	20	M16	4,000	13	381-150	**15,264.40**
BT 50	GPV20	ER 32	166	41	80 (110)*	20	M16	4,000	13	381-154	**15,264.40**
HSK100	GPV20	ER 32	170	45	80 (110)*	20	M16	4,000	13	381-158	**16,218.40**

Other tapers available please inquire ( )* Optional

Technical Data		GPV20
Ratio		1:1
RPM Max	g/min	4,000
Max axial load	N	715
Torque	Nm	32
Weight	Kg.	13
Collet	mm	ER-32 3mm-20mm



Standard Features & Equipment Included:

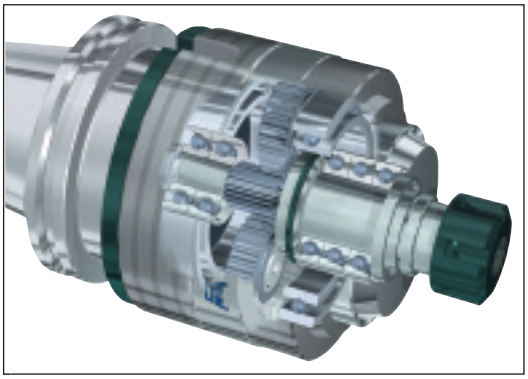
- Internal coolant from positioning pin
- Internal air pressure
- Retaining block
- Wrenches
- Grease tube
- Instruction book & Inspection report



Spindle Speeders

Made In Italy





These Spindle Speeders have been designed and developed to offer a product that ensures maximum reliability and precision in milling and drilling. From design to static and dynamic testing of the finished product.

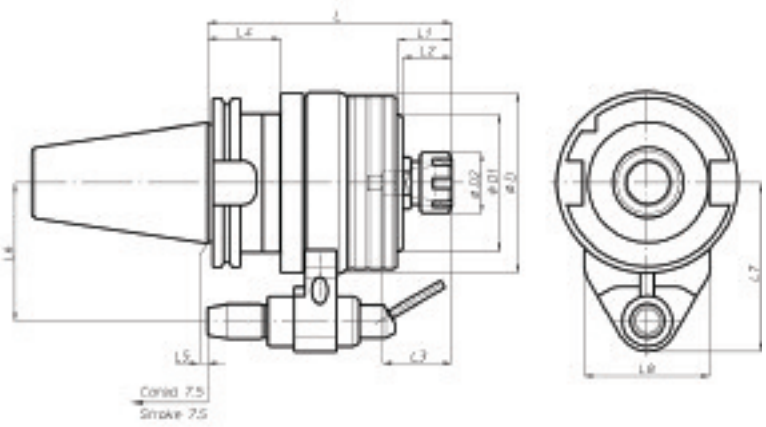
- **Max. 22,000 continuous revs (higher ratings on request)**
- **Used in particular for finishing operations**
- **Manual or automatic mounting option**
- **Allow the machine to rotate at low rpm**
- **Possibility of using hard metal tools**

The compact construction, the heat-treated steel parts and the ground gears on the involute guarantee transmission of high power ratings with amazingly low noise levels. The spindle is supported by a set of preloaded precision ball bearings with oblique contact that ensure greater strength and rotation precision within 0.01 mm.

- **Two or three planetary gears for high transmission power ratings**
- **Special tool attachment on request (Komet, DIN 1835, etc.)**
- **Coolant through the tool centre, on request**
- **Machine connection, on request (Morse Cone, DIN 69880 etc.)**
- **Interchangeable anti-rotation pin which can therefore be customized by the buyer**
- **Can be mounted on traditional machines and on machines with automatic tool change.**
- **Lubricated with a long-life synthetic grease that is practically maintenance free.**

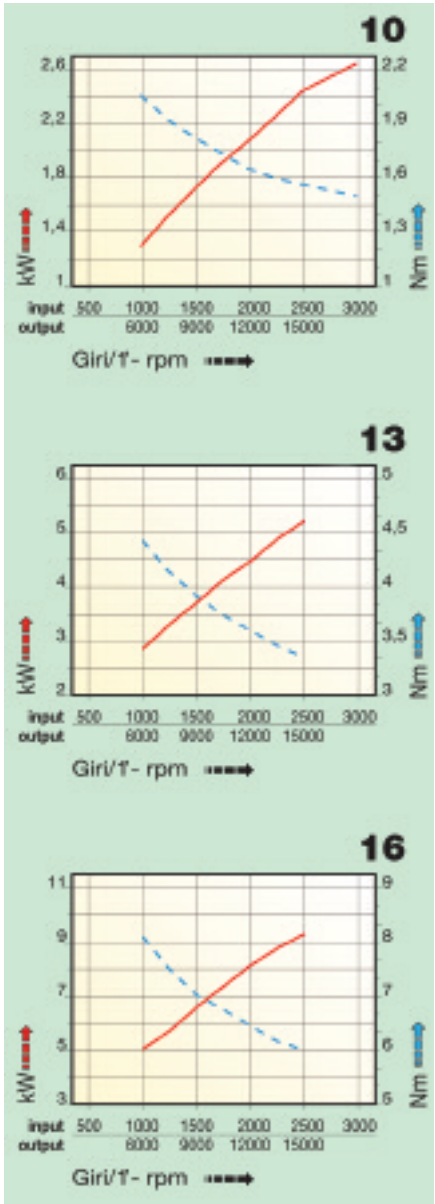
The test certificate attached to each Spindle Speeder guarantees the quality of the product.

CAT TAPER SPINDLE SPEEDERS



Modello *Type*		10				13			16	
Cono *Shank*	DIN	30	40	45	50	40	45	50	45	50
Cono *Shank*	CAT	40		50		40		50	50	
Rapporto *Ratio*		1 - 6				1 - 6			1 - 6	
N. giri max *RPM*		22.000 *				15.000 *			12.000 *	
Peso *Weight*		3,3	3,7	4,3	6,5	5,8	6,7	8	9	10
Pinza *Collet*		ER 16 max Ø 10				ER 20 max Ø 13			ER 25 max Ø 16	
D		84				105			123	
D1		65				80			100	
D2		24				35			42	
L		132				141,5			155,5	
L1		32				32			34	
L2		28				28,5			29	
L3		36,5				40			43	
L4		35				35	42		35	42
L5		0				0			0	
L6		65		80		80			80	
L7		82,5		97,5		97,5			97,5	
L8		71				73			75	
Forza assiale *Axial thrust*		60 daN				90 daN			110 daN	

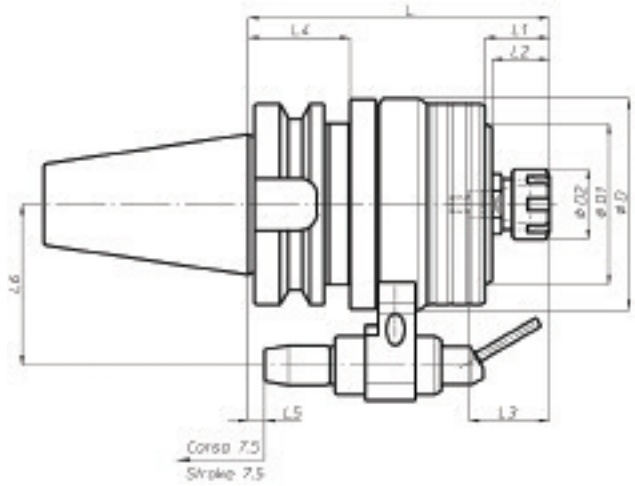
* n° giri max per lavorazioni continuative
speed at 100% duty cicle

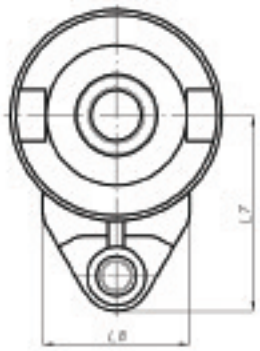


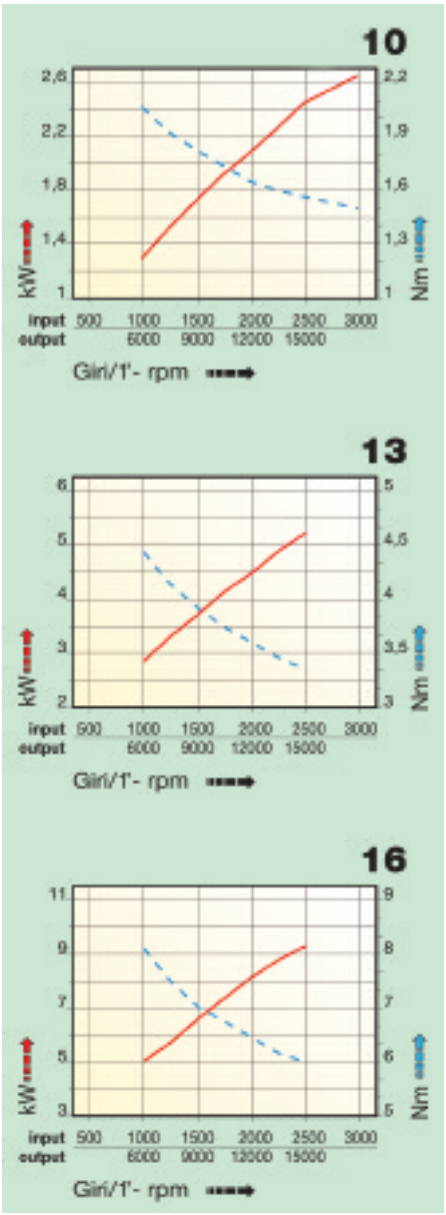
CAT Taper Spindle Speeders

Series	CAT 40 Code No.	Price $		CAT 50 Code No.	Price $
CT10/ER20	384-214	**12,582.40**		384-216	**12,582.40**
CT13/ER25	384-218	**13,532.00**		384-220	**13,532.00**
CT16/ER32				384-222	**17,093.10**

BT TAPER SPINDLE SPEEDERS







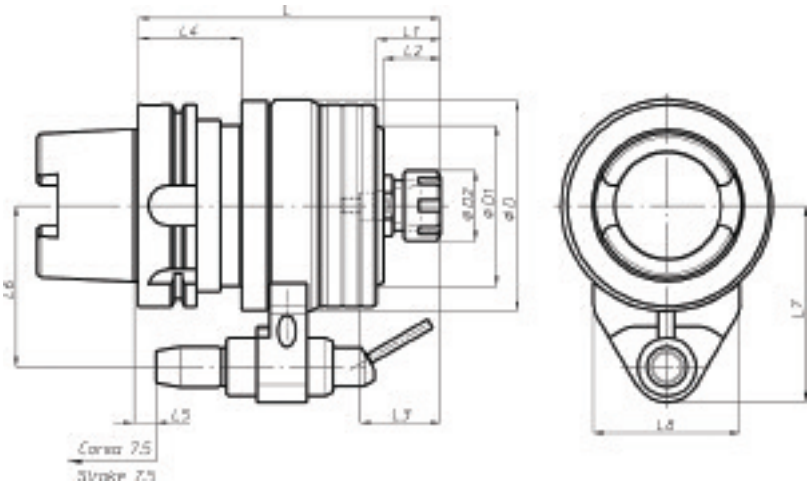
Modello *Type*	10			13		16
Cono *Shank*	30	40	50	40	50	50
Rapporto *Ratio*	1 - 6			1 - 6		1 - 6
N. giri max *RPM*	22.000 *			15.000 *		12.000 *
Peso *Weight*	3,3	3,7	6,5	5,8	8	10
Pinza *Collet*	ER 16 max Ø 10			ER 20 max Ø 13		ER 25 max Ø 16
D	84			105		123
D1	65			80		100
D2	24			35		42
L	132	132	40	141,5	149,5	163,5
L1	32			32		34
L2	28			28,5		29
L3	36,5			40		43
L4	42,5	42,5	50,5	34,5	50,5	41
L5	0		8	0	8	7,5
L6	65		80	80		80
L7	82,5		97,5	97,5		97,5
L8	71			73		75
Forza assiale *Axial thrust*	60 daN			90 daN		110 daN

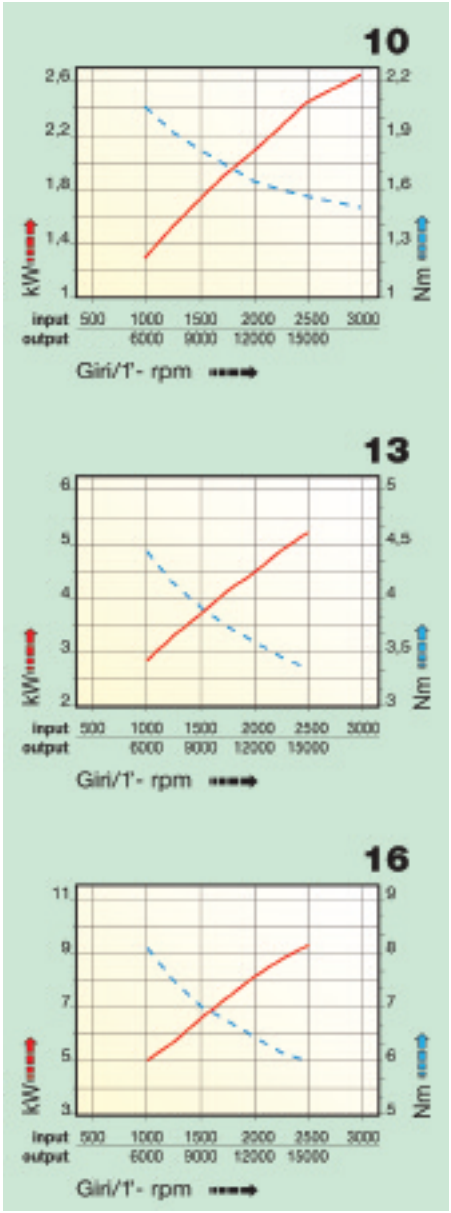
* n° giri max per lavorazioni continuative
speed at 100% duty cicle

BT Taper Spindle Speeders

Series	BT 40 Code No.	Price $		BT 50 Code No.	Price $
BT10/ER20	384-236	**12,582.40**		384-238	**12,582.40**
BT13/ER25	384-240	**13,532.00**		384-242	**13,532.00**
BT16/ER32				384-244	**17,093.10**

HSK TAPER SPINDLE SPEEDERS





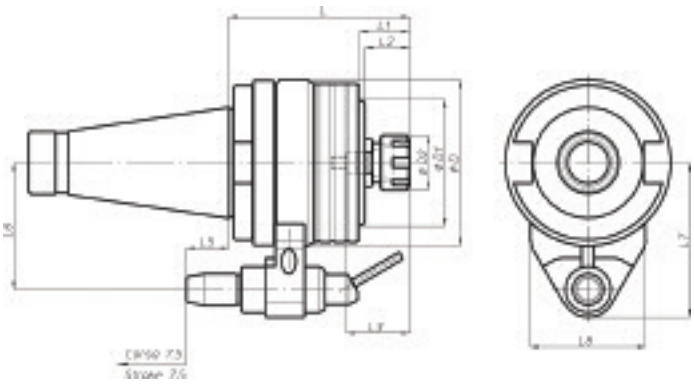
Modello *Type*	10			13			16	
Cono *Shank*	63	80	100	63	80	100	80	100
Rapporto *Ratio*	1 - 6			1 - 6			1 - 6	
N. giri max *RPM*	22.000 *			15.000 *			12.000 *	
Peso *Weight*	3,3	3,7	6,5	5,8	8		10	
Pinza *Collet*	ER 16 max Ø 10			ER 20 max Ø 13			ER 25 max Ø 16	
D	84			105			123	
D1	65			80			85	
D2	24			35			42	
L	141			150,5			164,5	
L1	32			32			44	
L2	28			28,5			32,5	
L3	36,5			40			52	
L4	42			42	51,5		56	
L5	9			9			8,5	
L6	65	80		80			80	
L7	82,5	97,5		97,5			97,5	
L8	71			73			75	
Forza assiale *Axial thrust*	60 daN			90 daN			110 daN	

* n° giri max per lavorazioni continuative
speed at 100% duty cicle

HSK Spindle Speeders

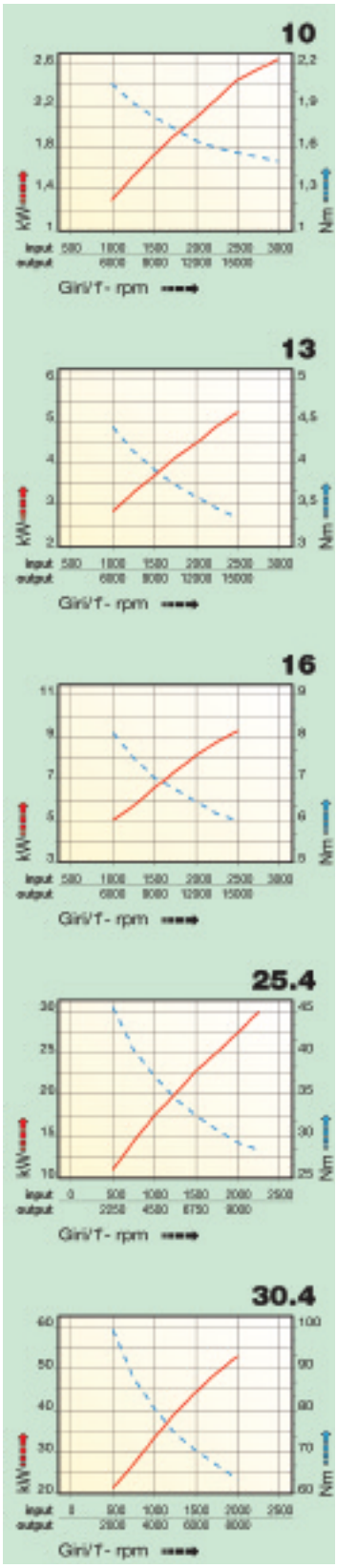
Series	HSK 63 Code No.	Price $	HSK 80 Code No.	Price $	HSK 100 Code No.	Price $
HSK10/ER20	384-246	**13,294.60**	384-248	**13,579.50**	384-250	**13,484.70**
HSK13/ER25	384-252	**14,244.20**	384-254	**14,529.00**	384-256	**14,434.30**
HSK16/ER32			384-258	**18,090.10**	384-260	**17,995.20**

NMTB TAPER SPINDLE SPEEDERS



Modello Type	10				13				16				25.4	30.4
Cono Shank DIN	40	45	50		40	45	50		40	45	50		50	50
Cono Shank NMTB	40		50		40		50		50				50	50
Rapporto Ratio	1 - 6				1 - 6				1 - 6				1 - 4,5	1 - 4
N. giri max RPM	22.000 *				15.000 *				12.000 *				10.000 *	8.000 *
Peso Weight	3	3	4,8	6,3	5	6	7,3		7,4	8	9,3		20	30
Pinza Collet	ER 16 max Ø 10				ER 20 max Ø 13				ER 25 max Ø 16				ER 40 max Ø 30	ER 50 max Ø 34
D	84				105				123				169	185
D1	65				80				100				120	114
D2	24				35				42				63	78
L	110	102	105	105	111	114,5			125	128,5			184,5	236
L1	32				32				34				67,5	85,5
L2	28				28,5				29				40,5	60,5
L3	36,5				40				43				64	90
L5	14,5		11,5		13	9,5			15	12			12	
L6	65		80		80				80				110	
L7	82,5		97,5		97,5				97,5				127,5	
L8	71				73				75				75	
Forza assiale Axial thrust	60 daN				90 daN				110 daN				300 daN	400 daN

* n° giri max per lavorazioni continuative
speed at 100% duty cicle



NMTB Taper Spindle Speeders

Series	NMTB 40 Code No.	Price $	NMTB 50 Code No.	Price $
NMTB-10/ER20	384-224	**12,582.40**	384-226	**12,582.40**
NMTB-13/ER25	384-228	**13,532.00**	384-230	**13,532.00**
NMTB-16/ER32			384-232	**17,093.10**
NMTB-30/ER50			384-234	**44,156.40**

Tapping Chucks & Collets

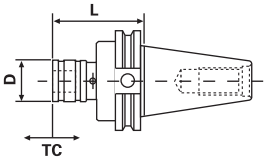
CAT Taper Tension/Compression Tap Holders	G76
CAT Taper Rigid Tap Holders	G76
BT Taper Tension/Compression Tap Holders	G76
BT Taper Rigid Tap Holders	G76
HSK Tension/Compression & Rigid Tap Holders	G77
NMTB Taper Tension/Compression Tap Holders	G77
Weldon Shank Tension/Compression & Rigid Tap Holders	G77
Straight Shank Tension/Compression Tap Holders	G78
Straight Shank T/C & Rigid Tapping Chuck	G78
Morse Taper Tension/Compression Tap Holders	G79
Torque Control Tap Collets & Sets	G79
Positive Drive Tap Collets, Reducers & Sets	G79
Synchrolize Tapping System	G80-81
Tapping Heads & Flex Collets	G82
Quick Change Drill & Tap Sets	G83-85
Air Tapping Units	G86



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





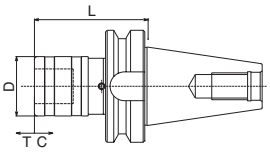
Pull Stud pg G114
Collets pg G79

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	531-543	**486.50**
CT40	#0-9/16	1/8	#1	4.00	1.43	0.29/0.29	531-540	**418.00**
CT40	#0-9/16	1/8	#1	4.47	1.25	0.79/0.39	531-542	**438.70**
CT40	5/16-7/8	1/4-1/2	#2	4.50	2.09	0.49/0.49	531-544	**496.60**
CT40	5/16-7/8	1/4-1/2	#2	6.66	2.00	0.85/0.49	531-546	**507.10**
CT40	13/16-1-3/8	3/4-1	#3	5.75	3.07	0.79/0.79	531-549	**662.60**
CT40	13/16-1-3/8	3/4-1	#3	8.00	3.07	0.79/0.79	531-548	**662.60**
CT40	13/16-1-3/8	3/4-1	#3	9.19	2.87	0.98/0.59	531-550	**588.50**
CT50	#0-9/16	1/8	#1	4.00	1.43	0.29/0.29	531-552	**493.50**
CT50	#0-9/16	1/8	#1	5.02	1.25	0.79/0.39	531-554	**517.90**
CT50	5/16-7/8	1/4-1/2	#2	4.50	2.09	0.49/0.49	531-556	**675.20**
CT50	5/16-7/8	1/4-1/2	#2	5.66	2.00	0.85/0.49	531-558	**675.60**
CT50	13/16-1-3/8	3/4-1	#3	6.25	3.07	0.79/0.79	531-560	**904.40**
CT50	13/16-1-3/8	3/4-1	#3	7.72	2.87	0.98/0.59	531-562	**948.90**

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





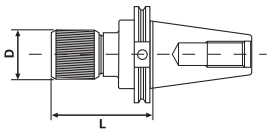
Pull Stud pg G114
Collets pg G79

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	532-261	**512.00**
BT30	#0-9/16	1/8	#1	4.25	1.43	0.29/0.29	532-260	**397.20**
BT30	#0-9/16	1/8	#1	4.92	1.25	0.79/0.39	532-262	**343.00**
BT40	#0-9/16	1/8	#1	2.62	1.43	0.29/0.29	532-267	**486.50**
BT40	#0-9/16	1/8	#1	3.80	1.43	0.29/0.29	532-264	**418.00**
BT40	#0-9/16	1/8	#1	4.33	1.25	0.79/0.39	532-266	**438.70**
BT40	5/16-7/8"	1/4-1/2	#2	4.50	2.09	0.49/0.49	532-268	**474.00**
BT40	5/16-7/8	1/4-1/2	#2	6.34	2.00	0.85/0.49	532-270	**497.60**
BT40	13/16-1-3/8	3/4-1	#3	7.50	3.07	0.79/0.79	532-272	**545.10**
BT40	13/16-1-3/8	3/4-1	#3	9.00	2.87	0.98/0.59	532-274	**588.50**
BT50	#0-9/16	1/8	#1	4.33	1.25	0.79/0.39	532-275	**461.40**
BT50	5/16-7/8	1/4-1/2	#2	6.34	2.00	0.85/0.49	532-277	**675.20**
BT50	13/16-1-3/8	3/4-1	#3	7.50	3.07	0.79/0.79	532-279	**904.40**

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





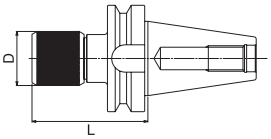
Pull Stud pg G114
Collets pg G79

Taper	Tap Range Hand	Tap Range Pipe	System	L (in.)	D (in.)	Code No.	Price $
CT40	#0-9/16"	1/8"	#1	3.02"	1.25"	531-564	**198.10**
CT40	5/16-7/8"	1/4-1/2"	#2	3.66"	2.00"	531-566	**235.50**
CT40	13/16-1-3/8"	3/4-1"	#3	4.72"	2.87"	531-568	**269.50**
CT50	#0-9/16"	1/8"	#1	3.02"	1.25"	531-570	**283.30**
CT50	5/16-7/8"	1/4-1/2"	#2	3.91"	2.00"	531-572	**298.50**
CT50	13/16-1-3/8"	3/4-1"	#3	4.98"	2.87"	531-574	**454.90**

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





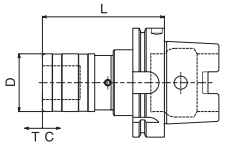
Pull Stud pg G114
Collets pg G79

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"	532-276	**188.40**
BT40	#0-9/16"	1/8"	#1	3.02"	1.25"	532-278	**198.10**
BT40	5/16-7/8"	1/4-1/2"	#2	3.66"	2.00"	532-280	**235.50**
BT40	13/16-1-3/8"	3/4-1"	#3	4.73"	2.87"	532-282	**269.50**
BT50	#0-9/16"	1/8"	#1	3.02"	1.25"	532-281	**283.30**
BT50	5/16-7/8"	1/4-1/2"	#2	3.66"	2.00"	532-283	**298.50**
BT50	13/16-1-3/8"	3/4-1"	#3	4.73"	2.87"	532-284	**454.90**

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





Collets



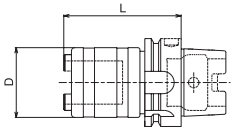
pg G79

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	536-196	**1,360.70**
HSK63	5/16-7/8	1/4-1/2	#2	6.10	2.09	0.49/0.49	536-198	**1,515.40**
HSK100	#0-9/16	1/8	#1	5.30	1.43	0.29/0.29	536-202	**2,010.30**
HSK100	5/16-7/8	1/4-1/2	#2	6.30	2.09	0.49/0.49	536-204	**2,164.90**
HSK100	13/16-1-3/8	3/4-1	#3	8.00	3.07	0.79/0.79	536-206	**2,002.60**

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





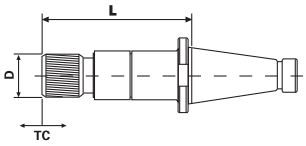
Collets



pg G79

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"	536-184	**881.50**
HSK63	5/16-7/8"	1/4-1/2"	#2	4.00"	1.97"	536-186	**927.90**
HSK63	13/16-1-3/8"	1/2-1"	#3	5.00"	2.83"	536-188	**841.20**
HSK100	#0-9/16"	1/8"	#1	3.54"	1.43"	536-190	**1,268.00**
HSK100	5/16-7/8"	1/4-1/2"	#2	3.74"	2.09"	536-192	**1,577.30**
HSK100	13/16-1-3/8"	3/4-1"	#3	5.00"	3.07"	536-194	**1,628.90**

NMTB Taper Tension/Compression Tap Holders





Collets



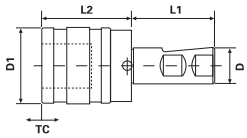
pg G79

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	534-500	**394.40**
NMTB40	5/16-7/8	1/4-1/2	#2	6.16	2.00	0.85/0.49	534-502	**448.20**
NMTB50	#0-9/16	1/8	#1	4.50	1.25	0.79/0.39	534-504	**461.40**
NMTB50	5/16-7/8	1/4-1/2	#2	7.00	2.00	0.85/0.49	534-506	**602.40**
NMTB50	13/16-1-3/8	3/4-1	#3	7.73	2.87	0.98/0.59	534-508	**896.30**

Weldon Shank Tension/Compression Tap Holders

- Precision ground surfaces
- Compact length
- Provide additional mating flexibility
- Provides axial float
- Adjustable entry force





Collets



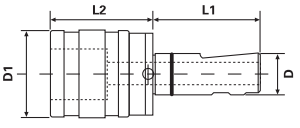
pg G79

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	534-520	**417.70**
#0-9/16	1/8	#1	1	1.43	2.28	1.53	0.79/0.39	534-522	**417.70**
#0-9/16	1/8	#1	1-1/4	1.25	2.28	4.13	0.79/0.39	534-528	**422.40**
5/16-7/8	1/4-1/2	#2	1-1/4	2.00	2.28	5.55	0.85/0.49	534-530	**488.90**
#0-9/16	1/8	#1	1-1/2	1.25	2.69	4.13	0.79/0.39	534-532	**422.40**
5/16-7/8	1/4-1/2	#2	1-1/2	2.00	2.69	5.55	0.85/0.49	534-534	**488.90**
13/16-1-3/83/4-1		#3	1-1/2	3.07	2.69	3.86	0.79/0.79	534-538	**651.30**

Weldon Shank Rigid Tap Holders

- Precision ground surfaces
- Compact length
- Provide additional mating flexibility
- Provides axial float
- Adjustable entry force





Collets



pg G79

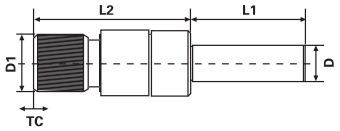
Tap Range Hand	Tap Range Pipe	System	Shank Dia. D	D1	L1	L2	Code No.	Price $
#0-9/16"	1/8"	#1	1"	1.26"	2.28"	1.46"	534-540	**169.60**
5/16-7/8"	1/4-1/2"	#2	1"	1.97"	2.28"	2.12"	534-542	**200.20**
13/16-1-3/8"	3/4-1"	#3	1-1/2"	2.83"	2.69"	3.27"	534-544	**474.00**

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 center or lathe
- When loaded into larger holders, their reduced O.D. permits tapping applications within large holes or whenever tight clearances are encountered



Collets
pg G79



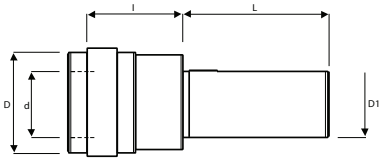
Tap Range Hand	Tap Range Pipe	System	Shank Dia. D	D1	L1	L2	T/C	Code No.	Price $
#0-9/16	1/8	#1	1	1.25	3.50	4.13	0.79/0.39	534-510	**376.40**
5/16-7/8	1/4-1/2	#2	1	2.00	3.50	5.55	0.85/0.49	534-512	**427.00**
#0-9/16	1/8	#1	1-1/4	1.25	4.00	4.13	0.79/0.39	534-514	**376.40**
5/16-7/8	1/4-1/2	#2	1-1/4	2.00	4.00	5.55	0.85/0.49	534-516	**427.00**

Straight Shank Tension/Compression Tapping Chuck

- Precision ground surfaces
- Compact length
- Provides axial float
- Plastic collar to protect chuck from coolant
- Roller cage construction
- Adjustable entry force



Collets
pg G79



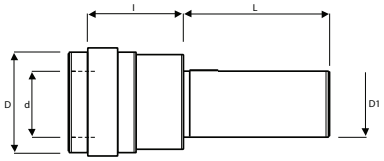
Description	System	Shank D1	d	D	l	L	Tap Capacity	Tension & Compression T	C	Code No.	Price $
1" shank	#1	1.00	.748	1.50	1.76	1.95	#0 - 9/16"	.35	.35	339-100	**749.10**
1" shank	#2	1.00	1.220	2.17	2.52	2.00	5/16 - 7/8"	.59	.59	339-105	**925.40**
1-1/2" shank	#2	1.50	1.220	2.17	2.52	3.50	5/16 - 7/8"	.59	.59	339-110	**1,604.50**
1-1/2" shank	#3	1.50	1.890	3.09	3.85	3.50	13/16 - 1-3/8"	.94	.94	339-115	**1,431.00**

Straight Shank Rigid Tapping Chuck

- Precision ground surfaces
- Compact length
- No float for synchronous tapping
- Coolant through spindle capability

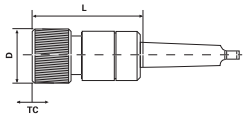


Collets
pg G79



Description	System	Shank D1	d	D	l	L	Tap Capacity	Code No.	Price $
1" shank	#1	1.00	.748	1.30	1.60	1.95	#0 - 9/16"	339-120	**385.30**
1" shank	#2	1.00	1.220	2.00	2.50	2.00	5/16 - 7/8"	339-125	**492.20**
1-1/2" shank	#3	1.50	1.890	2.84	3.44	3.50	13/16 - 1-3/8"	339-130	**1,275.20**

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 $
2	#0-9/16	1/8	#1	1.25	5.725	0.79/0.39	534-546	**298.40**
2	5/16-7/8	1/4-1/2	#2	2.00	7.00	0.85/0.49	534-548	**307.80**
3	#0-9/16	1/8	#1	1.25	4.750	0.79/0.39	534-550	**321.30**
3	5/16-7/8	1/4-1/2	#2	2.00	5.870	0.85/0.49	534-552	**328.20**
4	#0-9/16	1/8	#1	1.25	4.72	0.79/0.39	534-554	**307.70**
4	5/16-7/8	1/4-1/2	#2	2.00	5.94	0.85/0.49	534-556	**314.10**

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 Size	Tap System	D	Tap Shank	Square	Code No.	Price $
#0-#6	1	.748	0.141	0.110	337-260	**179.80**
#8	1	.748	0.168	0.131	337-261	**179.80**
#10	1	.748	0.194	0.152	337-262	**179.80**
#12	1	.748	0.220	0.165	337-263	**179.80**
1/4	1	.748	0.255	0.191	337-264	**179.80**
5/16	1	.748	0.318	0.238	337-265	**179.80**
3/8	1	.748	0.381	0.286	337-266	**179.80**
7/16	1	.748	0.323	0.110	337-267	**179.80**
1/2	1	.748	0.367	0.110	337-268	**179.80**
9/16	1	.748	0.429	0.332	337-269	**179.80**
NPT 1/8P	1	.748	0.313	0.234	337-270	**179.80**
5/16	2	1.220	0.318	0.238	337-275	**235.50**
3/8	2	1.220	0.381	0.286	337-276	**235.50**
7/16	2	1.220	0.323	0.242	337-277	**235.50**
1/2	2	1.220	0.367	0.275	337-278	**235.50**
9/16	2	1.220	0.429	0.322	337-279	**235.50**
5/8	2	1.220	0.480	0.360	337-280	**235.50**
11/16	2	1.220	0.542	0.406	337-281	**235.50**
3/4	2	1.220	0.590	0.442	337-282	**235.50**
13/16	2	1.220	0.652	0.489	337-283	**235.50**
7/8	2	1.220	0.697	0.523	337-284	**235.50**
NPT						
1/4P	2	1.220	0.562	0.421	337-285	**235.50**
3/8P	2	1.220	0.700	0.531	337-286	**235.50**
1/2P	2	1.220	0.687	0.515	337-287	**235.50**
Sets						
Type #1 - 11 pc		#0-9/16, 1/8NPT			337-271	**2,017.70**
Type #2 - 13 pc		5/16-7/8, 1/4, 3/8, 1/2 NPT			337-288	**3,123.30**

Positive Drive Tap Collets, Reducers & Sets

Tap System #1

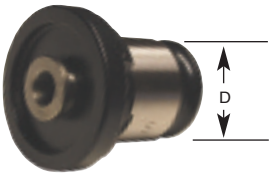
- Tap Collets are fully compatible with Bilz System #1. Size Range: #0 - 9/16" hand tap and 1/8" pipe tap

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: 13/16" - 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	.748	0.141	0.110	337-052	**59.10**
#8	1	.748	0.168	0.131	337-054	**59.10**
#10	1	.748	0.194	0.152	337-056	**59.10**
#12	1	.748	0.220	0.165	337-058	**59.10**
1/4	1	.748	0.255	0.191	337-060	**59.10**
5/16	1	.748	0.318	0.238	337-062	**59.10**
3/8	1	.748	0.381	0.286	337-064	**59.10**
7/16	1	.748	0.323	0.242	337-066	**59.10**
1/2	1	.748	0.367	0.275	337-068	**59.10**
9/16	1	.748	0.429	0.322	337-070	**59.10**
NPT 1/8P	1	.748	0.438	0.328	337-072	**59.10**
5/16	2	1.220	0.318	0.238	337-074	**83.20**
3/8	2	1.220	0.381	0.286	337-076	**83.20**
7/16	2	1.220	0.323	0.242	337-078	**83.20**
1/2	2	1.220	0.367	0.275	337-080	**83.20**
9/16	2	1.220	0.429	0.322	337-082	**83.20**
5/8	2	1.220	0.480	0.360	337-084	**83.20**
11/16	2	1.220	0.542	0.406	337-086	**83.20**
3/4	2	1.220	0.590	0.442	337-088	**83.20**
13/16	2	1.220	0.652	0.489	337-090	**83.20**
7/8	2	1.220	0.697	0.523	337-092	**83.20**
NPT						
1/4P	2	1.220	0.562	0.421	337-094	**83.20**
3/8P	2	1.220	0.700	0.531	337-096	**83.20**
1/2P	2	1.220	0.687	0.515	337-098	**83.20**
13/16	3	1.891	0.652	0.489	337-100	**182.10**
7/8	3	1.891	0.697	0.523	337-102	**182.10**
15/16	3	1.891	0.760	0.570	337-104	**182.10**
1	3	1.891	0.800	0.600	337-106	**182.10**
1-1/8	3	1.891	0.896	0.672	337-108	**182.10**
1-1/4	3	1.891	1.021	0.766	337-110	**182.10**
1-3/8	3	1.891	1.108	0.831	337-112	**182.10**
NPT						
3/4P	3	1.891	0.906	0.679	337-114	**182.10**
1P	3	1.891	1.125	0.843	337-116	**182.10**
Reducers						
Type #2 - #1					337-118	**136.80**
Type #3 - #2					337-119	**274.00**
Sets						
Type #1 - 11 pc		#0-9/16, 1/8NPT			337-073	**692.90**
Type #2 - 13 pc		5/16-7/8, 1/4, 3/8, 1/2 NPT			337-099	**1,153.90**
Type #3 - 9 pc		13/16-1-3/8, 3/4, 1" NPT			337-117	**1,751.90**

SYNCHROLIZE TAPPING SYSTEM FOR RIGID TAPPING



- 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 $
40	#0 - 1/2"	1	1.693	2.087	531-610	**741.40**
40	3/8" - 3/4"	2	2.323	2.874	531-614	**921.50**
50	#0 - 1/2"	1	1.690	2.402	531-612	**792.80**
50	3/8" - 3/4"	2	2.323	2.874	531-616	**1,148.00**

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 $
40	#0 - 1/2"	1	1.690	2.402	532-310	**587.10**

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	536-210	**741.40**
HSK50A	3/8" - 3/4"	2	2.362	3.819	536-218	**921.50**
HSK63A	#0 - 1/2"	1	1.693	2.520	536-212	**741.40**
HSK63A	3/8" - 3/4"	2	2.362	3.819	536-214	**921.50**
HSK100A	3/8" - 3/4"	2	2.362	3.583	536-216	**1,384.80**

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	338-120	**382.60**
2	3/8" - 3/4"	ER25	28mm	42mm	338-122	**447.20**
3	9/16" - 1-5/16"	ER40	32mm	63mm	338-124	**1,117.90**

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	338-126	**1,017.90**
2	3/8" - 3/4"	ER25	86mm	42mm	338-128	**1,088.40**
3	9/16" - 1-5/16"	ER40	95mm	63mm	338-130	**1,853.30**

- See page G26 for ER16 collets
- See page G28 for ER25 collets
- See page G30 for ER40 collets

SYNCHROLIZE EXTENSION SYSTEM



Up to 9" of gauge length

Synchrolize Tap Adapter Bodies



System	Length Added	Code No.	Price $
1	5mm	338-132	**500.20**
2	7mm	338-134	**559.00**
3	2mm	338-136	**882.70**

Synchrolize Terminals



System	Tap Range	Collet Style	Length	Code No.	Price $
1	#0 - 1/2"	ER16	50mm	338-138	**517.90**
2	3/8" - 3/4"	ER25	79mm	338-140	**529.70**
3	9/16" - 1-5/16"	ER40	93mm	338-142	**970.70**

- See page G26 for ER16 collets
- See page G28 for ER25 collets
- See page G30 for ER40 collets

Synchrolize Extensions



System	Length	Code No.	Price $
1	25mm	338-144	**135.50**
1	50mm	338-146	**159.00**
2	50mm	338-148	**206.20**
2	100mm	338-150	**235.50**
3	50mm	338-152	**270.80**
3	100mm	338-154	**329.60**

Synchrolize Assembly Supports



System	Code No.	Price $
1	338-156	**247.30**
2	338-158	**270.80**
3	338-160	**353.10**

Reverse Tapping Heads

Guaranteed Depth Control Within ±0.004"

Features:



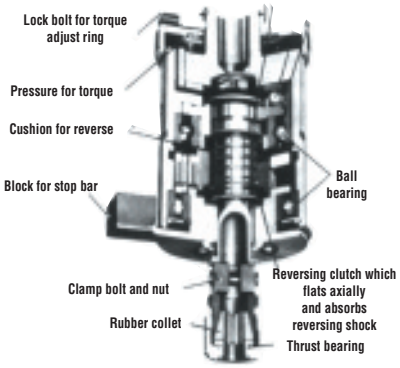
- Chatter-free clutch has positive engagement which allows for a smoother, more accurate tapping operation and more rapid reversal
- Guaranteed Depth Control to ± 0.004"
- Radial Float is SELF-CENTERING to compensate for hole center misalignment to 0.005"
- Unique Double Spring Mechanism produces Automatic Feed and Cushion Drive. There are two springs for the feed and two springs for the reversal. Each set gives you double smoothness for ULTRA accurate tapping applications (not possible with this type of tapping head in the past)
- Pre-set Torque Control permits easy operation of tap brake torque control
- **FOR DEPTH CONTROL:**

Tapping Depth	2.00"
Clockwise Expansion (B)	-0.14"
Hold Machine spindle travel	1.86"

Set your machine travel to feed up to 1.86", then stop your machine travel, the tap holding spindle will continue to feed out (self-feed) up to 0.14" (clockwise expansion B), the drive clutch will go into the neutral zone and stop automatically. We guarantee this Depth Control within ± 0.004" (0.1 mm).

- For NC machine, set torque as high as possible within the safe limits of the tap. NC machine Cutting Feed equals (tap pitch x spindle rpm). Reverse Feed equals 2 x (tap pitch x spindle rpm)

Mount JT No.	Tapping Cap. Steel	Standard Collet Code No.	Rec. Max. Speed	Gear Ratio	Clockwise Comp. (A)	Clockwise Expansion (B)	Code No.	Price $
YSN7								
		354-032						
J-6	#0 - 1/4	(#0 - 10)	1,500rpm	1:1.6	0.197"	0.14"	354-002	**616.60**
	M2 - M7	354-034						
		(#10 - 1/4)						
YSN12								
		354-036						
	#8 - 1/2	(#8 - 1/4)						
J-6	M4 - M12	354-038	1,000rpm	1:1.75	0.197"	0.16"	354-012	**750.50**
	1/8 NPT	(1/4 - 1/2)						
YSN20								
		354-042						
	5/16 - 3/4	(5/16 - 5/8)						
M20	M8 - M20	354-044	600rpm	1:1.7	0.236"	0.24"	354-022	**874.00**
	1/8, 1/4 NPT	(9/16 - 3/4)						



ROTARY TOOLING

Rubber Flex Collets



Capacity	Approximate Dimensions (in.) Large Dia. x Small Dia. x OAL	Code No.	Price $
#0 - 10	.590 x .350 x .440	354-032	**51.60**
#10 - 1/4	.590 x .350 x .440	354-034	**51.60**
#8 - 1/4	.818 x .508 x .522	354-036	**51.60**
1/4 - 1/2	.818 x .508 x .522	354-038	**51.60**
5/16 - 5/8	1.038 x .665 x .610	354-042	**51.60**
9/16 - 3/4	1.038 x .665 x .610	354-044	**51.60**

* See page G90 for STM JT6 Drill Chuck Arbors
* See page G101 for GS JT6 Taper Adapters

Shanks For 354-022

Description	Code No.	Price $
Morse Taper 3-M20	354-062	**52.60**
Morse Taper 4-M20	354-064	**52.60**
R8-M20	354-066	**73.50**

Clamp, Bolt And Nut Assembly

Model	Description	Code No.	Price $
YSN7	#21,22 & 44 Clamp Bolt & Nut	354-085	**4.10**
YSN12	#21,22 & 44 Clamp Bolt & Nut	354-075	**34.70**
YSN20	#21,22 & 44 Clamp Bolt & Nut	354-080	**32.50**

Collet Nuts

Model	Description	Code No.	Price $
YSN7	#23, 24 & 45 Collet Nut	354-084	**35.00**
YSN12	#23, 24 & 45 Collet Nut	354-074	**37.20**
YSN20	#23, 24 & 45 Collet Nut	354-079	**38.30**

BIG DAISHOWA

BIG Accu-Tapper Reversing Type

Designed with Reversing Mechanism for Use on Non-reversing Spindles

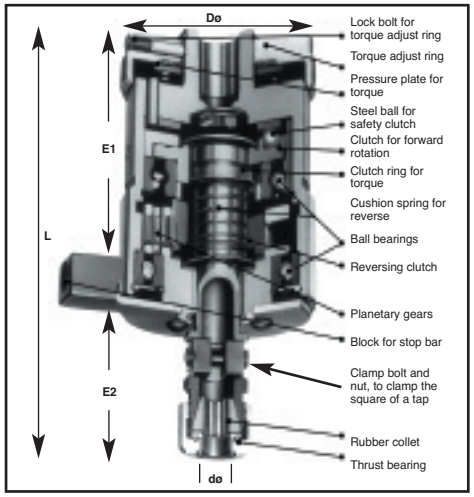
Features:

- Equipped with safety clutch to prevent tap breakage in case of overload; provides smooth transition and rapid change from forward to reverse
- Axial float assures smooth tapping and guards against breakage and cross tapping
- Guaranteed depth control to ±0.1mm (±0.004")
- JACOBS RUBBER FLEX COLLETS are standard accessory.



Mount JT No.	Tapping Cap. Steel	Standard Collet Code No.	Rec. Max. Speed	Clockwise Gear Ratio	Comp. (A)	Expansion (B)	Code No.	Price $
M207		354-032						
J-6	#0- 1/4"	(#0 -10)						
	M2-M7	354-034	1,500 rpm	1:1.6	.197"	.14"	355-921	**1,654.30**
		(#10 - 1/4")						
M412		354-036						
	#8- 1/2"	(#8- 1/4")						
J-6	M4-M12	354-038	1,000 rpm	1:1.75	.197"	.16"	355-924	**2,181.60**
	1/8 NPT	(1/4" - 1/2")						
M820		354-042						
	5/16" - 3/4"	(5/16" - 5/8")						
M20	M8-M20	354-044	600 rpm	1:1.7	.236"	.24"	355-926	**2,920.00**
	1/8 , 1/4 NPT	(9/16" - 3/4")						

INTERNAL CONSTRUCTION



ACCU-TAPPER Specifications:

Model No.	Dø	dø	E1	E2	L
M207	2.17"	.91"	3.46"	1.65"	5.12"
M412	2.95"	1.10"	3.82"	2.32"	6.14"
M820	3.58"	1.57"	4.72"	3.31"	8.03"

Clamp, Bolt And Nut

Model	Code No.	Price $
#412	355-925	**123.50**
#820	355-927	**130.00**

Rubber Flex Collets



Capacity	Approximate Dimensions (in.) Large Dia. x Small Dia. x OAL	Code No.	Price $
#0 - 10	.590 x .350 x .440	354-032	**51.60**
#10 - 1/4	.590 x .350 x .440	354-034	**51.60**
#4 - 1/4	.818 x .508 x .522	354-036	**51.60**
1/4 - 1/2	.818 x .508 x .522	354-038	**51.60**
5/16 - 5/8	1.038 x .665 x .610	354-042	**51.60**
9/16 - 3/4	1.038 x .665 x .610	354-044	**51.60**

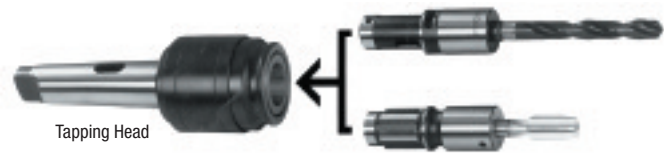
Quick Change Drill & Tap Sets

- Quick change holders allow fast changing of taps and drills only seconds
- Adjustable torque control provides easy selection for the material to be tapped
- Stable tapping is assured by simple but efficient cross tapping prevention system
- Automatic torque limiter built into each drill tapper
- Built-in safety clutch and exclusive tap holders assure safe tapping.
- No need to adjust torque for tapping blind or through holes.



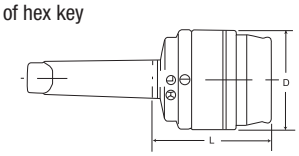
Set	Contents	Code No.	Price $
MT4 Set	1pc. - Morse Taper 4 Head	355-416	**5,825.20**
	1pc. - JT6 Drill Chuck Adapter		
	1pc. - MT2 & MT3 Drill Holder		
	1pc. - Tap Holder sizes: 3/8, 1/2, 5/8, 3/4, 7/8, 1", 1-1/8		
MT5 Set	1pc. - Morse Taper 5 Head	355-417	**5,825.20**
	1pc. - JT6 Drill Chuck Adapter		
	1pc. - MT2 & MT3 Drill Holder		
	1pc. - Tap Holder sizes: 3/8, 1/2, 5/8, 3/4, 7/8, 1", 1-1/8		

Tool Changers (Drilling & Tapping Heads)



Features:

- Automatic torque limiter built into each tap holder
- Tapping Capacity #8 to 6" capacity
- Floating drive allows roughing and finishing to be used without any danger of cross threading
- Automatically adjustable expansion and compression
- Spring and ball bearing facilitates super smooth operation in use either horizontally or vertically
- Adjustable torque control, H and L marks on upper body of tapper provides easy selection of high H and low L torque selection, according to the material being tapped, by use of hex key



Series	Shank Taper	Drill Cap.	Tap Cap.	Pipe Tap	D x L	Code No.	Price $
DT-24	MT-3	1-1/4"	#8-7/8"	1/8" - 1/2"	2.75" X 3.54"	355-305	**2,617.80**
DT-24	MT-4	1-1/4"	#8-7/8"	1/8" - 1/2"	2.75" X 3.54"	355-310	**2,617.80**
DT-33	MT-4	2"	3/8" - 1-1/4"	1/8" - 1"	3.46" X 4.13"	355-405	**2,931.90**
DT-33	MT-5	2"	3/8" - 1-1/4"	1/8" - 1"	3.46" X 4.13"	355-410	**2,931.90**
DT-52	MT-5		7/8" - 2"	7/8" - 1 1/2"	4.44" X 5.03"	355-505	**5,645.40**

BIG DAISHOWA

Quick Change Drilling & Tapping Attachments

Standard Tap Holder



• For 355-300, 400 Series (No. 8 - 1-1/4").
This standard tap holder is standard -side lock system and inside diameter and square is in accordance with U.S. standard.



• For 355-500, 600, 700 (7/8"-6"). This holder grasps tap by shank with collet and collet nut.

• For 355-600 series: any size from 1" to 3"
• For 355-700 series: any size from 3" to 6"
**When you order Tap Holders for 355-600 and 700 series, please specify your tap size, your tap shank dia. and your tap's square size

Tap Size	Code No.	Price $
355-300 Series - DT24		
#8	355-725	**271.00**
#10	355-726	**271.00**
#12	355-727	**271.00**
1/4	355-728	**271.00**
5/16	355-729	**271.00**
3/8	355-730	**271.00**
7/16	355-731	**271.00**
1/2	355-732	**271.00**
9/16	355-733	**271.00**
5/8	355-734	**271.00**
11/16	355-735	**271.00**
3/4	355-736	**271.00**
13/16	355-737	**271.00**
7/8	355-738	**271.00**
355-400 Series - DT33		
3/8	355-739	**302.20**
7/16	355-740	**302.20**
1/2	355-741	**302.20**
9/16	355-742	**302.20**
5/8	355-743	**302.20**
11/16	355-744	**302.20**
3/4	355-745	**302.20**
13/16	355-746	**302.20**
7/8	355-747	**302.20**
15/16	355-748	**302.20**
1	355-749	**302.20**
1-1/8	355-750	**302.20**
1-1/4	355-751	**302.20**
355-500 Series - DT52		
7/8	355-752	**697.90**
15/16	355-753	**697.90**
1	355-754	**697.90**
1-1/8	355-755	**697.90**
1-1/4	355-756	**697.90**
1-3/8	355-757	**697.90**
1-1/2	355-758	**697.90**
1-5/8	355-759	**697.90**
1-3/4	355-760	**697.90**
1-7/8	355-761	**697.90**
2	355-762	**697.90**

BIG DAISHOWA

Drill Holders & Drill Chuck Holders

Drill Holder
MT–1, 2, 3, 4, 5. This unit has unique backlash free feature eliminates shock when through-hole drilling.



Drill Chuck Holder
When purchased this unit comes without chuck.



Taper	Series 300 Code No.	Price $	Series 400 Code No.	Price $	Series 500 Code No.	Price $
Drill Holder						
MT-1	355-320	**247.20**	355-420	**256.80**		
MT-2	355-321	**247.20**	355-421	**256.80**	355-520	**585.10**
MT-3	355-322	**264.00**	355-422	**256.80**	355-521	**585.10**
MT-4			355-423	**276.00**	355-522	**585.10**
MT-5					355-523	**683.50**
Chuck Holder w/o Chuck						
JT 6	355-325	**196.70**	355-425	**211.20**	355-525	**386.30**

Pipe Tap Holders

NPT Size	Series 300 DT-24 Code No.	Price $	Series 400 DT-33 Code No.	Price $	Series 500 DT-52 Code No.	Price $
1/8	355-900	**271.00**	355-904	**302.20**		
1/4	355-901	**271.00**	355-905	**302.20**		
3/8	355-902	**271.00**	355-906	**302.20**	355-910	**697.90**
1/2	355-903	**271.00**	355-907	**302.20**	355-911	**697.90**
3/4			355-908	**302.20**	355-912	**697.90**
1			355-909	**302.20**	355-913	**697.90**
1 1/4					355-914	**697.90**
1 1/2					355-915	**697.90**

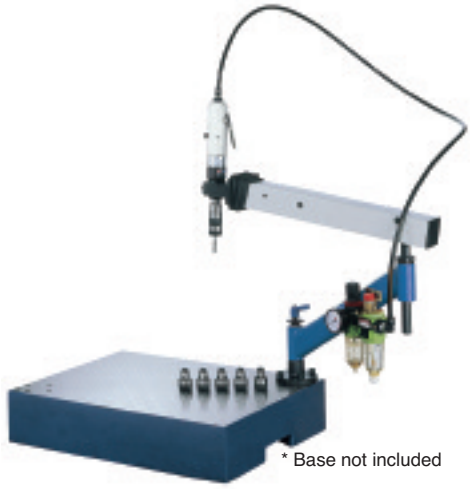
Air Tapping Units

Mini Arm Type Air Tapping Unit - VAT-712

Features:

- Air tapping spindle
- Parallel arm
- Table mounting column
- Air combination
- 6 ANSI Tap Collets #10-1/2”
- Radial jib
- Air pressure: 6~8 kgs/cm3
- Air Cylinders included
- Requires: 5HP compressor
- Without stand plate

Tap Range	Speed RPM	Work Range	Weight (kg)	Code No.	Price $
#10 - 1/2”	400	Rmax 700mm	12	326-700	**4,282.70**



* Base not included

Small Arm Type Air Tapping Unit - VAT-1412

Features:

- 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 kgs/cm3
- Air Cylinders included
- Requires: 5HP compressor
- Without stand plate

Tap Range	Speed RPM	Work Range	Weight (kg)	Code No.	Price $
#10 - 1/2”	400	Rmax 1400mm Rmin 200mm	18	326-705	**4,762.30**



* Base not included

Drill Chucks & Taper Adapters

CAT Taper Integral Keyless Drill Chucks	G88
BT Taper Integral Keyless Drill Chucks	G88
NMTB Taper Integral Keyless Drill Chucks	G89
M.T., R8 & Straight Shank Integral Keyless Drill Chucks	G89
Replacement Drill Chucks & Wrenches	G89
Ball/Plain Bearing & Keyless Drill Chucks	G90
Rohm Drill Chucks & Accessories	G91-93
Jacobs Drill, Tap & Die Grinder Chucks & Accessories	G94-100
CAT, BT, NMTB & R8 Jacobs Taper Adapters	G101
CAT, BT, NMTB & R8 Morse Taper Adapters	G101-102
CT, BT, NMTB Taper Boring Head Holders	G102
NMTB30 Drill Chuck Arbors	G102
NMTB To NMTB Taper Open End Adapters	G102
NMTB To R8 Taper Adapters	G102
Morse Taper Sleeves	G103
Extension Length Sockets	G103
Solid Sockets	G103
Lathe Mandrels	G104
Annular Cutter Holders	G104
Taper Dimensions	G105-106



DRILL CHUCKS



- **HIGH PRECISION**
- **PREMIUM TOLERANCE**
- **TIN COATED JAWS FOR IMPROVED LIFE**

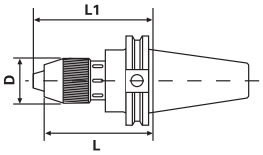
- **GS Keyless Drill Chucks designed to achieve the highest accuracy and rigidity possible**
- **GS Super Heavy Duty Ball Bearing Drill Chucks are made to the highest tolerances in the market**

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 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.





Pull Stud pg G114

Wrench pg G89

Replacement Drill Chuck pg G89

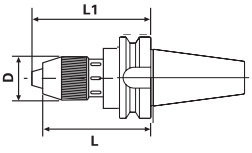
Taper	Cap.	L	L1	D	Code No.	Price $
CT40	1/4"	2.559"	2.795"	1.3"	531-480	**336.60**
CT40	1/2"	4.527"	4.992"	1.97"	531-482	**379.90**
CT40	5/8"	4.724"	5.236"	2.24"	531-483	**501.10**
CT50	1/2"	3.54"	3.996"	1.97"	531-484	**608.00**
CT50	5/8"	3.7"	4.134"	2.24"	531-485	**722.90**

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.





Pull Stud pg G114

Wrench pg G89

Replacement Drill Chuck pg G89

Taper	Cap.	L	L1	D	Code No.	Price $
BT30	1/4"	3.15"	3.38"	1.3"	532-210	**350.40**
BT30	1/2"	3.55"	4.02"	1.97"	532-212	**322.10**
BT40	1/4"	2.95"	3.19"	1.3"	532-214	**336.60**
BT40	1/2"	3.74"	4.18"	1.97"	532-216	**370.20**
BT50	5/8"	5.12"	5.59"	2.24"	532-219	**540.70**

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.

Wrench pg G89
Replacement Drill Chuck pg G89

Taper	Cap.	Gauge Length (Open)	Gauge Length (Closed)	Chuck Dia.	Code No.	Price $
NMTB30	1/2"	3.56"	4.02"	1.97"	534-402	**370.00**
NMTB40	1/4"	2.36"	2.60"	1.3"	534-404	**285.60**
NMTB40	1/2"	3.75"	4.20"	1.97"	534-406	**324.30**
NMTB50	1/2"	3.35"	3.74"	1.97"	534-408	**389.40**

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.

Wrench pg G89
Replacement Drill Chuck pg G89

Shank	Gripping Dia. (mm)	Chuck Dia.	Gauge Length	Code No.	Price $
M.T. 4	0-13	51	100	337-426	**235.70**
M.T. 4	3-16	57	120	337-428	**214.30**

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.

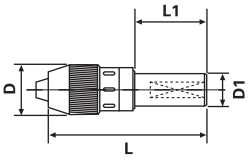
Wrench pg G89
Replacement Drill Chuck pg G89

Shank	Gripping Dia. (mm)	Chuck Dia.	Gauge Length	Draw Bar	Code No.	Price $
R-8	0-13	51	100	7/16-20	337-430	**292.10**
R-8	3-16	57	120	7/16-20	337-432	**331.00**

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.



Wrench pg G89
Replacement Drill Chuck pg G89

Capacity	D1	L	L1	D	Code No.	Price $
1/4"	3/4"	5.87"	2.56"	1.34"	534-410	**153.50**
1/2"	1-1/4"	6.06"	2.56"	1.97"	534-414	**202.80**

Replacement Drill Chucks



Description	Code No.	Price $
1/4" chuck	534-422	**152.10**
1/2" chuck for BT40	534-424	**183.00**
1/2" chuck for CAT40 / NMTB40	534-425	**183.00**
5/8" chuck for CAT40/50, BT40	534-427	**230.90**

Replacement Chuck Wrenches



Description	Code No.	Price $
Fits 1/4" chucks	534-418	**6.70**
Fits 1/2" chucks	534-420	**6.70**
Fits 5/8" chucks	534-431	**9.30**

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
- The jaws feature a TIN coated surface treatment to assure durability.

Chuck Model	Capacity (in.)	Mount	Code No.	Price $
13BXH	1/64-1/2	JT6	536-500	**59.90**
16BXH	1/64-5/8	JT3	536-502	**73.90**
19BXH	1/64-3/4	JT4	536-504	**143.50**

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 $
6GH	1/64-1/4	JT1	536-506	**27.50**
10GH	1/64-3/8	JT2	536-512	**30.80**
13GH	1/64-1/2	JT33	536-514	**38.50**
13GH	1/64-1/2	JT6	536-516	**38.50**
13GH	1/64-1/2	1/2-20	536-518	**38.50**
16GH	1/64-5/8	JT3	536-520	**51.50**
19GH	1/8-3/4	JT4	536-522	**98.20**

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	536-524	**173.20**
6XH	1/64-1/4	3/8 -24	536-526	**101.70**
10XH	1/64-3/8	JT2	536-528	**149.40**
10XH	1/64-3/8	JT33	536-530	**204.50**
13XH	1/64-1/2	JT6	536-534	**175.60**
13XH	1/64-1/2	JT33	536-536	**172.50**
13XH	1/64-1/2	1/2 -20	536-538	**110.80**
16XH	1/8-5/8	JT6	536-540	**192.50**
16XH	1/8-5/8	JT33	536-542	**180.50**

Drill Chuck Keys



Chuck Model	Key No.	Code No.	Price $
6GH 1/4	P1	536-544	**4.60**
10GH 3/8	P2	536-546	**4.10**
13GH 1/2 JT33	P6	536-548	**6.50**
13GH 1/2 JT6	P6	536-548	**6.50**
16GH 5/8	P7	536-550	**9.30**
19GH 3/4	P7	536-550	**9.30**
13BXH	P6	536-548	**6.50**
16BXH	P7	536-550	**9.30**
19BXH	P7	536-550	**9.30**

Drill Chuck Arbors



Taper	Jacobs Taper	Code No.	Price $
MT1	2	326-900	**9.10**
MT2	1	326-901	**9.50**
MT2	2	326-902	**9.50**
MT2	3	326-904	**9.50**
MT2	6	326-906	**9.50**
MT2	33	326-908	**9.50**
MT3	2	326-910	**10.90**
MT3	3	326-912	**11.20**
MT3	2S	326-911•	**23.50**
MT3	4	326-914	**13.30**
MT3	6	326-916	**11.30**
MT3	33	326-918	**11.40**
MT4	3	326-920	**14.70**
MT4	4	326-922	**14.90**
MT4	6	326-924	**14.70**
MT4	33	326-926	**14.70**
MT5	3	326-928	**28.90**
MT5	6	326-930	**28.90**
R8	2	326-932	**18.80**
R8	3	326-934	**18.80**
R8	6	326-936	**18.80**
1/2"	1	326-938	**8.00**
1/2"	2	326-940	**8.00**
1/2"	6	326-942	**8.00**
1/2"	33	326-944	**8.00**
5/8"	3	326-946	**8.50**
3/4"	3	326-948	**8.90**
3/4"	6	326-950	**10.10**

• Available only while supplies last

Rohm Prima Key Type Drill Chucks

Key-type drill chucks with key, DIN 6349
With taper mounting respectively thread mounting impact resistant.For drills with higher frequency we recommend key-type drill chuck Prima-Mat.
Heavy industry version for stationary drilling and hand-operated percussion drilling machines



* Smaller, intermediate sizes primarily for hand-operated percussion drilling machines
** With thru hole for right and left hand rotation

Rohm Id. No.	Cap. (in.)	Mount	Chuck Key	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
072806	1/64-5/32	B10	S1	24	39	47.5	390-005	**116.70**
072807	1/64-5/32	JT0	S1	24	34	42.5	390-015	**110.80**
245586*	1/64-1/4	B10	S1	29.5	43	53	390-020	**109.80**
072811*	1/64-1/4	3/8"-24	S1	29.5	42.5	53	390-025	**105.20**
245548	1/64-1/4	B12	S1	29.5	47.5	57.5	390-030	**109.80**
072810	1/64-1/4	JT1	S1	29.5	42.5	52.5	390-035	**114.10**
245485*	1/64-5/16	B10	S1	29.5	43	53	390-040	**114.50**
245550*	1/64-5/16	B12	S1	29.5	47.5	57.5	390-045	**111.70**
245552*	1/64-5/16	3/8"-24	S1	29.5	42.5	53	390-050	**111.70**
245553*	1/64-5/16	1/2"-20	S1	29.5	45	55.5	390-060	**111.70**
072653*	1/32-3/8	B12	S2	34.5	50	60.5	390-070	**115.20**
317255**	1/32-3/8	3/8"-24	S2	34.5	49.5	61	390-085	**119.70**
317256**	1/32-3/8	1/2"-20	S2	34.5	49.5	61	390-090	**119.70**
072687	1/32-3/8	B16	S2	42.8	63	77	390-100	**130.60**
072693	1/32-3/8	JT2	S2	42.8	59	75.5	390-105	**137.50**
072897*	1/16-1/2	B12	S2	42.8	58	72	390-150	**134.20**
072800*	1/16-1/2	B16	S2	42.8	63	77	390-155	**134.20**
064527*	1/16-1/2	3/8"-24	S2	42.8	59	74	390-125	**134.20**
317257**	1/16-1/2	1/2"-20	S2	42.8	59	74	390-140	**137.50**
072817*	1/32-1/2	JT2	S3	52	67.5	86	390-160	**183.50**
072818*	1/32-1/2	JT6	S3	52	67.5	86	390-165	**176.40**
072819*	1/32-1/2	JT33	S3	52	67.5	86	390-170	**176.40**
072820*	1/32-1/2	5/8"-16	S3	52	68.5	87.5	390-175	**172.40**
072825	1/32-5/8	B18	S3	56.5	79	98	390-195	**213.20**
072827	1/32-5/8	JT3	S3	56.5	79	98	390-200	**223.90**
072828	1/32-5/8	JT6	S3	56.5	79	98	390-205	**223.90**
072831	3/16-3/4	B22	S4	65	92.5	113.5	390-225	**356.10**
072833	3/16-3/4	JT3	S4	65	82.5	103.5	390-230	**362.20**
072834	3/16-1-1/32	B24	S4	80	120	147	390-240	**633.80**

Rohm Ball Bearing Drill Chucks

- Bodies and jaws hardened and ground
- One piece gear/scroll ring eliminates loss of clamping torque
- Dependable and accurate performance
- Ease of operation
- Extended life



Rohm Id. No.	Cap. (in.)	Mount	Chuck Key	O.D. (in.)	Opened Length (in.)	Closed Length (in.)	Code No.	Price $
215000	1/32-1/2	JT3	S10	2.24	3.11	3.86	390-245	**256.10**
215001	1/32-5/8	JT3	S10	2.44	3.15	3.94	390-250	**296.70**
215002	3/16-3/4	JT4	S13	2.80	3.82	4.65	390-255	**433.00**
215003	3/16-1 1/32	JT5	S13	3.11	4.72	5.79	390-260	**1,078.10**

Rohm Chuck Keys



Rohm Id. No.	Model No.	Jacobs Equiv.	Code No.	Price $
26411	S1	-	390-300	**7.50**
205989	S2A	-	390-315	**8.80**
309380	S2AT	-	390-320	**13.10**
25835	S3	-	390-325	**12.80**
309382	S3AT	-	390-330	**15.30**
25839	S4	-	390-335	**20.50**
228692	S7	K1	390-340	**9.90**
228693	S8	K30	390-345	**8.20**
500516	S9	K32	390-350	**16.10**
228695	S10	K3	390-355	**17.70**
68007	S13	K4	390-360	**78.30**
500694	S14	KG	390-365	**8.00**
500511	S17	K2	390-370	**13.70**
228698	S18	K7	390-380	**8.00**
212057	S19	KK	390-385	**10.30**

Rohm Supra Keyless Drill Chucks

- Self-tightening for higher clamping torque
- High percussion design
- All metal construction for extended life
- Jaws and bodies are hardened and ground
- Rapid clamping and releasing without use of a wrench

* Lightweight version mainly for hand operated drilling machines



Rohm Id. No.	Cap. (in.)	Mount	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
020089	0-1/4	JT1	35	62.5	68.6	390-940•	**198.90**
020147	0-1/4	3/8"-24	35	62.5	68.6	390-945•	**187.90**
215059*	0-5/16	3/8"-24	35	62.5	68.6	390-950	**175.90**
871019	0-5/32	B10	26	45.5	50.8	391-176	**179.00**
871031	0-5/16	B10	35	67	73.5	391-177	**179.00**
871032	0-5/16	B12	35.8	67	73.4	391-178	**179.00**
020093	0-5/16	JT1	35.8	70.5	76.9	390-970	**196.90**
871034	0-5/16	3/8"-24	35.8	67	73.4	391-179	**179.00**
871038*	1/64-3/8	3/8"-24	35.8	70.5	76.9	390-985	**185.80**
871040	0-3/8	B12	40.2	79.5	86.1	390-995	**166.40**
871041	0-3/8	B16	40.2	82.5	89.1	391-000	**217.60**
871042	0-3/8	JT2	40.2	80.5	87.1	391-005	**234.80**
871043	0-3/8	JT33	40.2	84	90.6	391-010	**234.80**
871045	0-3/8	1/2"-20	40.2	79.5	86.1	391-015	**224.50**
871049*	1/32-1/2	3/8"-24	42.5	81.5	89.8	391-020	**244.40**
871050*	1/32-1/2	1/2"-20	42.5	81.5	89.8	391-025	**235.20**
871051	1/32-1/2	B16	46	93	101.5	391-030	**262.30**
871052	1/32-1/2	JT2	46	91	99.5	391-035	**289.90**
871054	1/32-1/2	JT6	46	94	102.5	391-040	**289.90**
871053	1/32-1/2	JT33	46	94	102.5	391-045	**280.80**
871055	1/32-1/2	1/2-20	46	93	101.5	391-050	**210.50**
871062	1/8-5/8	1/2"-20	46	87.5	97.5	391-060	**293.40**
871063	1/8-5/8	5/8"-16	46	87.5	97.5	391-065	**293.40**
871064	1/8-5/8	B16	51	96.5	106.8	391-070	**308.90**
871066	1/8-5/8	JT6	51	96.5	106.8	391-075	**332.20**

• Available only while quantities last

Spare Parts for Supra Keyless Drill Chucks

Cap. (in.)	Set of Jaws Code No.	Price $	Retaining Ring Code No.	Price $	Driver Code No.	Price $	Set of Balls Code No.	Price $
1/4	390-780	**49.00**	391-130	**5.70**	-	-	391-225	**11.50**
5/16*	390-780	**49.00**	391-130	**5.70**	390-852	**21.70**	391-225	**11.50**
5/16	391-100	**61.60**	391-130	**5.70**	-	-	391-225	**11.50**
3/8*	391-100	**61.60**	391-130	**5.70**	-	-	391-225	**11.50**
3/8	391-105	**56.80**	390-820	**6.80**	-	-	391-230	**11.50**
1/2*	391-110	**68.90**	390-820	**6.80**	391-205	**31.60**	391-230	**11.50**
1/2	391-115	**82.50**	391-140	**8.50**	-	-	391-235	**12.30**
5/8*	391-120	**74.00**	391-140	**8.50**	391-215	**43.10**	391-235	**12.30**
5/8	391-125	**65.50**	391-145	**11.90**	-	-	391-240	**13.10**

* Lightweight version mainly for hand operated drilling machines

Rohm Spiro Keyless Drill Chucks

Design:
Pointed shape of sleeve, high runout precision 0.05mm, wearing parts are hardened.

Usage:
Due to permanent self tightening action perfectly suitable for use with high speeds on drilling machines, machining centres and special drilling heads.



Rohm Id. No.	Cap. (in.)	Mount	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
019816	0-1/4	B10	35	62.5	68.6	390-700	**355.70**
019832	0-1/4	B12	35	62.5	68.6	390-705	**355.70**
019847	0-3/8	B12	43	82.5	90.1	390-725	**399.20**
019864	0-3/8	B16	43	82.5	90.1	390-730	**399.20**
019868	1/32-1/2	B16	50	94	102.5	390-745	**556.80**
019953	1/32-1/2	JT6	50	94	102.5	390-755	**575.40**
019884	1/8-5/8	B16	55	96.5	106.8	390-765	**488.20**
019961	1/8-5/8	JT6	55	96.5	106.8	390-770	**654.40**

Spare Parts for Spiro Keyless Drill Chucks

Cap. (in.)	Set of Jaws Code No.	Price $	Retaining Ring Code No.	Price $	Driver Code No.	Price $	Set of Balls Code No.	Price $
5/32	390-775	**61.60**	390-805	**5.30**	390-870	**20.40**	390-900	**14.20**
1/4	390-780	**49.00**	390-810	**5.70**	390-875	**21.60**	390-905	**10.60**
3/8	390-790	**62.20**	390-820	**6.80**	390-885	**25.00**	390-915	**10.60**
1/2	390-795	**73.10**	390-825	**6.40**	390-890	**41.70**	390-920	**11.60**
5/8	390-800	**83.10**	390-830	**11.90**	390-895	**54.80**	390-925	**13.10**

Rohm Extra-RV Portable Keyless Drill Chucks

Radial Locking

Keyless drill chucks in plastic or metal design with radial locking, for corded and cordless drills, for percussion drilling, with hexagon for assembling and disassembling on the machine spindle.



With retaining ring

- No further locking when drilling and screwing, especially percussion drilling
- Very ergonomical, easy to handle, with metal nose piece
- With carbide inserts in the clamping jaws (size 13)
- For all drills up to 1100 W
- With through-hole for clockwise and anti-clockwise rotation (Thread M5 and M6)
- The plastic parts carry the material description and can therefore be easily recycled
- If necessary, use maintenance spray

Metal Design Without Retaining Ring

Rohm Id. No.	Cap. (mm)	Mount	Notes	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
893350	1-10	1/2-20	with thru hole	42.70	55	60.90	390-525	**76.70**
893351	1-10	3/8-24	with thru hole	42.70	55	60.90	390-515	**76.70**
802490	1.5-13	1/2-20	with thru hole/ jaws with carbide inserts with Retaining Ring	42.70	64.50	72.40	390-530	**105.30**
893352	1.5-13	1/2-20	with thru hole/ jaws with carbide inserts	42.70	64.50	72.40	390-520	**108.30**

Plastic Design With Retaining Ring

Rohm Id. No.	Cap. (mm)	Mount	Notes	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
767639	1-10	1/2-20	with thru hole	42.70	55	60.90	390-465	**68.50**
664467	1-10	3/8-24	with thru hole	42.70	55	60.90	390-450	**68.50**
767692	1.5-13	1/2-20	with thru hole/ jaws with carbide inserts	42.70	64.50	72.40	390-490	**91.60**
767657	1.5-13	3/8-24	with thru hole/ jaws with carbide inserts	42.70	64.50	72.40	390-475	**88.80**

Plastic Design Without Retaining Ring

Rohm Id. No.	Cap. (mm)	Mount	Notes	O.D. (mm)	Opened Length (mm)	Closed Length (mm)	Code No.	Price $
767651	1-10	1/2"-20	with thru hole	42.70	55	60.90	390-425	**68.50**
767573	1-10	3/8"-24	with thru hole	42.70	55	60.90	390-455	**68.50**
767580	1.5-13	1/2"-20	with thru hole/ jaws with carbide inserts	42.70	64.50	72.40	390-495	**88.80**
767641	1.5-13	3/8"-24	with thru hole/ jaws with carbide inserts	42.70	64.50	72.40	390-480	**88.80**

Rohm Morse Taper Drill Chuck Arbors



Rohm Id. No.	Morse Taper	Chuck Taper	O.A.L. (in.)	Code No.	Price $
14970	1	JT1	3.41	391-485	**16.30**
14971	1	JT2	3.62	391-490	**16.70**
14972	1	JT3	3.98	391-495	**22.80**
14974	1	JT6	3.74	391-500	**16.70**
14976	2	JT1	3.98	391-510	**21.70**
14977	2	JT2	4.19	391-515	**21.70**
14978	2	JT3	4.55	391-520	**22.80**
14981	2	JT6	4.31	391-530	**22.50**
14980	2	JT33	4.31	391-535	**22.50**
14983	3	JT2	4.96	391-545	**29.10**
14984	3	JT3	5.31	391-550	**28.60**
14988	3	JT6	5.08	391-565	**28.60**
14987	3	JT33	5.08	391-570	**29.10**
14991	4	JT3	6.34	391-580	**50.90**
14995	4	JT6	6.10	391-595	**50.90**

Rohm Ejectors



Rohm Id. No.	For Morse Taper	Length (mm)	Code No.	Price $
017076	1 & 2	140	391-831	**7.20**
017077	3	190	391-832	**14.20**
017078	4	225	391-833	**18.70**
017079	5 & 6	265	391-834	**32.40**

Rohm Hand Ejectors



Rohm Id. No.	For Morse Taper	Length (mm)	Code No.	Price $
317236	1-3	320	391-836	**237.20**
317258	4-6	380	391-837	**364.40**

Jacobs®

Jacobs Ball Bearing Key Type Super Chucks

Extra accuracy, extra gripping power, for extra heavy duty work.
The ball bearing super chuck is especially designed for EXTRA 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.



Chuck Model	Capacity Inch	Capacity mm	Taper Mount	Uses Key	Weight lbs	Weight Gr.	Length Closed Inch	Length Closed mm	Length Open Inch	Length Open mm	Diameter Inch	Diameter mm	Code No.	Price $
8-1/2N	0-1/4	0-6.4	JT2S & JT2	K30	0.6	255	2-13/32	61	1-7/8	48	1-9/16	40	610-050	**206.30**
11N	0-3/8	0-10	JT2	K32	1.2	510	2-7/8	73	2-1/4	57	1-15/16	49	610-051	**229.90**
14N	0-1/2	0-13	JT3	K3	2.4	1077	3-7/8	98	2-31/32	75	2-7/16	62	610-052	**321.40**
16N	1/8 - 5/8	3-16	JT3	K4	2.9	1332	4-5/16	110	3-1/4	83	2-5/8	67	610-053	**368.90**
18N	1/8 - 3/4	3-19	JT4	K4	4.2	1928	5-1/8	130	3-31/32	101	3-1/64	76	610-054	**554.80**
20N	3/8-1	10-25	JT4	K5	7.0	3175	5-1/2	140	4-1/4	108	3-21/32	93	610-055	**747.10**

Jacobs Plain Bearing Geared Key Chucks



Chuck Model	Capacity (in.)	Key	Mount (in.)	Code No.	Price $
0	0–5⁄32	K0	JT0	610-000	**138.40**
†0B, 5⁄16–24	0–5⁄32	K0	5⁄16–24	610-001	**169.70**
1B, 3⁄8–24	0–1⁄4	K1	3⁄8–24	610-002	**114.30**
1A	0–1⁄4	K1	JT1	610-004	**112.50**
7BA, 3⁄8–24	0–1⁄4	K7	3⁄8–24	610-008	**126.80**
41BA, 3⁄8–24	1⁄16–3⁄8	K30	3⁄8–24	610-014	**88.20**
†41BA, 1⁄2–20	1⁄16–3⁄8	K30	1⁄2–20	610-015	**178.10**
2A	0–3⁄8	K2	JT2	610-016	**154.40**
2BA, 3⁄8–24	0–3⁄8	K2	3⁄8–24	610-018	**151.80**
31-02	0–3⁄8	K30	JT2	610-019	**153.00**
32BA, 1⁄2–20	0–3⁄8	K32	1⁄2–20	610-020	**167.50**
33	5⁄64–1⁄2	K32	JT33	610-022	**172.50**
33KD**	5⁄64–1⁄2	K32	JT33	610-024	**192.20**
33BA, 3⁄8–24	5⁄64–1⁄2	K32	3⁄8–24	610-025	**107.30**
33BA, 1⁄2–20	5⁄64–1⁄2	K32	1⁄2–20	610-027	**102.80**
33BA, 5⁄8–16	5⁄64–1⁄2	K32	5⁄8–16	610-028	**107.20**
34-02	0–1⁄2	K3	JT2	610-029	**102.60**
34-33	0–1⁄2	K3	JT33	610-030	**116.60**
34-33C*	0–1⁄2	K3C	JT33	610-031	**165.60**
34-06	0–1⁄2	K3	JT6	610-033	**136.90**
3A	1⁄8–5⁄8	K3	JT3	610-039	**164.20**
†3KD**	1⁄8–5⁄8	K3	JT3	610-040	**335.60**
†3PD***	1⁄8–5⁄8	K3	JT3	610-041	**392.10**
3B, 5⁄8–16	1⁄8–5⁄8	K3	5⁄8–16	610-042	**254.30**
36	3⁄16–3⁄4	K4	JT3	610-043	**206.00**
†36B, 5⁄8–16	3⁄16–3⁄4	K4	5⁄8–16	610-044	**378.80**
†36B, 3⁄4–16	3⁄16–3⁄4	K4	3⁄4–16	610-045	**355.90**
36KD**	1⁄4–13⁄16	K4	JT3	610-046	**305.20**

†Special manufactured items.
Delivery information upon request.
With the exception of Models 0 and 0B Chucks which have a minimum capacity of No. 80 drill, all medium and heavy duty plain bearing chucks and ball bearing chucks having a nominal capacity of 0 will hold a No. 70 drill.
Key type chuck prices include the chuck and its key.
* Equipped with Threaded Locking Collar 1-1/16"-20 Thread
** Equipped with Positive Driving Slot
*** Equipped with Pin Type Positive Drive
BA Models are drilled and countersunk for Retaining Screw

Jaw And Nut Assembly

Description	Code No.	Price $
U-3	610-274	**101.80**
U-33	610-282	**78.20**
U-34	610-285	**91.60**
U-36	610-286	**130.40**
U-8-1/2 N	610-475	**93.00**
U-11 N	610-477	**109.50**
U-14 N	610-479	**165.30**
U-16 N	610-481	**190.10**
U-18 N	610-483	**260.30**
U-20 N	610-485	**309.90**

Service Kits For Newer Models

Description	Code No.	Price $
30343 8-1/2 N	610-460	**150.80**
30344 11N	610-462	**178.00**
30345 14N	610-464	**244.30**
30346 16N	610-466	**286.50**
30347 18N	610-468	**440.30**
30348 20N	610-470	**600.10**

Jacobs®

Jacobs Arbors & Adapters

Always specify Jacobs arbors to serve the finest performance from Jacobs drill and tap chucks. They are precision ground to our master gauges and guarantee the finest possible accuracy and fit.

When ordering arbors
Any of the following is correct; Show style and size of the mounting shank and the model number of the Jacobs chuck to which the arbor will be fitted.
Example: A #2 Morse taper shank arbor for #34 Jacobs chuck.
Show the style and size of the mounting shank plus the actual Jacobs taper desired.
Example: A #2 Morse taper shank with a #3 Jacobs taper.
Simply use the part number price in the standard arbor charts shown below.
Example: One #610-153 Jacobs chuck arbor



Bridgeport to Jacobs Taper



Morse Taper to Jacobs Taper



Straight Shank to Jacobs Taper

Taper Shank Arbors

Taper Shank	0	Price $	1	Price $	2	Price $	3	Price $	4	Price $	5	Price $	6	Price $	33	Price $
M.T. 1	-	-	610-144	**33.80**	610-145	**37.80**		-	-	-	-	-	610-148	**41.10**	610-149	**36.70**
M.T. 2	-	-	610-151	**36.00**	610-152	**29.10**	610-153	**28.60**	610-154	**36.80**	-	-	610-156	**39.10**	610-157	**29.10**
M.T. 3	-	-	610-158	**39.40**	610-159	**40.70**	610-160	**39.90**	610-161	**45.30**	610-162	**53.40**	610-163	**40.70**	610-164	**40.70**
M.T. 4	-	-	-	-	610-165	**71.40**	610-166	**56.50**	610-167	**62.70**	610-168	**87.70**	610-169	**63.80**	-	-
M.T. 5	-	-	-	-	-	-	610-172	**130.30**	610-173	**128.80**	610-174	**127.20**	**-**	**-**	**-**	**-**
R-8 (Bridgeport)	-	-	-	-	610-184	**156.90**	610-185	**156.90**	-	-	-	-	610-187	**156.90**	610-188	**156.90**

Straight Shank Arbors

Inches	0	Price $	1	Price $	2	Price $	3	Price $	4	Price $	5	Price $	6	Price $	33	Price $
1/2"	610-189	**29.80**	610-190	**29.80**	610-191	**29.80**	610-192	**29.80**	-	-	-	-	610-194	**38.50**	610-195	**29.80**
5/8"	-	-	610-196	**35.50**	610-197	**36.60**	610-198	**50.60**	-	-	-	-	610-200	**39.40**	610-201	**33.70**
3/4"	-	-	-	-	610-202	**50.60**	610-203	**46.20**	-	-	-	-	610-205	**54.30**	610-206	**55.00**
1"	-	-	-	-	-	-	610-208	**55.00**	-	-	-	-	-	-	**-**	**-**

-

Threaded Shank Arbors



Morse Taper	Thread	Code No.	Price $
MT2	3/8" - 24	610-221	**105.90**
MT2	1/2" - 20	610-222	**105.90**
MT2	5/8" - 16	610-223	**105.90**

Chuck Removal Wedge Sets



Description	Jacobs Taper	Code No.	Price $
13266	1	610-224	**15.10**
13267	2	610-225	**15.10**
13268	3	610-226	**15.10**
13269	6	610-227	**15.10**

Keys For Plain Bearing & Ball Bearing Chucks

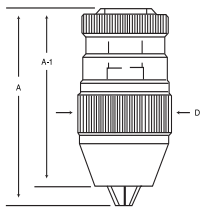


	Key No.	Code No.	Price $
Plain Bearing			
	K0	610-117	**8.70**
	K0M	610-118	**16.60**
	K1	610-119	**4.10**
	K1M	610-120	**26.30**
	K2	610-121	**5.70**
	K3	610-122	**6.80**
	S-K3C	610-123	**19.50**
Ball Bearing			
	K7	610-124	**4.70**
	K30	610-126	**5.50**
	K32	610-127	**5.90**
	K4	610-129	**11.20**
	K5	610-130	**37.50**
	KG1	610-131	**4.40**
	KK	610-132	**7.00**

Jacobs®

High Precision Industrial Keyless Chucks

Precision design combines keyless operation with the ultimate in drill chuck accuracy.
- Precision tested and certified to .0016" TIR or better
- All components exposed to wear are completely hardened to maintain accuracy and extend chuck life
- Permits use on a wide range of high accuracy drill presses, jig borers, milling machines and production drilling equipment
- Self-tightening feature automatically increases gripping force proportional to increased torque to prevent tool shank slippage
- For general machining applications

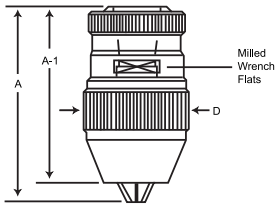




Chuck Model	Capacity Range Minimum (in.)	Minimum (mm)	Maximum (in.)	Maximum (mm)	Mount Jacobs	Dimensions Closed L (A) (in.)	Closed L (A) (mm)	Open L (A-1) (in.)	Open L (A-1) (mm)	Sleeve Dia. (D) (in.)	Sleeve Dia. (D) (mm)	Weight (oz.)	Code No.	Price $
JKP65-J1	0.000	0	0.255	6.5	JT1	2.76	70	2.44	62	1.28	32.5	11	610-500	**387.70**
JKP80-J2S	0.000	0	0.315	8.0	J2S	2.91	74	2.64	67	1.46	37.0	14	610-502	**387.70**
JKP100-J2	0.000	0	0.394	10.0	J2	3.50	89	3.19	81	1.61	41.0	22	610-504	**414.40**
JKP100-J33	0.000	0	0.394	10.0	J33	3.50	89	3.19	81	1.61	41.0	22	610-506	**414.40**
JKP130-J2	0.039	1	0.512	13.0	J2	3.90	99	3.46	88	1.81	46.0	32	610-508	**443.00**
JKP130-J33	0.039	1	0.512	13.0	J33	3.90	99	3.46	88	1.81	46.0	32	610-510	**443.00**
JKP130-J6	0.039	1	0.512	13.0	J6	3.90	99	3.46	88	1.81	46.0	32	610-512	**443.00**
JKP160-J6	0.118	3	0.630	16.0	J6	4.21	107	3.74	95	2.17	55.0	42	610-514	**512.20**

High Torque/High Precision Industrial Keyless Chucks

- Furnished with milled wrench flats and spanner wrench to allow the application of supplementary gripping torque
- Light tightening increases gripping torque up to 3 times higher than hand tightening
- Resists tool loosening on high speed machines with right hand rotation and instant spindle stop





Chuck Model	Capacity Range Minimum (in.)	Minimum (mm)	Maximum (in.)	Maximum (mm)	Mount Jacobs	Dimensions Closed L (A) (in.)	Closed L (A) (mm)	Open L (A-1) (in.)	Open L (A-1) (mm)	Sleeve Dia. (D) (in.)	Sleeve Dia. (D) (mm)	Weight (oz.)	Code No.	Price $
JKT65-J1	0.000	0	0.255	6.5	JT1	2.76	70	2.44	62	1.28	32.5	11	610-516	**428.80**
JKT80-J2S	0.000	0	0.315	8.0	J2S	2.91	74	2.64	67	1.46	37.0	14	610-518	**428.80**
JKT130-J2	0.039	1	0.512	13.0	J2	3.90	99	3.46	88	1.81	46.0	32	610-520	**514.40**
JKT130-J33	0.039	1	0.512	13.0	J33	3.90	99	3.46	88	1.81	46.0	32	610-522	**514.40**
JKT130-J6	0.039	1	0.512	13.0	J6	3.90	99	3.46	88	1.81	46.0	32	610-524	**514.40**
JKT160-J6	0.118	3	0.630	16.0	J6	4.21	107	3.74	95	2.17	55.0	42	610-526	**614.80**

Jacobs®

Jacobs Tap Chucks

Complete range of flexible collet tap chucks for tapping machines and portable tappers. Simplify tap changing and provide unmatched accuracy.

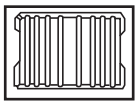
- Designed for use with the versatile Jacobs® Rubber-Flex® collet which accepts and precisely centers both decimal and metric shank diameters
- Simple operation – one quarter turn of chuck screw allows nut to disengage back jaws
- Tap shank sighting hole presents full view of tap square during changeovers
- Each chuck, with one interchangeable Rubber-Flex® collet, handles a wide range of tap sizes to speed tap size changes
- Positive-drive chuck jaws always locate square of tap shank to ensure superior performance
- Available with choice of Jacobs®, round or square hole mounts



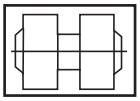
† Rubber-Flex Collets® are not included. Must be ordered separately

Model	Tap Capacity (in.)	Tap Capacity (mm)	Mount	O.A.L. at Max. Cap. (in/mm)	Max Dia. (in/mm)	Round Shank Cap. Min. (in/mm)	Round Shank Cap. Max. (in/mm)	Available Rubber-Flex® Collets	Weight (oz.)	Code No.	Price $
41-01	#0-1/4	1.00-6.35	JT1	2.00/51	0.84/21	0.09/2	0.25/6	J116, J117	2	610-562	**292.10**
42-02	#10-5/16	4.83-7.94	JT2S	2.50/64	1.06/27	0.09/2	0.38/10	J420, J421, J422, J423	5	610-566	**539.50**
42-24	#10-5/16	4.83-7.94	.3675 Dia.	2.50/64	1.06/27	0.09/2	0.38/10	J420, J421, J422, J423	6	610-568	**404.60**
42-J8	#0-1/4	1.00-6.36	.375 Sq. Hole	2.50/64	1.06/27	0.09/2	0.38/10	J420, J421, J422, J423	6	610-570	**406.10**
44-J9	#10-1/2	4.83-12.70	.500 Sq. Hole	3.12/79	1.47/37	0.11/3	0.50/13	J440, J441, J443	12	610-576	**559.90**

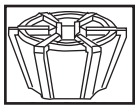
Replacement Parts For Tap Chucks



Nut



Back Jaws



Rubber-Flex® Collet

Model	Nut Size	Nut Price	Rubber-Flex® Collet	Back Jaws Code No.	Back Jaws Price $	Nut Wrench Code No.	Nut Wrench Price $	Body Wrench Code No.	Body Wrench Price $
41-01	610-578	**116.60**	J116, J117	610-594	**165.10**	610-610	**28.70**	610-626	**25.40**
42-01	610-580	**79.10**	J420, J421, J422, J423	610-596	**120.10**	610-612	**29.30**	610-628	**25.40**
42-02	610-580	**79.10**	J420, J421, J422, J423	610-596	**120.10**	610-612	**29.30**	610-628	**25.40**
42-J8	610-580	**79.10**	J420, J421, J422, J423	610-596	**120.10**	610-612	**29.30**	610-628	**25.40**
42-24	610-580	**79.10**	J420, J421, J422, J423	610-596	**120.10**	610-612	**29.30**	610-628	**25.40**
44-J9	-	-	J440, J441, J443	610-604	**127.70**	610-620	**28.30**	-	-

Jacobs®

Jacobs Die Grinder Chucks

Compact tap chuck designed for use with Rubber-Flex® Collets holds mounted grinding burrs and rotary files on pneumatic and electric die grinders.

- Compact design facilitates use for a wide range of applications
- Integral seal protects collet components from abrasives and swarf
- Rubber-Flex® Collets furnished separately for tools with collet seating cones built into spindles



Chuck Model	Capacity Range Minimum (in.)	Minimum (mm)	Maximum (in.)	Maximum (mm)	Mount Jacobs	Dimensions Open L (A) (in.)	Open L (A) (mm)	Closed L (A-1) (in.)	Closed L (A-1) (mm)	Sleeve Dia. (D) (in.)	Sleeve Dia. (D) (mm)	Weight (oz.)	Code No.	Price $
100-61	0.09	2.3	0.25	6.4	3/8-24	1.77	45.0	1.88	47.8	0.75	19.1	1.50	610-642	**168.70**

Nut For Die Grinder Chuck

Model No.	Code No.	Price $
N100	610-644	**97.30**

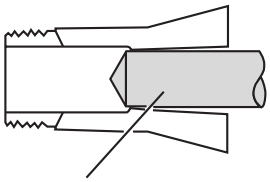
Rubber-Flex® Collets

Unique in design and operation, the Jacobs® Rubber-Flex® Collet can generate two to three times the gripping power of a conventional split-steel collet.



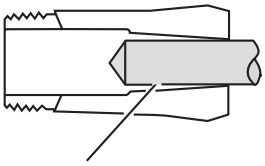
- Parallel jaw insert surfaces exert uniform, accurate gripping force up to three times greater than can be achieved with split-steel collets
- Each collet accepts and precisely centers a wide range of both decimal or metric diameters (within individual capacity ranges) to speed setups and increase machining productivity
- Durable one-piece construction
- Synthetic rubber retains flexibility and resists deterioration from heat, coolants and cutting compounds
- Steel jaw inserts precision ground (after molding process) to assure maximum gripping accuracy (parallelism)
- Hardened for greater wear resistance than split-steel collets
- Each collet bore is held concentric to the O.D. tapers, both front and back, to minimize TIR
- Automatically seals tool O.D. to permit coolant flow through tool reducing wear
- Seals collets and machine spindles to protect from abrasive particles and swarf

RUBBER-FLEX® COLLETS VS CONVENTIONAL COLLETS



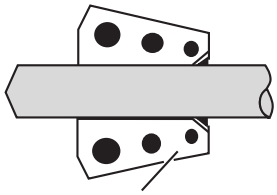
Oversized Bar

Conventional split-steel collets provide maximum gripping efficiency only at actual bored or nominal capacity.



Undersized Bar

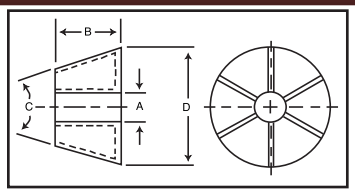
They loose parallelism when chucking bars even a few thousandths over or under this capacity. This significantly reduces gripping strength and accuracy.



Rubber-Flex® Collet

Rubber-Flex® Collets exert uniform gripping pressure throughout the collet contact length (within individual collet capacity ranges) regardless of bar tolerance deviations

Tap Chuck Collets





Model	Capacity Range Min. (in.)	Min. (mm)	Max. (A) (in.)	Max. (A) (mm)	Contact Length (B) (in.)	Contact Length (B) (mm)	Cone Angle (C) (deg)	Outside Dia. (D) (in.)	Outside Dia. (D) (mm)	No. of Inserts	Weight (oz.)	Code No.	Price $
J116	0.094	2.4	0.177	4.5	0.468	11.9	26	0.590	15.1	6	0.10	610-646	**91.70**
J117	0.177	4.5	0.256	6.5	0.468	11.9	26	0.590	15.1	8	0.10	610-648	**91.70**
J420	0.176	4.5	0.320	8.1	0.500	12.7	40	0.941	23.9	6	0.20	610-351	**78.20**
J421	0.139	3.5	0.257	6.5	0.500	12.7	40	0.941	23.9	6	0.20	610-352	**78.20**
J422	0.253	6.4	0.383	9.7	0.500	12.7	40	0.941	23.9	6	0.30	610-355	**78.20**
J423	0.090	2.3	0.090	4.6	0.500	12.7	40	0.860	21.8	4	0.30	610-656	**76.90**
J440	0.280	7.1	0.280	12.7	0.630	16.0	45	1.296	32.9	6	0.30	610-353	**89.60**
J441	0.176	4.5	0.176	9.7	0.630	16.0	45	1.296	32.9	6	0.30	610-354	**88.10**
J443	0.110	2.5	0.280	7.1	0.620	15.7	45	1.180	30.0	4	0.30	610-662	**88.10**

Jacobs®

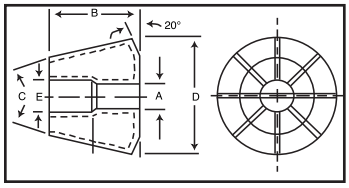
Die Grinder Collets

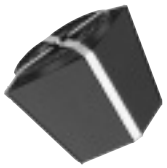


Model	Capacity Range Min. (in.)	Min. (mm)	Max. (A) (in.)	Max. (A) (mm)	Contact Length (B) (in.)	Contact Length (B) (mm)	Cone Angle (C) (deg)	Outside Dia. (D) (in.)	Outside Dia. (D) (mm)	No. of Inserts	Weight (oz.)	Code No.	Price $
J116	0.094	2.4	0.177	4.5	0.468	11.9	26	0.590	15.1	6	0.10	610-646	**91.70**
J117	0.177	4.5	0.256	6.5	0.468	11.9	26	0.590	15.1	8	0.10	610-648	**91.70**

Lathe Chuck Collets

- Collets J910, J911 and J912 have a contact length of .90" (23 mm)
- All other lathe chuck collets have full length contact





Model	Capacity Range Min. (in.)	Min. (mm)	Max. (A) (in.)	Max. (A) (mm)	Contact Length (B) (in.)	Contact Length (B) (mm)	Cone Angle (C) (deg)	Outside Dia. (D) (in.)	Outside Dia. (D) (mm)	Clearance Dia. (E) (in.)	Clearance Dia. (E) (mm)	No. of Inserts	Weight (oz.)	Code No.	Price $
J910	0.060	1.5	0.125	3.2	1.74	44.5	26	2.25	57	0.60	15.2	4	0.53	610-668	**780.50**
J911	0.125	3.2	0.250	6.4	1.74	44.5	26	2.25	57	0.60	15.2	6	0.53	610-670	**718.80**
J912	0.250	6.4	0.375	9.5	1.74	44.5	26	2.25	57	0.60	15.2	6	0.47	610-672	**709.20**
J913	0.375	9.5	0.500	12.7	1.74	44.5	26	2.25	57			8	0.47	610-674	**727.20**
J914	0.500	12.7	0.625	15.9	1.74	44.5	26	2.25	57			10	0.47	610-676	**702.90**
J915	0.625	15.9	0.750	19.1	1.74	44.5	26	2.25	57			10	0.47	610-678	**706.80**
J916	0.750	19.1	0.875	22.2	1.74	44.5	26	2.25	57			12	0.47	610-680	**665.50**
J917	0.875	22.2	1.000	27.9	1.74	44.5	26	2.25	57			16	0.55	610-682	**683.10**
J918	1.000	25.4	1.125	28.6	1.74	44.5	26	2.25	57			20	0.52	610-684	**689.90**
J919	1.125	28.6	1.250	31.8	1.74	44.5	26	2.25	57			24	0.43	610-686	**713.80**
J920	1.250	31.8	1.375	34.9	1.74	44.5	26	2.25	57			24	0.40	610-688	**759.50**
J921	1.375	34.9	1.500	38.1	1.74	44.5	26	2.25	57			24	0.27	610-690	**846.90**

Hand-Tite® Keyless Drill Chucks

Increases operator productivity and convenience by speeding bit changeovers and eliminated downtime caused by loss of chuck keys.

- Keyless operation permits fast bit changes without lost key delays
- Superior gripping force provides high mechanical advantage to convert hand tightening torque into superior bit gripping force
- Versatile models available to fit all 10 mm (3/8") and 13 mm (1/2") variable speed corded and cordless portable drills
- Precision operation by meeting or exceeding stringent DIN run-out and dimensional specifications
- Ergonomic design increases hand tightening efficiency and user comfort
- Constructed of high performance materials to maximize durability and performance



Model	Features	Capacity Range Min. (in.)	Min. (mm)	Max. (A) (in.)	Max. (A) (mm)	Mount Thread	Dimensions O.A.L. (in.)	O.A.L. (mm)	Sleeve Dia. (in.)	Sleeve Dia. (mm)	Boss/Body Clearance (in.)	Boss/Body Clearance (mm)	Weight (oz.)	Code No.	Price $
10 mm Capacity (3/8")															
30354	Hard nose, dark finish	0.040	1.0	0.375	10	3/8-24	2.00	54.6	1.67	42.7	0.126	3.00	6.5	610-700	**40.60**
13 mm Capacity (1/2")															
31038	Hard nose, black finish	0.062	2.0	0.500	13	1/2-20	2.90	73.7	1.68	42.7	0.082	2.08	12.0	610-702	**62.50**
31037	Hard nose, black finish	0.062	2.0	0.500	13	3/8-24	2.90	73.7	1.68	42.7	0.082	2.08	12.0	610-704	**62.50**

Jacobs®

Adapt-A-Drive® Chuck

Converts any cordless screwdriver to a multi-purpose mini-drill for bit sizes up to 1/4".
- Easy conversion – integral hex mount locks the Adapt-A-Drive® chuck into the screwdriver bit socket
- Ideal for use in starting screw holes for use in hard-to-reach spaces



Model	Capacity Range Min. (in.)	Min. (mm)	Max. (in.)	Max. (mm)	Mount Thread	Key No.	Sleeve Finish	Sleeve Dia. (in.)	Sleeve Dia. (mm)	(oz.)	Weight Code No.	Price $
30248	0.028	0.7	0.250	6.5	.250-Hex	KG1	Ground-Matte Band	1.13	28.6	3.5	610-708	**27.40**

Jacobs Stainless Steel Chucks

- For special applications on either portable air operated or stationary machine tools
- Resist chemical corrosion and reduce potential for hazardous sparking



* Minimum capacity will hold #70 drill

Chuck Model	Capacity Range Minimum (in.)	Minimum (mm)	Maximum (in.)	Maximum (mm)	Mount Jacobs	Key	Dimensions Closed L (in.)	Closed L (mm)	Open L (in.)	Open L (mm)	Sleeve Dia. (in.)	Sleeve Dia. (mm)	Weight (oz.)	Code No.	Price $
0M	0*	0	0.156	4	JT0	K0M	1.45	37	1.10	28	0.85	22	2.0	610-710	**279.90**
0BM 5/16	0*	0	0.156	4	5/16-24	K0M	1.53	39	1.17	30	0.85	22	2.0	610-712	**275.00**
1M	0*	0	0.250	6	JT1	K1M	1.92	49	1.54	39	1.12	28	5.0	610-714	**255.30**
1BM 5/16	0*	0	0.250	6	5/16-24	K1M	1.95	50	1.57	40	1.12	28	5.0	610-716	**279.10**
1BM 3/8	0*	0	0.250	6	3/8-24	K1M	1.95	50	1.57	40	1.12	28	5.0	610-718	**272.30**

Jacobs Drain Chucks

- Specifically designed for use with flexible coil spring tools
- Allows coil spring to pass through chuck
- Chuck may be hand tightened to secure coil spring at desired length transmitting tool rotation to shaft
- Ideal for soil pipe and sewer cleaning tools



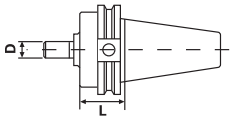
Chuck Model	Capacity Range Minimum (in.)	Minimum (mm)	Maximum (in.)	Maximum (mm)	Mount Thread	Dimensions Closed L (in.)	Closed L (mm)	Open L (in.)	Open L (mm)	Sleeve Dia. (in.)	Sleeve Dia. (mm)	Weight (oz.)	Code No.	Price $
DC4595	0.25	6.4	.500	13	13/16-20	2.49	63.2	2.49	63.2	1.70	43.2	4.5	610-720	**148.60**

CAT Taper Jacobs Taper Adapter

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- .0002" or better ensures the best possible cutting tool life

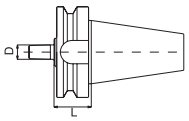
Pull Stud
pg G114





Taper	JT Size	L	D	Code No.	Price $
CT40	JT#2	1.61"	.560"	531-490	**141.30**
CT40	JT#3	1.58"	.812"	531-492	**141.30**
CT40	JT#4	1.49"	1.13"	531-494	**141.30**
CT40	JT#6	1.61"	.677"	531-496	**141.30**
CT40	JT#33	1.61"	.625"	531-498	**141.30**
CT50	JT#2	1.61"	.560"	531-500	**186.40**
CT50	JT#3	1.58"	.812"	531-502	**186.40**
CT50	JT#4	1.49"	1.13"	531-504	**186.40**
CT50	JT#6	1.61"	.677"	531-506	**186.40**
CT50	JT#33	1.61"	.625"	531-508	**186.40**

BT Taper Jacobs Taper Adapter

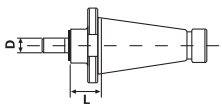




Pull Stud
pg G114

Taper	JT Size	L	D	Code No.	Price $
BT30	JT#2	1.02"	.560"	532-220	**134.50**
BT30	JT#3	0.98"	.812"	532-222	**110.70**
BT30	JT#6	1.02"	.677"	532-224	**134.50**
BT30	JT#33	1.02"	.625"	532-226	**134.50**
BT40	JT#2	1.61"	.560"	532-230	**141.30**
BT40	JT#3	1.57"	.812"	532-232	**141.30**
BT40	JT#6	1.61"	.677"	532-234	**141.30**
BT40	JT#33	1.61"	.625"	532-236	**141.30**
BT50	JT#6	1.77"	.677"	532-237	**187.70**

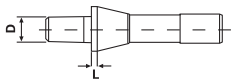
NMTB Taper Jacobs Taper Adapter





Taper	JT Size	L	D	Code No.	Price $
NMTB40	JT#1	0.69"	.385"	534-440	**134.50**
NMTB40	JT#2	0.65"	.560"	534-442	**134.50**
NMTB40	JT#3	0.61"	.812"	534-444	**134.50**
NMTB40	JT#6	0.65"	.677"	534-446	**134.50**
NMTB40	JT#33	0.65"	.625"	534-448	**134.50**
NMTB50	JT#2	1.34"	.560"	534-450	**154.40**
NMTB50	JT#3	1.30"	.812"	534-452	**187.70**
NMTB50	JT#4	1.22"	1.13"	534-454	**187.70**
NMTB50	JT#6	1.34"	.677"	534-456	**187.70**
NMTB50	JT#33	1.34"	.625"	534-458	**187.70**

R8 Jacobs Taper Adapter





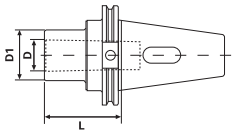
Taper	JT Size	L	D	Code No.	Price $
R8	JT#1	0.13"	.385"	534-460	**94.60**
R8	JT#2	0.13"	.560"	534-462	**92.20**
R8	JT#3	0.13"	.812"	534-464	**92.20**
R8	JT#6	0.13"	.677"	534-466	**92.20**
R8	JT#33	0.13"	.625"	534-468	**92.20**

CAT Morse Taper Adapters

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- .0002" or better ensures the best possible cutting tool life



Pull Stud
pg G114



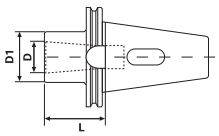
Taper	Size	L	D	D1	Code No.	Price $
CT40	MT#1	1.75"	.475"	1.00"	531-510	**148.30**
CT40	MT#2	2.36"	.700"	1.25"	531-512	**148.30**
CT40	MT#3	3.00"	.938"	1.57"	531-514	**148.30**
CT40	MT#4	3.54"	1.23"	1.97"	531-516	**148.30**
CT50	MT#2	1.75"	.700"	1.25"	531-518	**202.40**
CT50	MT#3	1.75"	.938"	1.57"	531-520	**218.20**
CT50	MT#4	3.00"	1.23"	1.97"	531-522	**218.20**
CT50	MT#5	4.13"	1.75"	2.75"	531-524	**245.90**

BT Morse Taper Adapters

- Shank traverse ground to obtain optimum accuracy
- Meets or exceeds ANSI specifications
- .0002" or better ensures the best possible cutting tool life

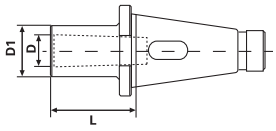


Pull Stud
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Taper	Size	L	D	D1	Code No.	Price $
BT30	MT#1	1.75"	.475"	1.00"	532-238	**115.90**
BT30	MT#2	2.36"	.700"	1.25"	532-240	**115.90**
BT40	MT#1	1.75"	.475"	1.00"	532-242	**148.30**
BT40	MT#2	2.36"	.700"	1.25"	532-244	**148.30**
BT40	MT#3	3.00"	.938"	1.57"	532-246	**148.30**
BT40	MT#4	3.54"	1.23"	1.97"	532-248	**148.30**
BT50	MT#2	1.75"	.700"	1.25"	532-241	**202.40**
BT50	MT#3	1.75"	.928"	1.57"	532-243	**218.00**
BT50	MT#4	3.00"	1.231"	1.89"	532-245	**218.20**
BT50	MT#5	4.00"	1.748"	2.48"	532-247	**245.90**

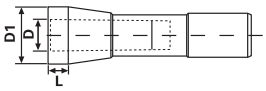
NMTB Morse Taper Adapters





Taper	Size	L	D	D1	Code No.	Price $
NMTB40	MT#1	0.94”	0.48”	1.00”	534-470	**118.40**
NMTB40	MT#2	1.75”	0.70”	1.25”	534-472	**143.90**
NMTB40	MT#3	2.25”	0.94”	1.57”	534-474	**143.90**
NMTB40	MT#4	3.00”	1.23”	1.97”	534-476	**143.90**
NMTB50	MT#2	1.88”	0.70”	1.25”	534-478	**211.70**
NMTB50	MT#3	2.38”	0.94”	1.57”	534-480	**218.00**
NMTB50	MT#4	3.25”	1.23”	1.97”	534-482	**224.30**
NMTB50	MT#5	4.63”	1.75”	2.75”	534-484	**245.40**

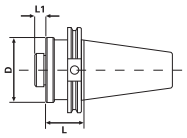
R8 Morse Taper Adapters





Taper	Size	L	D	D1	Code No.	Price $
R8	MT#1	0.44”	0.48”	1.00”	534-486	**95.10**
R8	MT#2	0.44”	0.70”	1.25”	534-488	**95.10**
R8	MT#3	2.56”	0.94”	1.57”	534-490	**104.40**

CT Taper Boring Head Holders



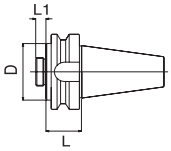
Pull Stud

pg G114



Taper	Thread	L	L1	D	Code No.	Price $
CT40	7/8” - 20	1.75”	0.44”	1.75”	531-526	**118.00**
CT40	1-1/2” - 18	1.75”	0.50”	2.96”	531-528	**120.40**
CT50	7/8” - 20	1.75”	0.44”	1.75”	531-530	**177.50**
CT50	1-1/2” - 18	1.75”	0.50”	2.96”	531-532	**169.00**

BT Taper Boring Head Holders



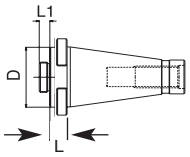
Pull Stud

pg G114



Taper	Thread	L	L1	D	Code No.	Price $
BT30	7/8”-20	1.75”	0.44”	1.75”	532-250	**106.30**
BT30	1-1/2”-18	1.75”	0.50”	2.96”	532-252	**97.20**
BT40	7/8”-20	1.75”	0.44”	1.75”	532-254	**121.10**
BT40	1-1/2”-18	1.75”	0.50”	2.96”	532-256	**124.30**

NMTB Taper Boring Head Holders





Taper	Thread	L	L1	D	Code No.	Price $
NMTB40	7/8”-20	1.75”	0.44”	1.75”	534-492	**115.20**
NMTB40	1-1/2”-18	1.75”	0.50”	2.96”	534-494	**118.10**
NMTB50	7/8”-20	1.75”	0.44”	1.75”	534-496	**169.00**
NMTB50	1-1/2”-18	1.75”	0.50”	2.94”	534-498	**169.60**

NMTB30 Drill Chuck Arbors



Taper	Size	Draw Bar	Code No.	Price $
30	JT-3	1/2-13	420-147	**155.20**
30	JT-33	1/2-13	420-148	**163.10**
30	JT-6	1/2-13	420-149	**163.10**

NMTB To NMTB Taper Open End Adapters



Outside Taper	Inside Taper	Code No.	Price $
40	30	420-035	**372.90**
50	30	420-040	**421.10**
50	40	420-045	**421.10**

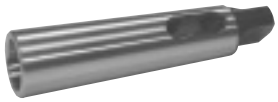
NMTB To R8 Taper Adapters



Outside Taper	Inside Taper	Draw Bar	Code No.	Price $
40	R-8	5/8-11	420-060	**326.90**

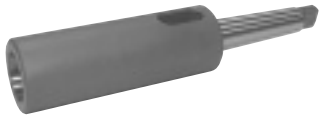
Morse Taper Sleeves

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	420-305	**8.80**
13	1	3	3-7/8	420-310	**10.00**
23	2	3	4-3/8	420-315	**9.50**
14	1	4	4-7/8	420-320	**11.30**
24	2	4	5	420-325	**10.70**
34	3	4	5-1/2	420-330	**10.40**
15	1	5	6-1/8	420-335	**23.50**
25	2	5	6-1/8	420-340	**23.50**
35	3	5	6-1/8	420-345	**22.10**
45	4	5	6-3/4	420-350	**22.10**
36	3	6	8-5/8	420-353	**39.00**
46	4	6	8-5/8	420-355	**39.00**
56	5	6	8-5/8	420-360	**39.00**

Extension Length Sockets

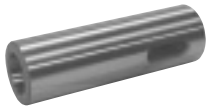


Sleeve No.	Morse Taper Hole	Morse Taper Shank	Overall Length	Soft, Hard. Tang Code No.	Price $	Hardened Ground Code No.	Price $
21	2	1	6-1/4	420-405	**121.10**	420-605•	**38.50**
12	1	2	6-1/4	420-410	**115.80**	-	-
22	2	2	6-7/8	420-415	**109.50**	-	-
32	3	2	7-3/4	420-420	**126.60**	-	-
42	4	2	8-1/2	420-425	**226.70**	-	-
13	1	3	6-7/8	420-430	**44.40**	420-630•	**44.40**
23	2	3	7-5/8	420-435	**130.70**	-	-
33	3	3	8-1/2	420-440	**133.50**	-	-
43	4	3	9-1/2	420-445	**182.80**	-	-
53	5	3	10-1/2	420-450	**301.70**	-	-
14	1	4	7-1/2	420-455 •	**175.10**	-	-
24	2	4	8-1/2	420-460	**144.50**	-	-
34	3	4	9-1/2	420-465	**156.60**	-	-
44	4	4	10-1/2	420-470	**208.40**	-	-
54	5	4	11-7/8	420-475	**287.70**	-	-
35	3	5	10-1/2	420-480	**197.20**	420-680•	**105.50**
45	4	5	11-7/8	420-485	**228.10**	-	-
55	5	5	13-1/4	420-490	**331.70**	-	-
65	6	5	15-3/8	420-495	**558.50**	-	-
46	4	6	14	420-500	**382.60**	-	-
56	5	6	15-3/8	420-505	**457.80**	-	-

• Available only while supplies last

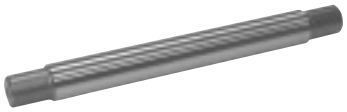
Solid Sockets

Hardened and Ground Throughout



Socket No.	Overall Length (in.)	Morse Taper Hole	Outside Dia. (in.)	Code No.	Price $
1	3-1/2	1	1	420-805	**100.60**
2	3-1/2	1	1-1/4	420-810	**107.30**
3	3-1/2	1	1-1/2	420-815	**122.50**
4	4	2	1	420-820	**138.40**
5	4	2	1-1/4	420-825	**138.40**
6	4	2	1-1/2	420-830	**138.40**
7	4	2	1-3/4	420-835	**138.40**
8	4	2	2	420-840	**161.40**
9	4-3/4	3	1-1/4	420-845	**150.00**
10	4-3/4	3	1-1/2	420-850	**150.00**
11	4-3/4	3	1-3/4	420-855	**150.00**
12	4-3/4	3	2	420-860	**170.80**
13	6	4	1-1/2	420-865	**187.60**
14	6	4	1-3/4	420-870	**187.60**
15	6	4	2	420-875	**213.00**
16	7-3/8	5	2-1/4	420-880	**315.90**
17	7-3/8	5	2-1/2	420-885	**202.70**
18	10-1/8	6	3-1/4	420-890	**564.40**
19	10-1/8	6	3-1/2	420-895	**576.50**

Lathe Mandrels



Diameter (in.)	Overall Length (in.)	Code No.	Price $
1/8	2-1/2	425-105•	**17.90**
5/32	3	425-110•	**34.40**
3/16	3	425-115•	**57.90**
1-5/8	9-1/2	425-295•	**82.50**
1-7/8	10-1/2	425-315•	**105.40**

• Available only while supplies last

Annular Cutter Holders

Straight Shank
R8 Shank
Morse Taper Shank

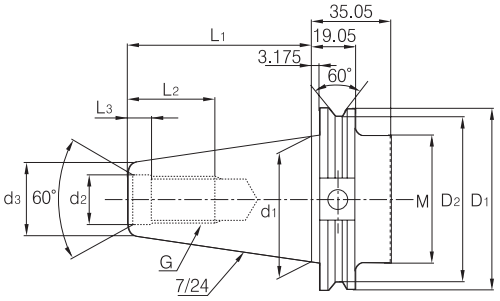
- Holder shank allows different machines to drive cutter
- Select adapter lengths reduce the number of machine set ups.

See page D10 for Annular Cutters



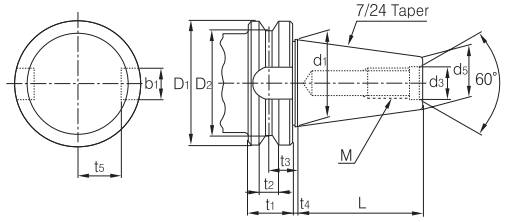
Model No.	Shank	Cutter Shank Size	Gauge Length	Code No.	Price $
Straight Shank - 3 flats					
HEN-1	1/2"	3/4"	2-1/8"	425-435	**184.50**
HEN-2	3/4"	3/4"	2"	425-436	**184.50**
HEN-2-6	3/4"	3/4"	6"	425-437	**198.30**
HEN-2-12	3/4"	3/4"	12"	425-438	**226.90**
HEN-6	3/4"	1-1/4"	3-1/8"	425-439	**183.50**
HEN-6-6	3/4"	1-1/4"	6"	425-440	**268.60**
HEN-6-12	3/4"	1-1/4"	12"	425-441	**236.50**
Straight Shank - 2 flats					
HEN-9-6	3/4"	3/4"	6"	425-442	**231.40**
Morse Taper Shank					
HEN-3	MT2	3/4"	2"	425-444	**213.00**
HEN-3-6	MT2	3/4"	6"	425-445	**247.70**
HEN-3-12	MT2	3/4"	12"	425-446	**264.80**
HEN-4	MT3	3/4"	2"	425-447	**246.80**
HEN-4-6	MT3	3/4"	6"	425-448	**280.50**
HEN-4-12	MT3	3/4"	12"	425-449	**354.40**
HEN-8	MT3	1-1/4"	2-3/4"	425-450	**281.40**
HEN-8-6	MT3	1-1/4"	6"	425-451	**344.40**
HEN-8-12	MT3	1-1/4"	12"	425-452	**308.50**
R8 Shank					
HEN-5	R8	3/4"	1-3/4"	425-453	**263.60**
HEN-5-12	R8	3/4"	12"	425-455	**406.60**
HEN-7-6	R8	1-1/4"	6"	425-457	**355.70**
HEN-7-12	R8	1-1/4"	12"	425-458	**471.80**

CAT Taper Dimensions



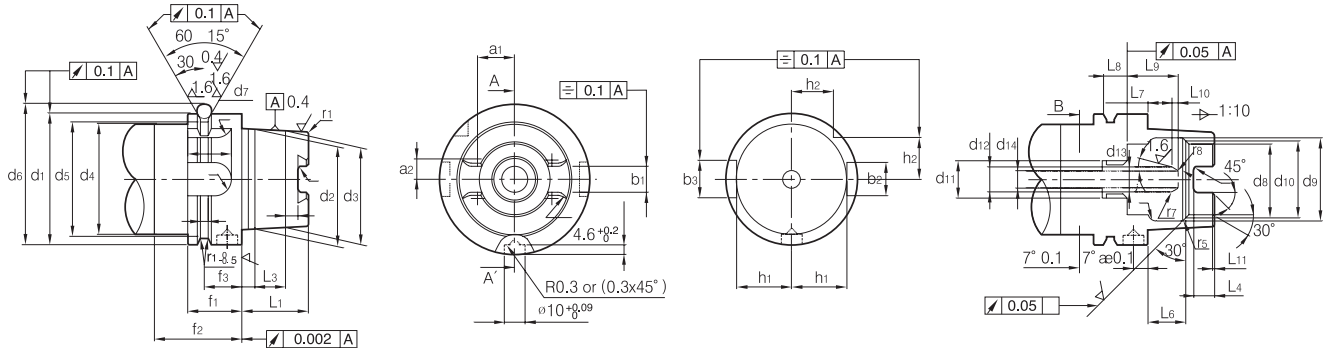
Shank No.	D1	D2	M	d1	d2	d3	L1	L2	L3	G
CAT40	63.5	56.36	44.45	44.45	16.28	21.84	68.25	28.45	4.78	5/8-11
CAT45	82.55	75.41	57.15	57.15	19.46	27.69	82.55	38.1	4.78	3/4-10
CAT50	98.43	91.29	69.85	69.85	26.19	35.05	101.6	44.45	6.35	1-8

BT Taper Dimensions



BT No.	D1	D2	t1	t2	t3	t4	d1	d3	L	M	b1	t5	d5
35	53	43	22	10	14.6	2	38.1	13	56.5	M12x1.75	16.1	19.6	21.62
40	63	52	25	10	16.6	2	44.45	17	65.4	M16x2	16.1	22.6	25.3
45	85	73	30	12	21.2	3	57.15	21	82.8	M20x25	9.3	29.1	33.1
50	100	85	35	15	23.2	3	69.85	25	101.8	M24x3	25.7	35.4	40.1
60	155	135	45	20	28.2	3	107.95	31	161.8	M30x3.5	25.7	60.1	60.7

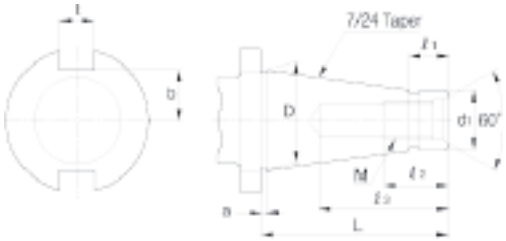
HSK Taper Dimensions



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
63	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
100	20	20	14	100	75	72,80	85	92	109.75	7	53	63	58	M24X1.5	16	12	12	27.329	15

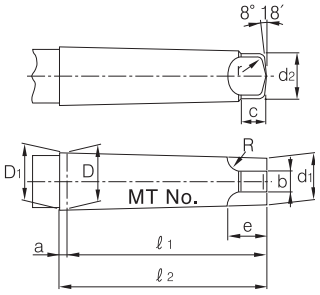
Shank No.	f1	f2	f3	f4	b1	b2	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	r1	r2	r3	r4	r5	r6	r7	r8
HSK50	26	42	18	3.75	2	15.5	25	5	11	7.5	4.5	14.13	10	10	23	3	1	19	1	1.5	2.38	6	0.5	1	2	6
63	26	42	18	3.75	28.5	20	32	6.3	14.7	10	6	18.13	10	12	24.5	3	1	21	1.2	1.5	3	8	0.6	1.5	3	8
100	29	45	20	3.75	44	31.5	50	10	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



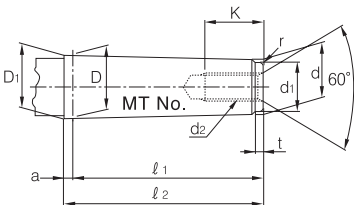
MT NO.	D	d1	L	ℓ1	M	ℓ2	ℓ3	a	t	b
30	1-1/4"-31.75	17.40 (-0.29/-0.36)	70	20	UNC-1/2"	24	50	1.6	15.9	6
40	1-3/4"-44.45	25.32(-0.30/-0.387)	95	25	UNC-5/8"	30	60	1.6	15.9	22.5
50	2-3/4"-69.85	39.60 (-0.31/-0.41)	130	25	UNC-1"	45	90	3.2	25.4	35
60	4-1/4"-107.95	60.20 (-0.34/-0.46)	210	45	UNC1/4"	56	110	3.2	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

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BORING & FACING HEADS





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Universal Boring And Facing Masterhead

Solve ALL Your Boring and Facing Problems

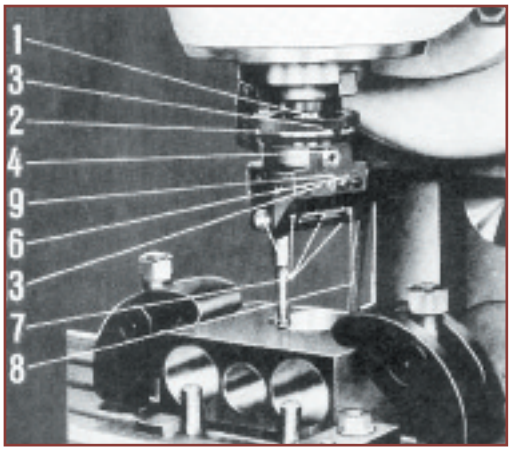


	1-3/8"		2-1/8"		3-1/8"		4-7/8"		6-1/4"	
Model No.	**VHU 36**	**Price $**	**VHU 56**	**Price $**	**VHU 80**	**Price $**	**VHU 125**	**Price $**	**VHU 160**	**Price $**
Code No.	300-007	**4,954.80**	300-055	**6,306.70**	300-105	**6,663.20**	300-155	**8,802.60**	300-205	**9,545.40**
QUICK RETURN MOVEMENT QUICK RETURN ADJUSTMENT THROUGH SLIDE SETTING SCREW										
Operating Accuracy	± .0002		± .0002		± .0002		± .0002		± .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	
			.002		.002		.002		.002	
Various automatic slide –	.0016		.004		.004		.004		.004	
feeds per revolution	.0032		.006		.006		.006		.006	
	.0048		.008		.008		.008		.008	
1 graduation of sensitive	.0005		.0005		.0005		.0005		.0005	
adjustments ins. on dia.										
1 Revolution of sensitive adjustment	.016		.016		.016		.016		.016	
Quick return per revolution	.030		.120		.120		.160		.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	300-003	**956.30**	300-053	**1,776.80**	300-104	**1,776.80**	-	-	300-202•	**2,319.00**
Head only	300-004	**4,156.30**	300-054	**4,732.00**	300-103	**5,015.80**	300-154	**6,343.10**	300-203	**6,826.70**
Case only	300-006	**378.00**	300-052	**224.00**	300-102	**596.30**	300-204	**727.70**	300-204	**727.70**
Shank M.T. 2	300-010	**393.20**								
Shank M.T. 3	300-015	**414.50**								
Shank M.T. 4	300-020	**478.30**	300-110	**529.80**	300-110	**529.80**				
Shank M.T. 5			300-115	**644.70**	300-115	**644.70**	300-115	**644.70**	300-115	**644.70**
Shank M.T. 6					300-165	**785.90**	300-165	**785.90**	300-165	**785.90**
Shank ISA - 30	300-025	**362.60**								
Shank ISA - 40	300-030	**393.20**	300-070	**452.40**	300-070	**452.40**				
Shank ISA - 50			300-075	**554.90**	300-075	**554.90**	300-075	**554.90**	300-075	**554.90**
Shank R - 8	300-035	**316.40**	300-080	**358.90**						
Shank Straight 3/4"	300-039	**235.00**								
Shank Straight 1"	300-040	**260.90**								
Shank Cat - 40	300-033	**529.80**	300-073	**610.40**						
Shank Cat - 50			300-076	**644.70**	300-076	**644.70**	300-076	**644.70**	300-076	**644.70**
Shank BT - 40	300-034	**529.80**	300-074	**602.00**						
Shank BT - 50			300-077	**644.70**	300-077	**644.70**	300-077	**644.70**	300-077	**644.70**
Tang M.T. 2	300-245	**67.80**								
Tang M.T. 3	300-250	**86.50**								
Tang M.T. 4	300-255	**119.30**	300-255	**119.30**	300-255	**119.30**				
Tang M.T. 5			300-260	**143.90**	300-260	**143.90**	300-260	**143.90**	300-260	**143.90**
Tang M.T. 6					300-265	**160.30**	300-265	**160.30**	300-265	**160.30**

• Available only while supplies last.

Standard Equipment Supplied With The Master Head In Case

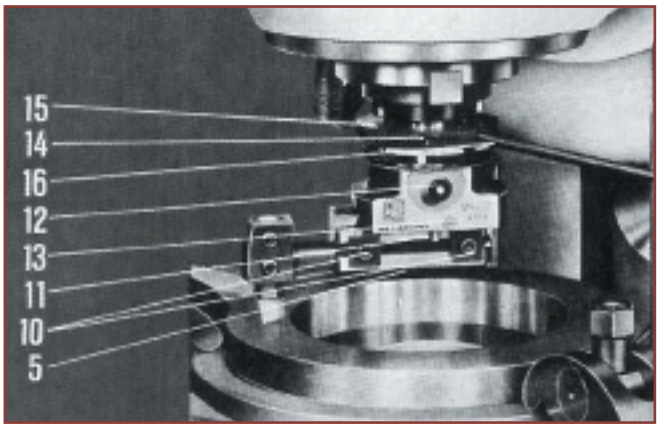
Boring bars	3⁄8 2 pcs.	1 x 4	1 x 4	1-1⁄4 x 6	1-1⁄4 x 6
Boring bars	5⁄8 2 pcs.	1 x 6	1 x 6	1-1⁄4 x 9-3⁄4	1-1⁄4 x 9-3⁄4
Boring bar holders		*1 x 5-1⁄2	*1 x 5-1⁄2	*1-1⁄4 x 6-5⁄16	*1-1⁄4 x 6-5⁄16
		*2 pcs.	*2 pcs.	*2 pcs.	*2 pcs.
Extension holder	5⁄8 x 3-7⁄8	1 x 6-7⁄8	1 x 6-5⁄8	1-1⁄4 x 11-13⁄16	1-1⁄4 x 11-13⁄16
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
		*4 pcs.	*4 pcs.	*4 pcs.	*4 pcs.
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
		*4 pcs.	*4 pcs.	*4 pcs.	*4 pcs.
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





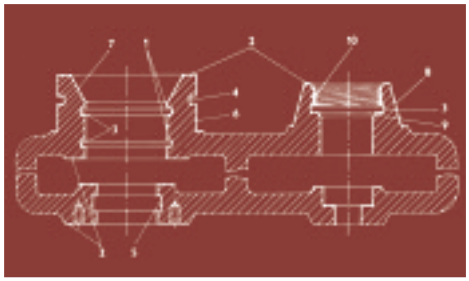
Principal Component Part of Head Vhu-36

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



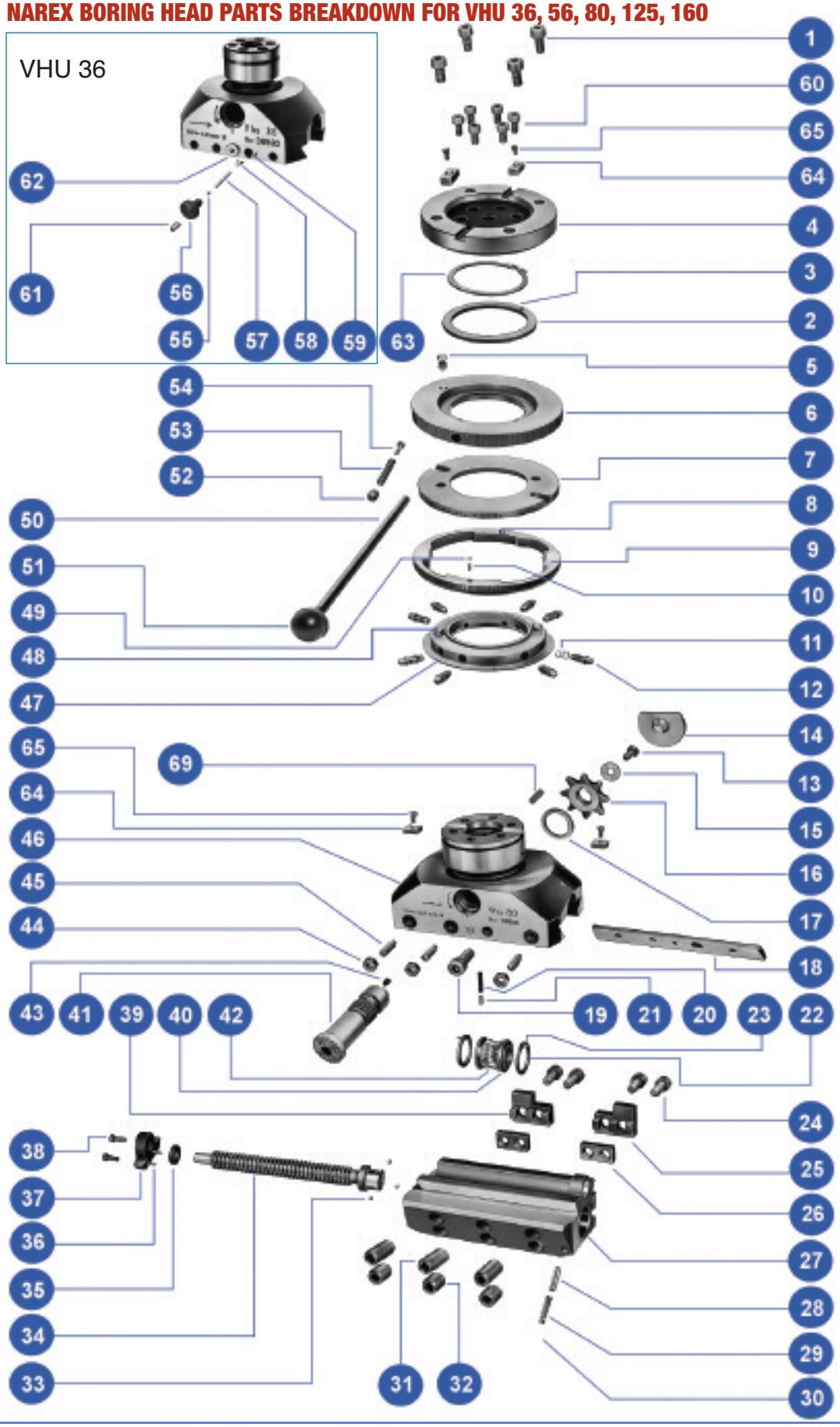
Basic machining operations shown for the Vhu type universal boring heads:

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

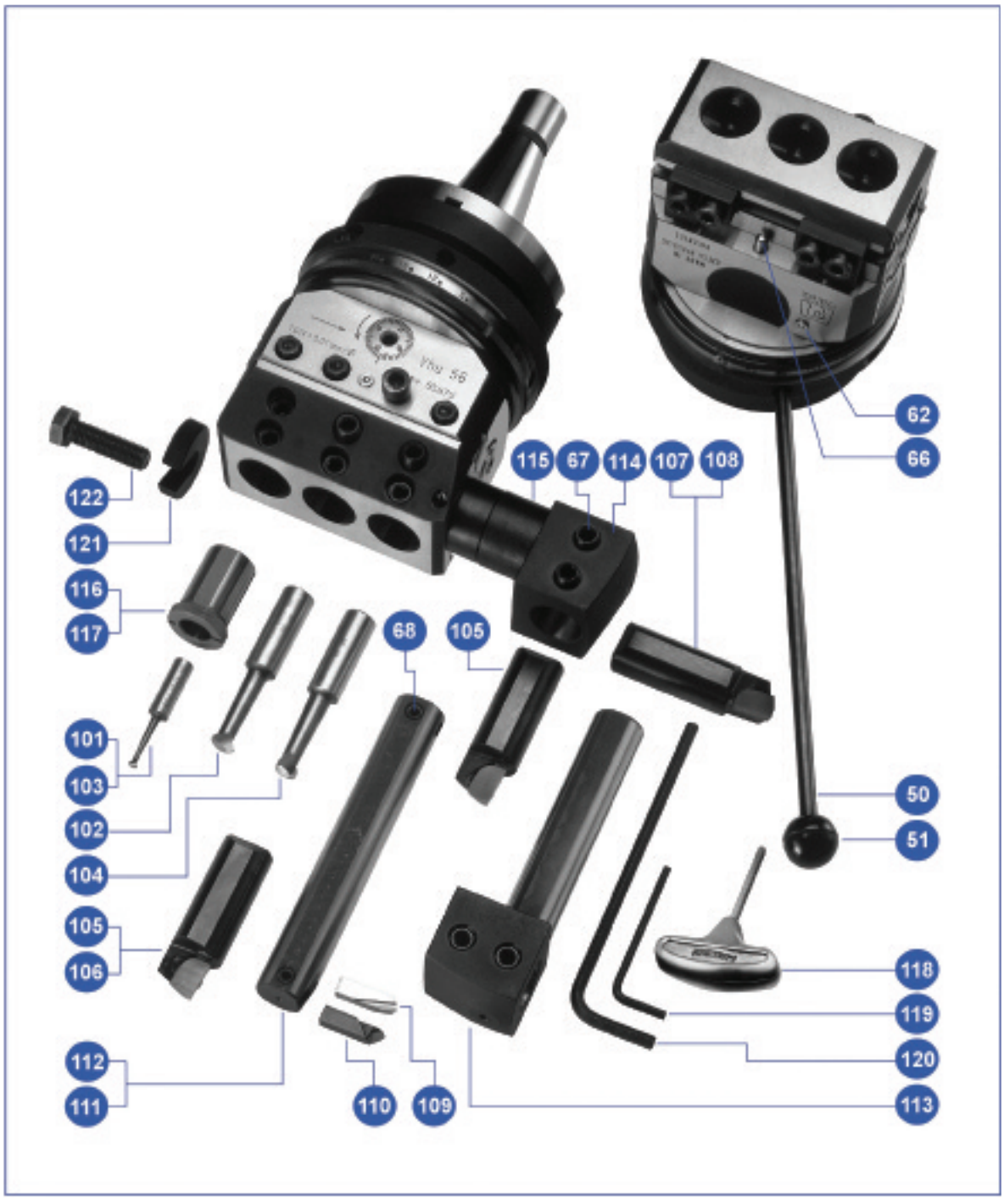


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NAREX BORING HEAD PARTS BREAKDOWN FOR VHU 36, 56, 80, 125, 160



NAREX BORING HEAD PARTS BREAKDOWN FOR VHU 36, 56, 80, 125, 160 CONTINUED



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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	300-770	2.40	4	300-588	2.80	4	300-588	2.80
2	Ring	1	300-702	73.00	1	300-503	271.70	1	300-603	145.10
3	Pin	1	300-736	2.40	1	300-551	2.40	1	300-655	2.40
4	Flange (Hold-Ring)	1	300-771	489.00	1	300-480(vhu-56)	512.60	1	300-691	904.40
					1	300-591(vhu-80)	844.20			
5	Clutch Pin (Safety pin)	1	300-726	60.50	1	300-505	78.80	1	300-605	78.80
6	Hold Ring (Brake ring)	1	300-703	349.90	1	300-504	663.30	1	300-604	603.10
7	Set Ring	1	300-704	331.80	1	300-506	440.40	1	300-606	494.80
8	Pin	2	300-736	2.40	2	300-554	2.40	2	300-658	2.40
9	Ring (Control Ring)	1	300-705	235.30	1	300-507	458.90	1	300-607	536.90
10	Spring	2	300-720	2.40	1	300-540	2.40	1	300-640	2.40
11	Spring	6	300-707	2.40	8	300-511	2.40	8	300-611	2.40
12	Pin	6	300-708	29.40	8	300-509	72.60	8	300-609	72.60
13	Cap Screw	1	300-764	2.40	1	300-546	18.60	1	300-650	18.60
14	Cover (Lid)	1	300-716	38.80	1	300-518	29.40	1	300-618	47.20
15	Washer	1	300-765	14.50	1	300-541	21.60	1	300-646	21.60
16	Star Gear (Ratchet Wheel)	1	300-715	103.10	1	300-520	127.20	1	300-620	133.10
17	Washer (Ring)	1	300-718	73.00	1	300-522	123.40	1	300-622	123.40
18	Slideguide	1	300-710	181.00	1	300-413(vhu-56)	223.00	1	300-613	301.70
					1	300-513(vhu-80)	241.20			
19	Screw				1	300-577	5.20	1	300-653	2.80
20	Spring				1	300-536	2.40	1	300-670	2.40
21	Brake				1	300-521	21.60	1	300-621	21.60
22	Washer (Ring)	2	300-722	84.80	2	300-525	103.10	2	300-625	103.10
23	Pin	2	300-769	2.40	2	300-551	2.40	2	300-655	2.40
24	Stop Screw	2	300-739	2.40	4	300-549	2.80	4	300-644	2.80
25	Stop (Dog) - L.H. Stop	2	300-728	108.90	1	300-515	163.20	1	300-615	163.20
26	Stop Nut (Insert)	2	300-742	67.90	2	300-514	49.10	2	300-614	49.10
27	Slide	1	300-713	3,380.40	1	300-402(vhu-56)	3,873.90	1	300-602	5,054.20
					1	300-502(vhu-80)	4,114.90	1	300-680	5,733.10
28	Pin (Bar)	1	300-747	28.40	1	300-524	28.40	1	300-624	35.30
29	Spring	1	300-746	2.40	1	300-570	3.30	1	300-670	2.40
30	Set Screw	1	300-774	2.40	1	300-508	2.40	1	300-671	2.40
31	Set Screw	3	300-735	8.10	3	300-568	16.10	3	300-674	16.10
								5	300-674	16.10
32	Set Screw	3	300-741	8.10	3	300-567	16.10	3	300-673	16.10
								5	300-673	16.10
33	Ball	3	300-775	2.40	3	300-558	2.40	3	300-661	2.40
34	Worm Rod (Screw)	1	300-712	783.80	1	300-423(vhu-56)	964.80	1	300-623	1,326.30
					1	300-523(vhu-80)	1,205.80	1	300-692	1,507.20
35	Washer (Distance Ring) - Spacer	1	300-727	73.00	1	300-537	73.00	1	300-637	73.00
36	Pin	2	300-777	2.40	2	300-553	2.40	2	300-657	2.40
37	End Stop (Back Bearing)	1	300-717	97.10	1	300-538	84.80	1	300-638	103.10
38	End Screw	2	300-776	2.40	2	300-543	2.40	2	300-648	2.40
39	Stop (Dog) - R.H. Stop				1	300-516	163.20	1	300-616	163.20
40	Gear Ring	2	300-721	84.80	2	300-526	84.80	2	300-626	84.80
41	Spindle (Worm)	1	300-709	536.90	1	300-512	723.50	1	300-612	783.80
42	Worm Gear (Worm Wheel)	1	300-723	688.10	1	300-417	832.30	1	300-617	724.20
43	Pin (Parallel Key)	1	300-766	14.50	1	300-519	14.50	1	300-619	14.50
44	Head Nut	3	300-749	2.40	3	300-572	2.40	4	300-647	2.40
45	Head Screw	3	300-748	2.40	3	300-545	2.80	4	300-649	2.80
47	Ring (Control Ring)	1	300-706	416.30	1	300-510	663.30	1	300-610	723.50
48	Pin	2	300-738	2.40	2	300-556	5.20	2	300-659	5.20
49	Ball	2	300-744	2.40	2	300-558	2.40	2	300-661	2.40
50	Stop Rod (Bar)	1	300-734	28.40	1	300-535	53.40	1	300-635	71.20
51	Knob (Ball)				1	300-559	3.90	1	300-662	3.90
52	Screw	1	300-763	2.40	1	300-547	2.40	1	300-651	2.40
53	Spring	1	300-724	2.40	1	300-529	2.40	1	300-629	2.40
54	Pin Point	1	300-725	49.10	1	300-530	60.50	1	300-630	60.50
55	Ball	1	300-751	2.40						
56	Cap Screw	1	300-740	78.80						
57	Pin	1	300-732	21.60						
58	Pin	1	300-719	21.60						
59	Pin	1	300-779	3.10						
60	Cap Screw	6	300-770	2.40	6	300-481(vhu-56)	2.80	6	300-689	2.80
					6	300-589(vhu-80)	2.40			
61	Pin	1	300-778	3.10						
62	Plug	2	300-780	8.20	2	300-592	9.10	2	300-694	9.10
63	Ring Clip (Circlip)	1	300-750	4.10	1	300-560	14.50	1	300-663	18.90
64	Parallel key				4	300-587	42.30	4	300-687	42.30
65	Screw				4	300-590	2.40	4	300-690	2.40
66	Pin	1	300-781	13.10	1	300-593	21.60	1	300-695	21.60
67	Set Screw	2	300-741	8.10	2	300-567	16.10	2	300-673	16.10
68	Screw				2	300-548	8.10	2	300-652	8.10

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Narex Boring And Facing Head Parts

New ID No.	Description	pcs	VHU-36 (1-3/8") Code No.	Price $	pcs	VHU-56 (2-1/8") VHU-80 (3-1/8") Code No.	Price $	pcs	VHU-125 (4-7/8") VHU-160 (6-1/4") Code No.	Price $
69	Pin	1	300-782	3.10	1	300-594	3.10	1	300-696	3.10
101	Boring tool Ø5mmx3/8"x60mm	1	300-754	316.90						
102	Boring tool Ø13mmx5/8"x90mm	1	300-752	325.90						
103	Internal corner tool Ø5mmx3/8"x60	1	300-755	461.60						
104	Internal corner tool Ø13mmx5/8"x90	1	300-753	434.50						
105	Right hand tool S20	1	300-759	136.20	1	300-565	190.40	1	300-668	253.90
106	Right hand tool H10	1	300-758	136.20	1	300-575	190.40	1	300-677	253.90
107	Left hand tool S20	1	300-757	136.20	1	300-566	190.40	1	300-666	253.90
108	Left hand tool H10	1	300-756	136.20	1	300-576	190.40	1	300-676	253.90
109	Tool HSS				2	300-564	97.10	2	300-667	114.90
110	Tool S20				2	300-563	67.00	2	300-669	184.60
111	Extension (Boring bar)				1	300-528	325.90	1	300-628	524.80
112	Extension (Boring bar)				1	300-527	325.90	1	300-627	561.00
113	Toolholder (Holder with screw)				2	L=185 300-534	889.70	2	300-634	938.90
114	Toolholder (Holder with screw)	1	300-731	663.30	1	L=220 300-533	938.90	1	L=350 300-633	1,013.10
115	Collar Set (Set of spacing tubes)	1	300-730	84.80	1	300-532	136.20	1	300-632	169.30
116	Reducer (Reduction sleeve)	1	300-733	235.30	1	300-542	271.70	1	300-641	325.90
117	Reducer (Reduction sleeve)				1	300-544	271.70	1	300-608	331.80
118	Allen (Hexagon) Wrench "NAREX"	1	300-773	86.80						
119	Allen (Hexagon) Wrench 4	1	300-760	67.00	1	300-561	67.00	1	300-664	67.00
120	Hexagon wrench 6				1	300-562	81.70	1	300-665	211.20
121	Washer	1	300-729	52.30	1	300-531	78.80	1	300-631	78.80
122	Hex Screw	1	300-743	2.40	1	300-550	3.70	1	300-654	3.70
27P	Slide-set									
	consists of parts: 27+36+37+38+28+29+30+31+32									
34P	Screw-set									
	consists of parts: 34+42+40+22+35+23									
42P	Worm wheel-set									
	consists of: 42+40+22+23									

Boring Bar Sets for Boring & Facing Heads



Diameter	Pieces	Code No.	Price $
5⁄8	6	300-835	1,229.70
1	6	300-837	1,434.20
1-1⁄4	6	300-839	1,758.70

Individual Bars

Model	Shank Dia.	Style	O.A.L.	Boring Head	Code No.	Price $
R5/8-0945	5/8"	SCBCR	50mm	VHU-36	300-840	343.00
R5/8-0946	5/8"	SCBCL	50mm	VHU-36	300-845	343.00
L5/8-0947	5/8"	SCACR	50mm	VHU-36	300-850	343.00
L5/8-0948	5/8"	SCACL	50mm	VHU-36	300-855	343.00
R5/8-0949	5/8"	SCBCR	90mm	VHU-36	300-860	478.20
R5/8-0950	5/8"	SCACR	90mm	VHU-36	300-865	478.20
R1-0951	1"	SCBCR	80mm	VHU-56, VHU-80	300-870	430.80
R1-0952	1"	SCBCL	80mm	VHU-56, VHU-80	300-875	430.80
L1-0953	1"	SCACR	80mm	VHU-56, VHU-80	300-880	430.80
L1-0954	1"	SCACL	80mm	VHU-56, VHU-80	300-885	430.80
R1-0955	1"	SCBCR	150mm	VHU-56, VHU-80	300-890	478.20
R1-0956	1"	SCACR	150mm	VHU-56, VHU-80	300-895	478.20
R1-1/4-0957	1-1/4"	SCBCR	100mm	VHU-125, VHU-160	300-900	551.30
R1-1/4-0958	1-1/4"	SCBCL	100mm	VHU-125, VHU-160	300-905	580.80
L1-1/4-0959	1-1/4"	SCACR	100mm	VHU-125, VHU-160	300-910	551.30
L1-1/4-0960	1-1/4"	SCACL	100mm	VHU-125, VHU-160	300-915	551.30
R1-1/4-0961	1-1/4"	SCBCR	180mm	VHU-125, VHU-160	300-920	612.60
R1-1/4-0962	1-1/4"	SCACR	180mm	VHU-125, VHU-160	300-925	612.60

SIM

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	356-001	144.50
3	3⁄4	3⁄4	356-002	192.50
4	1	1	356-003	288.60

Shanks for Boring Heads

* See also pg. G102 for GS Boring Head Holders



Size	Thread	Code No.	Price $
R8	1-1/2 - 18TPI	356-010	96.40
ISA40	1-1/2 - 18TPI	356-012	120.40
MT3	1-1/2 - 18TPI	356-014	96.40
ISA30	1-1/2 - 18TPI	356-016	50.80
3/4" S.S.	1-1/2 - 18TPI	356-018	72.50
MT4	1-1/2 - 18TPI	356-020	108.30
1" S.S.	1-1/2 - 18TPI	356-025	72.50

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	337-950	**831.10**

Height Presetter - Optical Type

- Height 50 mm
- 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)	337-970	**466.00**
HP-50Z (Standard Base)	337-971	**416.30**

Electronic Tool Length Setter

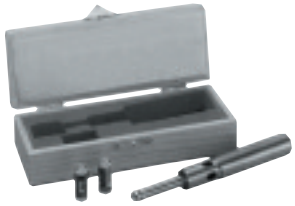
- High Accuracy
- Easy Operation
- Be sure to remove all chips and oil from the sensor plate and the base of the HP-50E as well as from the workpiece and tool
- To move the tool approaching the sensor plate slowly
- When touching, the "LED" turns on immediately and "H" is just 50.00 mm (or 2")
- LED will not function if batteries are not set in correctly.
- Designed to be used on ferrous and non-ferrous materials

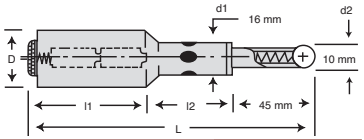


Model No.	H	Base Dia.	Sensor Plate Dia.	Code No.	Price $
With Magnetic Base					
HP-50EM	50 mm	40mm	12.7mm	337-976	**605.60**
HP-100 EM	100 mm	40mm	12.7mm	337-978	**941.90**

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



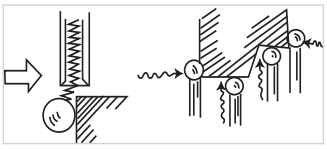


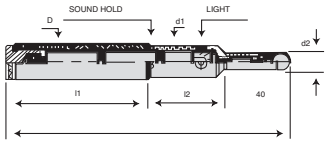
D	d1	d2	L	l1	l2	Type	Code No.	Price $
20	18	10	160	79	41	UM-5#(SP)	337-955	**144.50**

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#	337-960	**192.70**
3/4	.629"	.394"	6.18"	3.03"	1.378	UM-5#	337-962	**202.70**

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 ±.0001"



MADE IN USA

Shank Dia.	Code No.	Price $
1/2"	145-600	**41.20**

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	326-986	**7.80**	326-985	**1,001.60**
Trolley, 4 trays hold 20 inserts	50	5	326-996	**7.50**	326-995	**1,001.60**

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	151-700	**114.00**

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)	335-250	**623.30**
50 Taper	50 Taper x 2 (only BT & NMTB)	335-260	**623.30**
50 Taper	50 Taper x 1 / 40 Taper x 1	335-240	**623.30**
40 Taper	50 Taper x 1 / 40 Taper x 1	335-230	**623.30**

Tool Holder Locking Device

- For Cat BT & NMTB Tapers



Description	Code No.	Price $
30 Taper	335-270	**292.60**
40 Taper	335-275	**292.60**
50 Taper (Only CAT50 & NMTB50)	335-280	**292.60**

Tool Holder Locking Fixture

- Weight: 4.5 kg



Description	Code No.	Price $
HSK63	335-225	**739.80**

Simple 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.
- This is an excellent helping tool for simple, rapid and safe tool holding
- For Cat BT & NMTB Tapers





Model	Code No.	Price $
TL-30	335-200	**335.40**
TL-35	335-205	**335.40**
TL-40	335-210	**335.40**
TL-50	335-220	**335.40**

Spindle Taper Wipers

Features:
- 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	326-210	**36.80**
VTW-40	#40	159mm	326-215	**36.80**
VTW-50	#50	265mm	326-220	**53.60**
VTW-50H	HSK50	159mm	326-225	**167.90**
VTW-63H	HSK63	167mm	326-230	**167.90**

Pull Studs Cross-Reference Chart

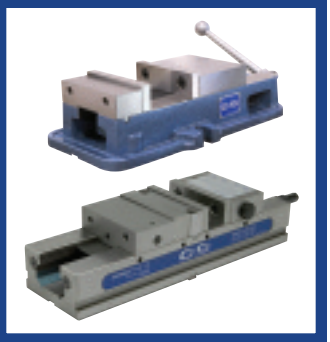
Can't find your pull stud?
We invite your inquiries
Please have ready the following Information when calling

- Taper of Machine
- Make & Model No. of the Machine
- Draw Bar Thread Dia & Pitch
- Taper Angle required underneath head of stud

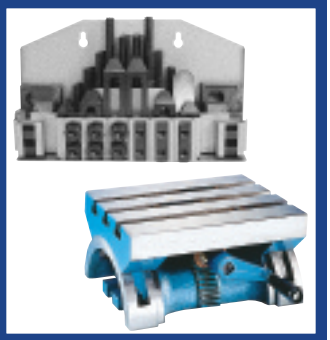


Retention Knob Supply	Collis No.	Parlec No.	Command No.	Lyndex No.	Code No.	Price $
BT-30 (M12 x 1.75 Draw Bar Thread)						
311-09	64723	3003TRK	RB2M-0001	B30-4500	366-000	**28.20**
311-09A	64721	3004TRK	RB2M-0002	B30-6000	366-002	**37.00**
BT-40 (M16 x 2 Draw Bar Thread)						
329-12			RS4M-0205	B40-1500	366-003	**49.90**
329-13	69101	P329-13	RS4M-0205C		366-004	**28.20**
311-13	64711	4003TRK	RB4M-0001	B40-4500	366-006	**28.20**
311-13A	64713	4004TRK	RB4M-0002	B40-6000	366-008	**44.70**
311013B	69059	4002TRK	RB4M-0003	B40-9000	366-010	**44.70**
311-13D		4003TRKC	RB4M-0001-C	B40-4500*	366-012	**52.60**
311-13E		4004TRKC	RB4M-0002-C	B40-6000*	366-014	**52.60**
311-13F		4002TRKC	RB4M-0003-C	B40-9000*	366-016	**52.60**
111-26	69047	F40TRK	RS4M-0115		366-018	**42.10**
111-22A	69980	A40TRK	RS4M-0105		366-020	**42.10**
312-25					366-022	**49.90**
111-26A		F40TRKC	RS4M-0115C		366-024	**49.90**
					366-026	**52.60**
350-00V		MH40TRK			366-028	**47.40**
171-26					366-030	**47.40**
171-27					366-032	**57.90**
CT-40 (5/8-11 Draw Bar Thread)						
711-23		4030TRK	RS4E-0114-C		366-034	**28.20**
					366-036	**28.20**
312-26	69007				366-038	**28.20**
111-22	67751	40TRK	RC4E-0001	C40-STD*	366-040	**28.20**
111-23	64724	40NTRK	RC4E-0002	C40-STD	366-042	**28.20**
312-22	64732		RB4E-0100	C40-MAZAK	366-044	**42.10**
126-22	69978				366-046	**42.10**
316-16		4008TRK	RS4E-0212	C40-1500	366-048	**47.40**
311-14	64712	4009TRK		C40S-4500	366-050	**28.20**
311-14A	64714	4014TRK	RB4E-0002	C40S-6000	366-052	**28.20**
311-14B	64683	4001TRK	RB4E-0003	C40S-9000	366-054	**42.10**
316-17	64730	4008TRKC	RS4E-0212-C	C40-1500*	366-056	**28.20**
315-14		4009TRKC		C40S-4500*	366-058	**28.20**
318-14A		4014TRKC	RB4E-0002-C	C40S-6000*	366-060	**49.90**
360-30		4001TRKC	RB4E-0003-C	C40S-9000*	366-062	**49.90**
171-22	64725	C400TRK	RS4E-0104		366-064	**44.70**
171-23	69029	C400TRKC	RS4E-0104-C		366-066	**55.20**
321-14	64729	4005TRK	RB4E-0001	C40-4500	366-068	**28.20**
				C40-6000	366-070	**44.70**
				C40-9000	366-072	**44.70**
				C40-4500*	366-074	**52.60**
				C40-6000*	366-076	**52.60**
				C40-9000*	366-078	**52.60**
CT-45 (3/4-10 Draw Bar Thread)						
111-33	67752	45TRK	RC5E-0001	C45STD*	366-080	**42.10**
BT-50 (M24 x 3 Draw Bar Thread)						
111-44A		A50TRK	RS6M-0105		366-082	**55.20**
311-17	69995	5003TRK	RS6M-0001	B50-4500	366-084	**34.50**
311-17A		5004TRK	RB6M-0002	B50-6000	366-086	**63.10**
311-17B	64719	5002TRK	RB6M-0003	B50-9000	366-088	**63.10**
316-43		5003TRKC	RB6M-0001-C	B50-4500*	366-090	**73.60**
CT-50 (1"-8 Draw Bar Thread)						
111-46	69993	50NTRK	RC6E-0002	C50-STD	366-092	**49.90**
312-46	64737	M50TRK			366-094	**57.90**
111-44	57753	50TRK	RC6E-0001	C50-STD*	366-096	**34.50**
311-18	64720	5005TRK	RB6E-0001	C50-4500	366-098	**60.50**
311-18A	64722	5014TRK	RB6E-0002	C50-6000	366-100	**60.50**
311-18B	69057	5001TRK	RB6E-0003	C50-9000	366-102	**60.50**
316-45	64731	5005TRKC	RB6E-0001-C	C50-4500*	366-104	**34.50**
318-44A	69057	5014TRKC	RB6E-0002-C	C50-6000*	366-106	**70.90**
342-18B		5001TRKC	RB6E-0003-C	C50-9000	366-108	**70.90**

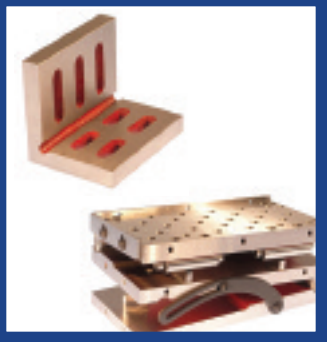
* Coolant Thru













VISES & CLAMPS

VISES

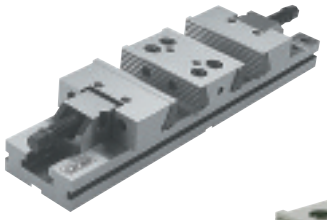
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CLAMPING

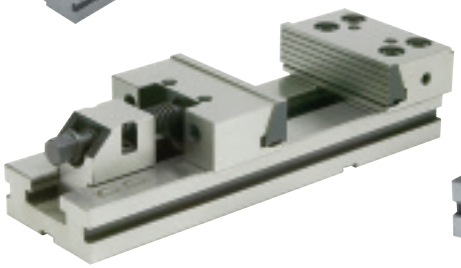
Tooling Components & Clamping Kits	H21-22
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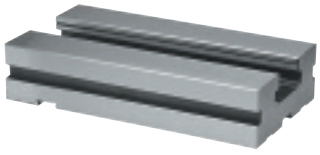
VISES



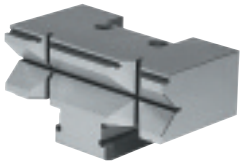












Precision Clamping Systems for all Applications

High Quality and Accuracy

Promotional Kits

Great Savings!

GS Vise/Face Mill Kits



Description	Code No.	Price $
GS890 Vise Kit Includes each of the following: • 1pc - 327-290M (GS890 machine vise 6" x 8.9") • 1pc - 147-814 (4" 45º face mill) • 10pcs - 147-730 (SEXT 14M4AGSN PM25C)	500-203	**1,613.50**
GS675 Vise Kit Includes each of the following: • 1pc - 327-275M (GS675 machine vise 6" x 7.5") • 1pc - 147-814 (4" 45º face mill) • 10pcs - 147-730 (SEXT 14M4AGSN PM25C)	500-204	**1,530.60**

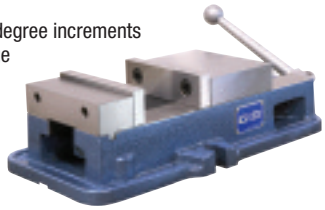
Milling Kits

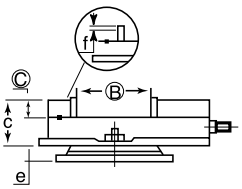


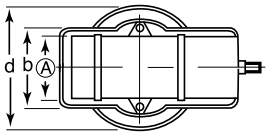
Description	Code No.	Price $
NMTB 40 Milling Kit Includes 1 each of the following: • 334-605 (NMTB40 1/8-1" collet set) • 327-275M (GS675 machine vise, 6" x 7.5") • 149-869 Max Mill Kit containing: 147-813 (3"-45º face mill), 40pcs 147-730 (SEXT 14M4AGSN PM25C)	500-002	**1,550.90**
R8 Milling Kit Includes 1 each of the following: • 334-620 (R8 1/8-1" collet set) • 327-275M (GS675 machine vise, 6" x 7.5") • 149-869 Max Mill Kit containing: 147-813 (3"-45º face mill), 40pcs 147-730 (SEXT 14M4AGSN PM25C)	500-004	**1,550.90**

GS 6" Precision Milling Machine Vises

- Vises are Matched
- 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	.39	80lbs	327-275M	**838.00**
GS890	6	8.9	1.5	17.2	8.3	4.6	12	1.7	.2	80lbs	327-290M	**940.20**
Jaw Plates for GS675 & GS890											327-287	**162.80**
Swivel base only											327-280	**235.20**
Replacement Handle											327-285	**95.80**
Main Screw, Collar & Collar Set Screw for GS675											327-284	**138.30**
Main Screw, Collar & Collar Set Screw for GS890											327-291	**186.30**
Chip Cover for GS675											327-289	**22.90**
Chip Cover for GS890											327-294	**8.00**
Vise Nut for GS675											327-288	**188.80**
Vise Nut & Brush Set for GS890											327-293	**180.00**
Jaw Plate Screws (4pcs) for GS675 & GS890											327-286	**22.70**
Ball Bearing Thrust Collar for GS675 & GS890											327-292	**25.80**

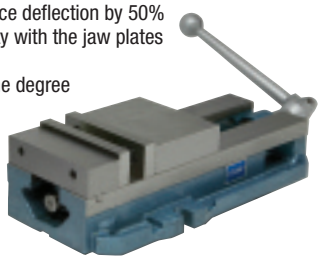
Capacity

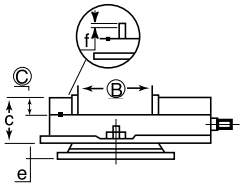


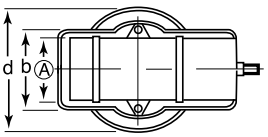
	I	II	III	IV
GS 675	0-7-1/2"	2-1/8" - 10-1/4"	5" - 13-1/8"	7" - 15-7/8"
	0-192mm	54-262mm	125-333mm	177-403mm
GS 890	0-8.89"	2.125" - 11.65"	5" - 14.44"	6.97" - 17.24"
	0-226mm	54-296mm	125-367mm	177-437mm
GS 810	0-10.43"	2.36" - 3.66"	6.25"- 16.61"	8.58" - 20.79"
	0-265mm	60-347mm	159-422mm	218-528mm

GS 8" Precision Milling Machine Vises

- Vises are Matched
- 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







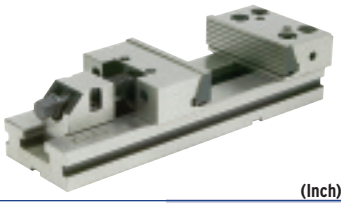
(Inch)

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	.43	158lbs	327-300	**1,900.40**
Swivel base only											327-310	**449.80**
Jaw Plates											327-311	**323.40**
Replacement Handle											327-305	**108.60**

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.

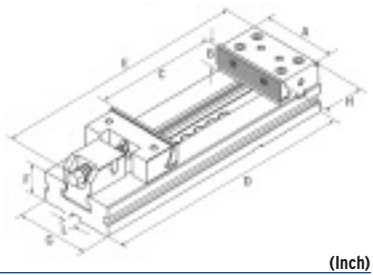
Features/Benefits:
- High accuracy
- Unlimited clamping range
- High quality alloy steel
- High clamping pressure
- No jaw lift
- All vises are matched



(Inch)

Model	Jaw Width (A)	Opening (C)	Jaw Height (B)	Code No.	Price $
1	4	4	1.2	382-005	**1,384.30**
2	5	6	1.6	382-010	**1,476.50**
3	6	8	1.97	382-015	**1,799.40**
3	6	12	1.97	382-017	**2,504.60**
4	7	8	2.4	382-020	**2,537.40**
4	7	12	2.4	382-025	**2,768.20**
4	7	16	2.4	382-030	**3,133.90**
4	7	20	2.4	382-032	**3,690.80**
5	8	8	2.6	382-035	**3,220.90**
5	8	12	2.6	382-040	**3,395.00**
5	8	16	2.6	382-045	**3,743.10**
5	8	20	2.6	382-050	**4,265.40**
5	8	24	2.6	382-052	**5,628.40**
6	12	8	3.2	382-055	**5,121.00**
6	12	12	3.2	382-060	**5,674.60**
6	12	16	3.2	382-065	**6,643.30**
6	12	20	3.2	382-070	**7,311.80**
6	12	24	3.2	382-075	**7,981.20**
6	12	28	3.2	382-080	**9,275.00**
6	12	32	3.2	382-085	**10,333.90**

Modular Vise Specs



(Inch)

Vise Size	Code No.	D	E	F	G	H	I	Kgs
4 x 4	382-005	10.45	12.5	1.38	2.95	3.07	.628	6.8
5 x 6	382-010	13.8	16.4	1.6	3.8	3.04	.64	12.9
6 x 8	382-015	16.8	20.86	1.97	4.92	3.574	.64	25.5
6 x 12	382-017	20.47	20.86	1.97	4.92	3.574	.64	29
7 x 8	382-020	17.91	24.80	2.32	5.8	3.876	.64	37
7 x 12	382-025	21.85	24.80	2.32	5.8	3.876	.64	42
7 x 16	382-030	25.78	24.80	2.32	5.8	3.876	.64	47
7 x 20	382-032	29.72	24.80	2.32	5.8	3.876	.64	52
8 x 8	382-035	22.9	28.74	2.8	6.8	4.536	.64	64
8 x 12	382-040	26.8	28.74	2.8	6.8	4.536	.64	69
8 x 16	382-045	30.7	28.74	2.8	6.8	4.536	.64	74
8 x 20	382-050	34.6	28.74	2.8	6.8	4.536	.64	79
8 x 24	382-052	38.6	28.74	2.8	6.8	4.536	.64	84
12 x 8	382-055	24.8	32.67	3.07	7.67	4.74	.64	95
12 x 12	382-060	28.7	32.67	3.07	7.67	4.74	.64	105
12 x 16	382-065	32.7	32.67	3.07	7.67	4.74	.64	115
12 x 20	382-070	36.6	32.67	3.07	7.67	4.74	.64	125
12 x 24	382-075	40.5	32.67	3.07	7.67	4.74	.64	135
12 x 28	382-080	44.5	32.67	3.07	7.67	4.74	.64	145
12 x 32	382-085	48.5	32.67	3.07	7.67	4.74	.64	155

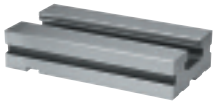
Parts For GS 8" Precision Milling Machine Vises

Description	Code No.	Price $
Main Screw, Collar & Collar Set Screw	327-306	**315.00**
Ball Bearing Thrust Collar	327-292	**25.80**
Needle Bearing Thrust Collar	327-307	**71.20**
Chip Cover	327-308	**11.50**
Vise Nut	327-309	**449.90**
Jaw Plate Screws (4pcs)	327-312	**17.20**

Parts & Accessories For GS Modular Vises


Mechanical Blocking Device


Swivel Base

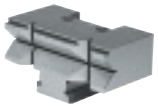

Extension Base


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	382-380	**902.60**	382-385	**977.80**	382-390	**1,128.20**	382-395	**1,278.60**	382-400	**1,880.00**	382-405	**2,256.10**
Extension Base	382-260	**738.50**	382-265	**830.70**	382-270	**923.00**	382-275	**1,015.10**	382-280	**1,273.60**	382-285	**1,568.80**
Mechanical Blocking Device	382-470	**323.10**	382-475	**332.30**	382-480	**369.30**	382-485	**383.40**	382-490	**453.20**	382-495	**692.20**
Moveable Jaw	382-412	**323.10**	382-417	**415.50**	382-422	**553.90**	382-427	**825.60**	382-432	**1,241.60**	382-437	**1,845.50**
Fixed Jaw	382-410	**323.10**	382-415	**415.50**	382-420	**553.90**	382-425	**825.60**	382-430	**1,245.90**	382-435	**1,845.50**
Main Screw	382-850	**94.90**	382-852	**134.50**	382-854	**137.50**	382-856	**137.50**	382-858	**206.80**	382-860	**206.80**
T-Wrench	382-820	**25.50**	382-822	**25.50**	382-824	**33.90**	382-826	**33.90**	382-828	**38.80**	382-830	**38.80**
Box Wrench	382-874	**23.40**	382-876	**48.40**	382-878	**58.00**	382-880	**58.00**	382-882	**82.30**	382-884	**82.30**
Vise Holding Jaws	382-685	**92.50**	382-690	**92.50**	382-695	**134.10**	382-700	**134.10**	382-705	**151.10**	382-710	**151.10**
Positioning Keys	382-655	**57.00**	382-660	**57.00**	382-665	**57.00**	382-670	**57.00**	382-675	**57.00**	382-680	**57.00**
Work Stop	382-770	**82.80**	382-775	**82.80**	382-780	**82.80**	382-785	**82.80**	382-790	**94.00**	382-795	**94.00**
Jaw Plate for Fixed Jaw	382-862	**111.00**	382-864	**147.90**	382-866	**231.80**	382-868	**252.00**	382-870	**267.90**	382-872	**302.20**
Jaw Plate for Moveable Jaw	382-863	**111.00**	382-865	**147.90**	382-867	**231.80**	382-869	**252.00**	382-871	**260.90**	382-873	**271.70**
Lock Screw for Blocking Device	382-471 M6x1 x 25mm	**15.30**	382-476 M12x1 x 25mm	**15.30**	382-481 M14x2 x 35mm	**22.90**	382-486 M16x2 x 60mm	**22.90**	382-491 M20x2.5 x 60mm	**30.60**	382-496 M20x2.5mm x 50mm	**30.60**
	382-472 M8x1.25 x 25mm	**2.10**			382-482 M12x1.75 x 30mm	**4.60**						
Chrome Locking Ball for Blocking Device	382-473 9/16" dia.	**2.80**	382-477 3/4" dia.	**6.10**	382-483 7/8" dia.	**9.20**	382-483 7/8" dia.	**9.20**	382-492 1-1/8" dia.	**30.80**	382-492 1-1/8" dia.	**30.80**
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	382-290	**913.60**	382-295	**1,015.10**	382-300	**1,338.20**	382-305	**1,476.50**	382-310	**2,214.70**	382-315	**3,091.30**

Prismatic Jaws



Model No.	Code No.	Price $
#3	382-890	**553.90**
#4	382-892	**738.50**
#5	382-894	**923.00**

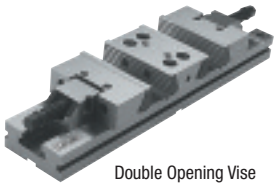
6" Soft Jaw Assembly



Model No.	Code No.	Price $
#3	382-895	**593.80**

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	382-101	**1,799.40**
2	12.6	20.5	5	17	382-102	**2,352.90**
3	14.7	23	6	31	382-103	**2,998.90**
3	18.11	27	6	34	382-104	**3,414.10**
4	16	26	7	46	382-105	**3,321.80**
4	20	30	7	51	382-106	**3,783.10**
5	24	36	8	92	382-110	**5,905.20**
Double Opening Modular Vise						
3	2 x 4.3	23	6	38	382-153	**3,150.40**
3	2 x 6.3	27	6	41	382-154	**3,395.10**
4	2 x 6.7	30	7	63	382-156	**4,336.70**
5	2 x 10	40	8	107	382-172	**8,157.60**
6	2 x 6.3	35	12	154	382-175	**10,197.00**
6	2 x 16	55	12	194	382-180	**17,464.60**

Modular Vise w/ Quick Interchangeable Pulldown Jaws

- No tools needed for quick hand change of downward jaw plates


Soft Jaws



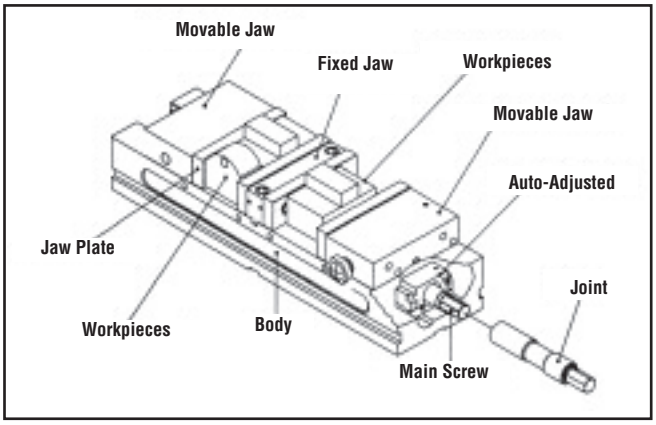
Description	Code No.	Price $
6 x 8 Modular Vise	382-896	**1,810.20**
Pair Soft Jaws	382-897	**242.00**

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 HRC45
- The rigid construction prevents base distortion
- Precision made to high accuracy standard



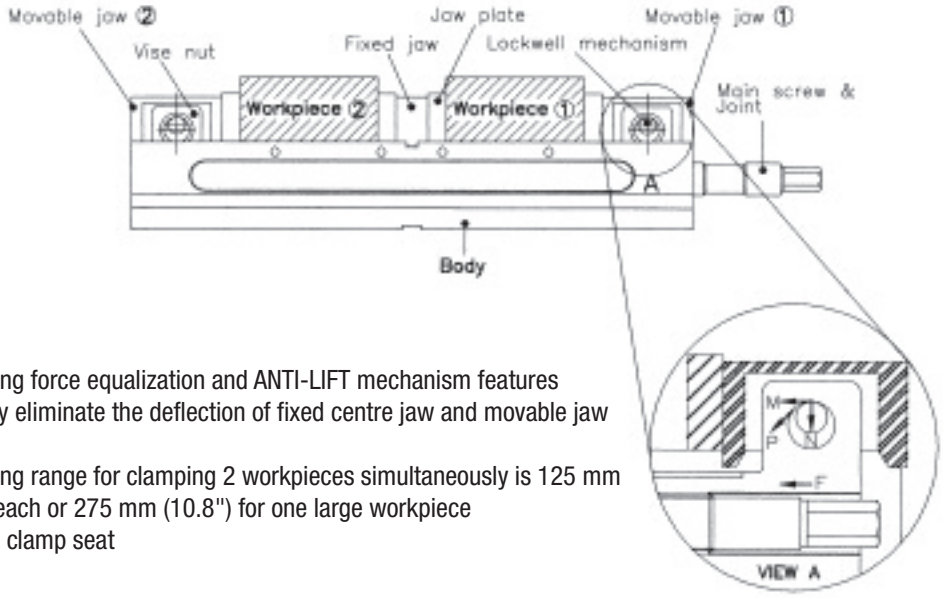
GS Double Clamp Vise
(TLD-40G/HV, TLD-60G/HV)



Double Clamp Vises

Model No.	Code No.	Price $
4" - TLD-40G/HV	382-610	**2,751.30**
6" - TLD-60G/HV	382-600	**3,065.00**

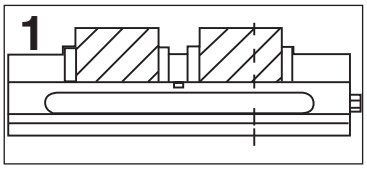
Feature:
ANTI-LIFT MECHANISM



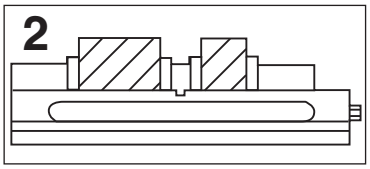
- Clamping force equalization and ANTI-LIFT mechanism features virtually eliminate the deflection of fixed centre jaw and movable jaw lift
- Clamping range for clamping 2 workpieces simultaneously is 125 mm (4.9") each or 275 mm (10.8") for one large workpiece
- Double clamp seat

ANTI-LIFT Mechanism

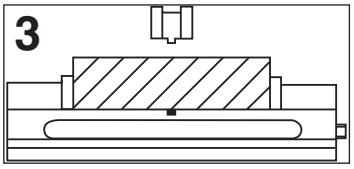
CLAMPING EXAMPLES FOR DIFFERENT APPLICATIONS:



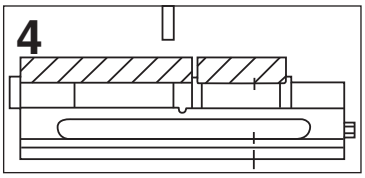
Clamping 2 pieces of same size workpieces.
Max. Capacity: 90mm (3.5")
125mm (4.9")



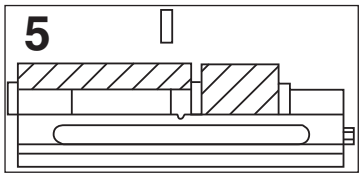
Clamping 2 pieces of different size of workpieces.
Max. Capacity: 90mm (3.5")
125mm (4.9")



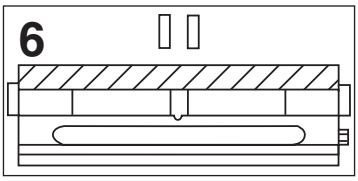
Large workpieces are able to be clamped after moving fixed jaw.
Max. Capacity: 237mm (9.3")
1315mm (12.4")



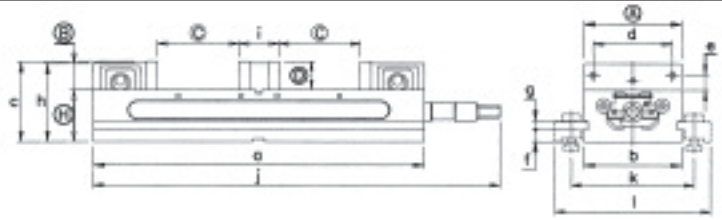
Stepped jaw plate for thin workpiece.
Max. Capacity: 215mm (8.4")
275mm (10.8")



Clamping 2 different workpieces.
Max. Capacity: 215mm (8.4")
275mm (10.8")



Large thin workpiece is able to be clamped after removing jaw plate on fixed jaw.
Max. Capacity: 405mm (15.9")
520mm (20.5")



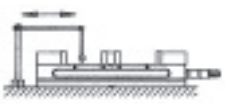
Dimensional Information For Double Clamp Vises

(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)

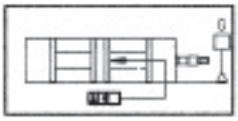
Inspection Specification:

1 

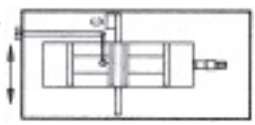
Parallelism: running face to bottom of bed.
Guaranteed: 0.01 mm (0.0004")

2 

Squareness: between running face and jaw plate.
Guaranteed: 0.03 mm (0.0012")

3 

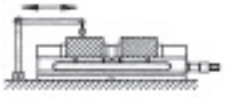
Squareness both sides to fixed jaw plate.
Guaranteed: 0.02 mm (0.0008")

4 

Parallelism: keyways on bottom of bed to jaw plate.
Guaranteed: 0.02 mm (0.0008")

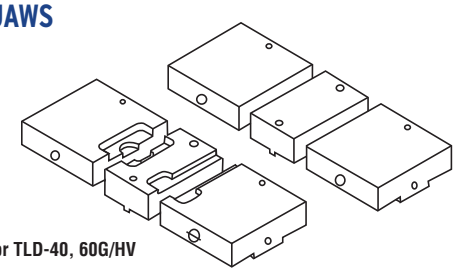
5 

Squareness: keyways on bottom of bed to jaw plate.
Guaranteed: 0.02 mm (0.0008")

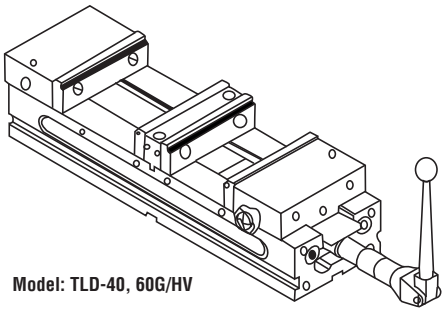
6 

Parallelism: running face of the test block to bottom.
Guaranteed: 0.02 mm (0.0008")

MACHINABLE FIXTURE JAWS



Soft Jaws for TLD-40, 60G/HV



Model: TLD-40, 60G/HV

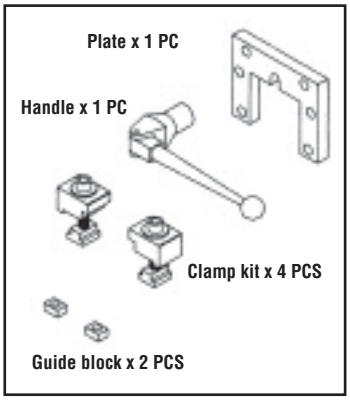
Machinable Fixture Jaws

Description	Code No.	Price $
4" aluminum soft jaws	382-612	**735.90**
4" step jaws	382-614	**331.60**
6" aluminum soft jaws	382-602	**1,124.10**
6" step jaws	382-604	**403.40**

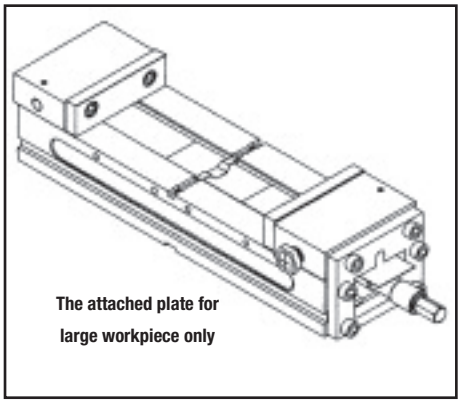
Steel Jaw Sets

Model No.	Code No.	Price $
4" steel jaw set for TLD40	382-615	**473.40**
6" steel jaw set for TLD60	382-605	**599.70**

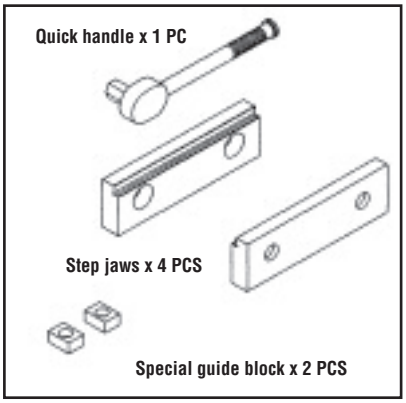
Standard Accessories



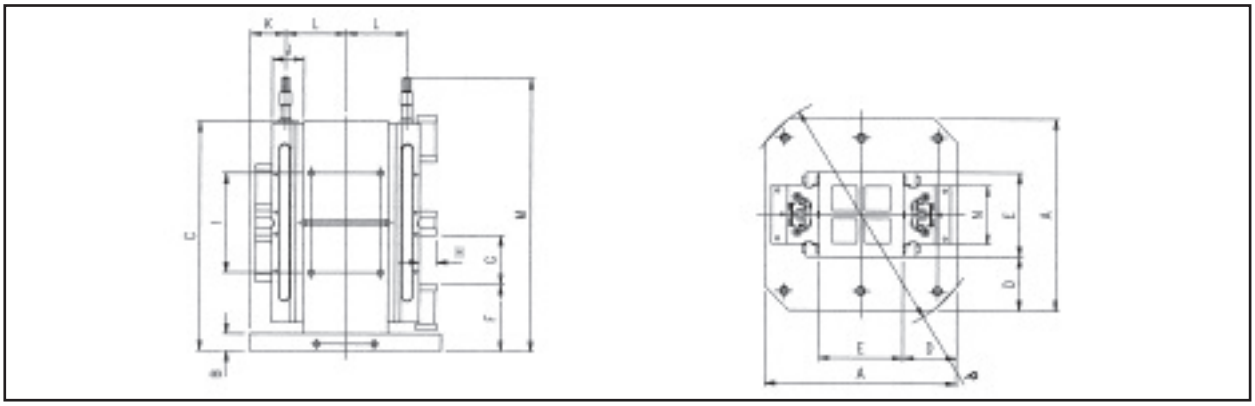
Usage of "Plate"



Optional Accessories



JIG BLOCK



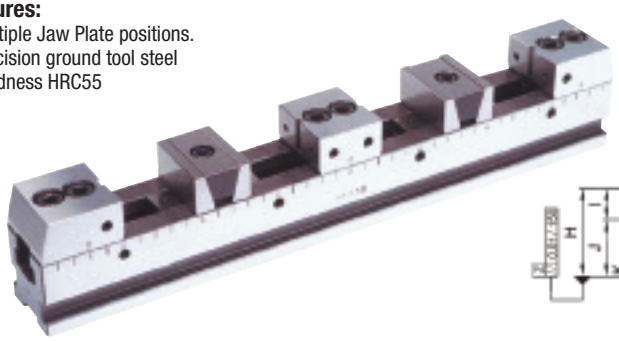
Jig Block Dimensional Specifications

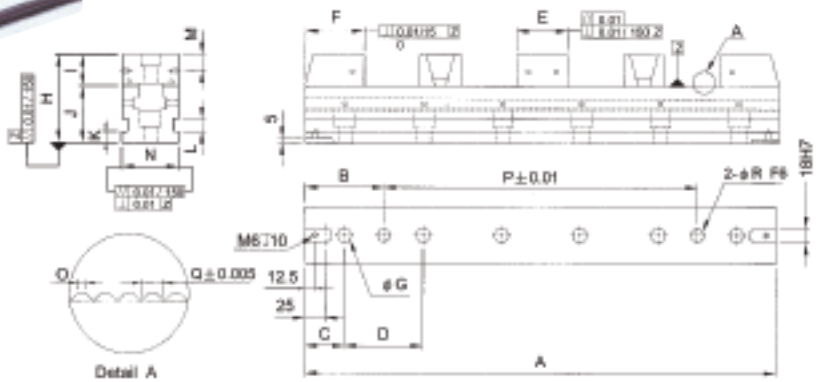
(mm/in.)

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

Flexible Line Modular Vises

Features:
- Multiple Jaw Plate positions.
- Precision ground tool steel
- Hardness HRC55





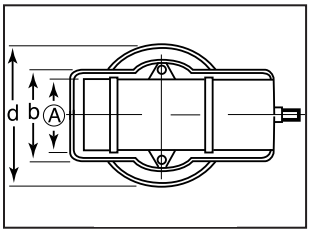
Model No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	kgs.	Code No.	Price $
VFL-5030	300	70	30	80	44	50	13	75	24.8	50	10	12	12.5	50	0.5	160	1.5	12	7	230-400	**4,087.30**
VFL-5030G	300	100	50	100	44	50	13	75	24.8	50	10	12	12.5	50	0.5	100	1.5	12	7	230-405	**4,087.30**
VFL-5040	400	80	40	80	44	50	13	75	24.8	50	10	12	12.5	50	0.5	240	1.5	12	9	230-410	**4,524.40**
VFL-5040G	400	100	50	100	44	50	13	75	24.8	50	10	12	12.5	50	0.5	200	1.5	12	9	230-415	**4,524.40**
VFL-5050	500	90	50	80	44	50	13	75	24.8	50	10	12	12.5	50	0.5	320	1.5	12	10	230-420	**5,127.50**
VFL-5050G	500	100	50	100	44	50	13	75	24.8	50	10	12	12.5	50	0.5	300	1.5	12	10	230-425	**5,127.50**
VFL-5060	600	100	60	80	44	50	13	75	24.8	50	10	12	12.5	50	0.5	400	1.5	12	11	230-430	**6,236.50**
VFL-5060G	600	100	50	100	44	50	13	75	24.8	50	10	12	12.5	50	0.5	400	1.5	12	11	230-435	**6,236.50**
VFL-5070	700	110	70	80	44	50	13	75	24.8	50	10	12	12.5	50	0.5	480	1.5	12	14	230-440	**7,043.80**
VFL-5070G	700	100	50	100	44	50	13	75	24.8	50	10	12	12.5	50	0.5	500	1.5	12	14	230-445	**7,043.80**
VFL-7240	400	100	50	100	65	75	18	110	39.7	72	14	16	21.3	72	0.7	200	2.0	16	19	230-450	**6,334.10**
VFL-7250	500	100	50	100	65	75	18	110	39.7	72	14	16	21.3	72	0.7	300	2.0	16	25	230-455	**6,937.30**
VFL-7260	600	100	50	100	65	75	18	110	39.7	72	14	16	21.3	72	0.7	400	2.0	16	27	230-460	**7,540.60**
VFL-7270	700	100	50	100	65	75	18	110	39.7	72	14	16	21.3	72	0.7	500	2.0	16	30	230-465	**9,923.60**

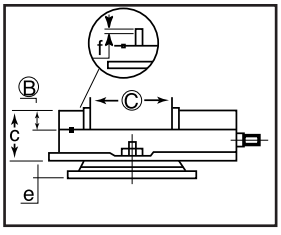
Lock-Well Precision Milling Vises

Jaw Plate Positions

Lock-Well vises have these quality features:
- 4 Jaw Plate positions allowing extra capacity with the jaw plates in the outside position
- The other quality movable jaw does not lift off the bed, and deflection of the stationary bed is minimized
- The lead screw is enclosed for maximum protection
- The swivel base is graduated 360 degrees in one degree increments



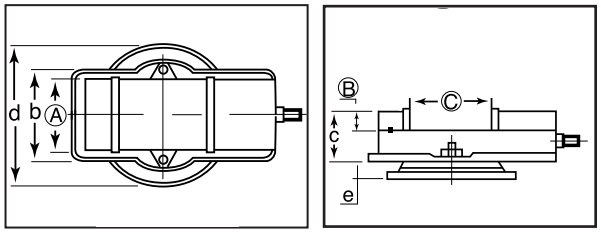


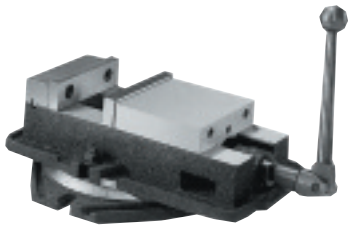


Capacity		I	II	III	IV
Model No.	Capacity				
ATW-40	100	104	150	218	267
ATW-50	125	130	178	262	318
ATW-60	150	146	202	305	368
ATW-80	200	200	280	395	476

Model No	A	B	C	Overall Length	b	c	d	e	f	Weight Plain Kg	Plain Base Code No.	Price $	Weight with Base Kg	With Swivel Base Code No.	Price $
ATW-40	100	32	104	320	165	89	245	32	6.5	16	327-100	**776.70**	20	327-105	**878.90**
ATW-50	125	38	130	370	194	97	254	35	8	25	327-110	**838.00**	32	327-115	**1,021.90**
ATW-60	150	44	146	425	210	117	300	41	9.5	36	327-120	**981.00**	48	327-125	**1,205.70**
ATW-810A	200	57	250	552	295	141	380	47	11	70	327-130	**2,084.30**	100	327-135	**2,472.50**

Milling Vises



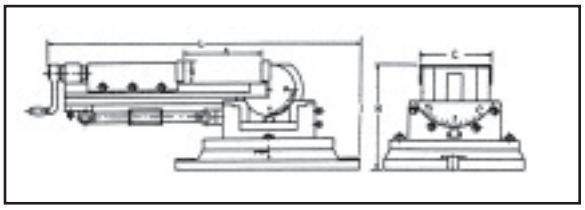


Model No.	A	B	C	O.A.L.	b	c	d	e	With Swivel	Price $	Without Swivel	Price $	Swivel Only	Price $
CH-4	4	1-1/8	4	12-9/16	6-1/2	3-1/2	9-3/4	1-1/4	326-405	**685.60**	326-420	**649.50**	326-423	**91.60**
CH-6	6	1-1/2	5-3/4	16-3/4	8-1/4	4-3/8	11-3/4	1-5/8	326-410	**815.40**	326-425	**737.50**	326-427	**188.40**
CH-8	8	2	8	21-3/4	11-5/8	5-5/16	15	1-7/8	326-415	**1,745.00**	326-430	**1,661.80**	326-433	**229.90**

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

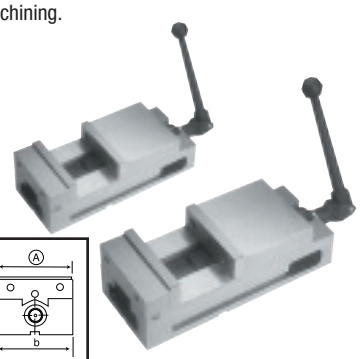


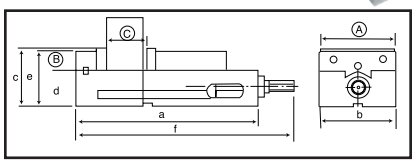


Model No.	Width	Jaw A	B	H	L	Height at Vertical Position	Gross Weight (kg)	Measure CFT	Code No.	Price $
KAV-75	80	90	30	144	400	385	(C) 15	0.7	326-100	**790.30**
KAV-100	106	105	38	172	460	470	(C) 32	1.2	326-102	**961.10**
KAV-125	132	140	40	205	625	590	(W) 50	1.6	326-104	**1,324.20**

Precision Lock-Well II Milling Vises

This slightly modified version of the famous AUTO-WELL Lock-Well vise has features including the exclusive LOCK DOWN principle 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	327-150	**940.20**
AMC-60	152	44	146	370	154	117	73	111	438	30 kg	327-155	**1,195.50**

Tilting Hydraulic Machine Vises

- Angle setting ranges from 0º ~ 50º. Tilting degrees graduated for easy reading.
- Swivel base graduated to 360º and fixable in any position
- Accuracy within 0.02mm
- Tilting seat set by two locking screws

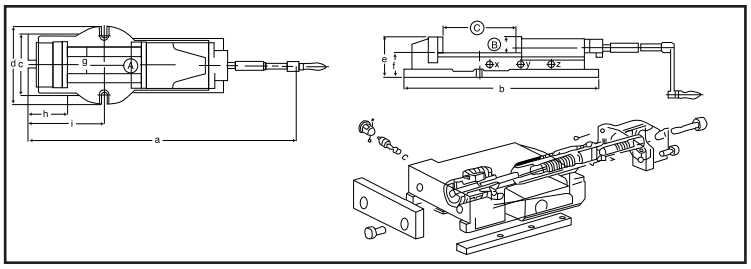


Model	Jaw Width	Jaw Height	Jaw Opening	Weight (kg)	Code No.	Price $
VHT-4	110mm	36mm	170mm	33.3	326-105	**2,328.20**
VHT-6	154mm	54mm	300mm	88	326-107	**2,816.40**

Lock-Well 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)





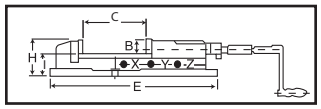
Seal Kits

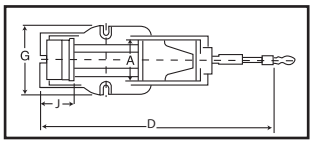
Vise Model	Code No.	Price $
HP-40	327-201	**77.60**
HP-50	327-211	**90.70**
HP-60	327-221	**90.70**
HP-80	327-231	**106.60**

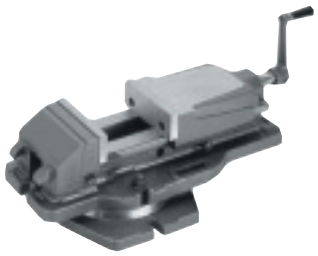
Model No.	A	B	C	a	b	c	d	e	f	g	h	i	Clamp Force	Wt. (kg) Plain	Plain Base Code No.	Price $	Wt (kg) with Swivel Base	With Swivel Base Code No.	Price $
HP-40	100	36	170	525	430	130	160	94	60	78	100	155	2500kg	16	327-200	**1,839.10**	22	327-205	**1,982.10**
HP-50	125	46	220	670	540	165	185	118	72	97	117	185	3500kg	32	327-210	**1,869.80**	42	327-215	**2,186.50**
HP-60	150	51	300	800	620	200	240	133	82	116	125	247	4400kg	54	327-220	**1,941.30**	70	327-225	**2,258.00**
HP-80	200	62	300	900	700	240	280	162	100	160	165	266	6600kg	95	327-230	**3,596.40**	125	327-235	**4,045.80**

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





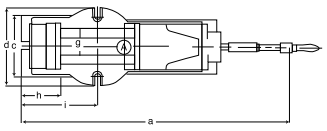


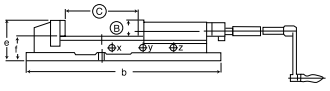
Model No.	A	B	C	D	E	G	H	I	J	Clamp Force	G.W. (kg)	Plain Base Code No.	Price $	Wt (kg) with Swivel Base	With Swivel Base Code No.	Price $
HP-40G	100	36	170	525	430	160	94	60	78	2500kg	22	329-205	**1,292.00**	26	329-200	**1,537.70**
HP-50G	127	46	220	670	540	185	118	72	97	4500kg	45	329-215	**1,366.80**	52	329-210	**1,652.90**
HP-60G	150	51	300	800	620	240	133	82	116	6000kg	64	329-225	**1,471.50**	74	329-220	**1,825.90**
HP-80G	200	65	300	800	710	280	158	100	161	8500kg	109	329-235	**2,840.00**	125	329-230	**3,534.00**

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	327-240	**1,941.30**	16	327-245	**269.90**

Suburban

Suburban Precision Vises

Angled channel provides extra jaw capacity. Jaw can be opened or closed without unbolting from work surface. Squareness and parallelism within 0.0002". Models V-411 & V-612 squareness and parallelism within 0.0003".
V-237 has recessed pockets at both ends for clamping, vees machined in face of movable jaw and 12 stepped channel which eliminates side holes.



Model No.	Dimensions (in.)	Jaw Capacity (in.)	Code No.	Price $
V-225	2 x 5-1/2 x 2	3-1/8	251-200	**684.10**
V-237	3 x 7-1/2 x 2-3/8	4	251-206	**875.60**
V-411	4 x 11 x 3	7-1/2	251-216	**1,524.80**
V-612	6 x 12 x 3-1/2	8-1/2	251-224	**2,264.60**

stm

Toolmaker Vises

- Solid one piece body
- Square and parallel within 0.0002" and 0.0003"
- Angled centre channel provides extra jaw capacity



Model No.	Length (mm)	Width (mm)	Jaw Opening (mm)	Jaw Height (mm)	Code No.	Price $
YCT-VB20	140	48	65	25	230-815	**143.90**
YCT-VB25	170	63	90	35	230-820	**175.80**
YCT-VB30	180	73	90	35	230-825	**190.60**
YCT-VB35	225	88	125	45	230-830	**292.80**
YCT-VB40	225	98	125	45	230-835	**386.70**
YCT-VB50	287	125	150	50	230-836	**583.50**

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	230-840	**722.30**
VSTV-100W	100mm	24mm	50mm	4.9	230-842	**1,874.30**
VSTV-150W	150mm	24mm	60mm	6.8	230-844	**3,753.30**

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 & robust vises, machined to close tolerances, are designed for smooth operation and reliability.



Jaw Size	Code No.	Price $
4	231-400	**223.50**
5	231-405	**324.10**
6	231-410	**432.00**

Bench Vises With Swivel

- Steel serrated jaws
- Heavy duty cast iron body



Jaw Size	Code No.	Price $
4	326-785	**99.50**
5	326-790	**156.60**
6	326-795	**300.80**

Multi-Purpose Bench & Pipe Vises

- Ground anvil, two axis
- Jaws can be rotated 360°, stop every 45°
- Steel Pipe Jaws



Jaw Size	Code No.	Price $
4	326-770	**294.00**
5	326-775	**402.50**
6	326-780	**670.70**

Milling Machine Vises For Round Workpieces

These vises are used for clamping round workpieces with diameters from 25/64" to 6-1/3" for use on a milling machine or drill press.



Jaw Width	Shaft Capacity	Weight (lb)	Code No.	Price $
6	2 to 6-1/2	165	401-003	**4,700.30**

Drill Press Vises

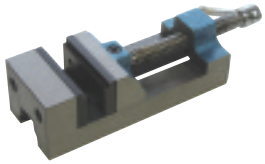
- High tensile iron casting
- Cold rolled screw thread
- Plain jaws of special steel



Jaw Width	Opening (in.)	Jaw Depth	Weight (lb)	Code No.	Price $
3	3	1-1/8	6	370-206	**66.60**
4	4	1-3/8	10	370-211	**86.70**
5	5	1-1/2	17-1/2	370-216	**152.80**
6	6	1-1/2	23	370-221	**177.70**

Drill Press Vise P250

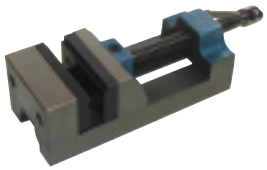
- High tensile iron casting
- Jaw plates – one grooved and one plain
- Accurate machining and assembling
- Four sides and one end machined



Jaw Width	Jaw Depth	Opening (in.)	Length	Weight (lb)	Code No.	Price $
2-1/2	1-1/2	2-9/16	7-1/4	5-1/2	370-226	**88.20**

Drill Press Vises P350 & P400

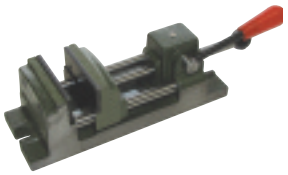
- Rugged 3 inch and 4 inch
- Precision cut Acme thread screw
- Hexagonal screw head for tight clamping



Jaw Width	Jaw Depth	Opening (in.)	Length	Weight (lb)	Code No.	Price $
3	1-3/4	3	9-1/4	9-3/4	370-236	**102.50**
4	1-3/4	4	10-3/4	17	370-241	**160.00**

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	326-485	**489.30**
V-100	4	1-15/16	4-11/16	326-490	**582.00**

Heavy Duty Drill Press Vises

- A vise designed especially for the professionals who require a heavy vise
- Manufactured from close grained cast iron, this vise offers a ground vise bed for smooth & consistent jaw movement
- Jaws are hardened & ground with cross-patterned 90° V-grooves in the stationary jaw facilitating holding of round jobs both horizontally & vertically
- Rugged design makes these vises perfect for even the most difficult drilling, tapping & reaming operations



Model No.	Jaw Width	Opening (in.)	Jaw Depth	Code No.	Price $
DPV/60/BU	2-7/16	2-11/16	1	370-900	**196.20**
DPV/80/BU	3-3/16	3-1/2	1	370-905	**317.40**
DPV/100/BU	4	4	1-1/4	370-910	**354.90**
DPV/120/BU	4-3/4	5-13/16	1-11/16	370-915	**606.80**
DPV/150/BU	6	6-5/8	2	370-920	**793.20**

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 work pieces.
- Vises are equipped with a convenient unigrip mechanism. Spindle moves inside the hollow hand grip allowing the vise to be used at a location away from the table edge. This feature increases the scope of application of this range of vises.
- This vise is also 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 cumbersome and 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	370-925	**129.90**
DPV/UG-100	4	3-1/2	13/16	370-930	**151.50**
DPV/UG-125	5	4-15/32	1-3/8	370-935	**230.70**
3 WAY Drill Press Vise					
DPV/UG/3/100	4	3-1/2	13/16	370-940	**205.50**

SG Iron Unigrip Drill Press Vise

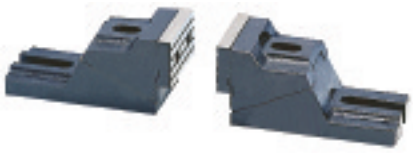
- Manufactured from SG Iron makes them amongst the strongest vises in the market - virtually unbreakable.
- Only Drill Vise that can also be used as a milling vise
- Equipped with long mounting slots for easy adjustment on the machine table
- Fixed jaw has horizontal and vertical V slots for holding round jobs
- Both jaws have a seat for retaining flat & low height work pieces
- 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	370-945	**155.80**

Free Style Vises

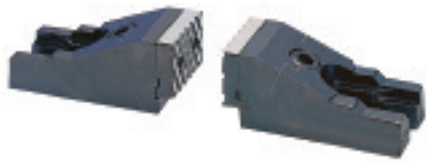
- Free style clamping
- Light duty



Model	Dimensions WxHxL	Clamping Capacity HxL	Weight (2pcs) (kg)	Code No.	Price $
FV-350	75x67x150mm	140x350mm	7.5	326-450	**350.20**
FV-450	100x90x200mm	180x450mm	14	326-455	**416.70**
FV-550	125x120x250mm	250x550mm	23	326-460	**599.90**

Heavy Duty Free Style Vises

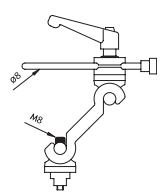
- Free style clamping
- Heavy duty



Model	Height (mm)	Width (mm)	Length (mm)	Weight (2pcs) (kg)	Code No.	Price $
SV-62	59.5-80.5	64	139	5.8	326-465	**484.80**
SV-85	86-110	86.5	192	11	326-470	**772.70**
SV-125	84-117	127	218	21	326-475	**1,075.80**

U/N Work Stopper - Non-toothed

- Locking lever can be rotated a full 360º
- Arm made of anodized aluminum
- Steel hinge pins

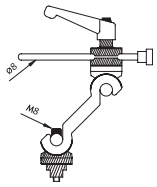




Model	T-Slot Size	Stop Pin Length	Height	Arm Length	Code No.	Price $
VWS-123	16mm	160mm	200mm	132mm	326-440	**347.30**

U/N Work Stopper - Toothed

- Locking lever can be rotated a full 360º
- 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	326-445	**364.10**

"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	231-442	**32.40**
GCL/13D/150	6"	3"	1400	231-443	**41.20**
GCL/13D/200	8"	3-1/8"	1700	231-444	**52.20**
GCL/13D/250	10"	3-1/2"	2200	231-445	**72.90**

"C" Clamps

- Drop forged steel construction for maximum clamping power
- High strength ACME screw with black oxide plating for corrosion resistance



Opening Cap.	Throat Depth	Spindle Dia.	Clamping Force (lb)	Dynamic EDP	Code No.	Price $
0-2"	2-1/4"	15/32"	2700	D090001	861-666	**12.39**
0-3"	2-1/2"	45/64"	3000	D090002	866-021	**22.59**
0-4"	3-1/4"	45/64"	3700	D090003	861-667	**27.11**
0-6"	4-1/8"	45/64"	4500	D090004	865-766	**46.43**
0-8"	5"	45/64"	5200	D090005	865-486	**65.50**
0-10"	6"	15/16"	6000	D090006	866-927	**112.94**
0-12"	6-5/16"	15/16"	8000	D090007	866-928	**143.07**

Dynamic

Pullers

- Spring-loaded jaws for quick and easy set-up for different applications
- Two or three jaw design for added flexibility
- Solid Chrome-Vanadium forged construction for increased durability
- Heavy duty forcing screw with live center for strong even pulls



Pulling Cap.	Max. Reach	Max. Spread	Dynamic EDP	Code No.	Price $
2 tons	3-1/2"	4"	D093001	865-873	**119.40**
5 tons	5-1/4"	7"	D093002	866-076	**233.69**

Dynamic

9" Locking Chain Clamp

- Flexible heavy duty chain adjusts quickly around any shape providing a secure hold even in hard to reach ares

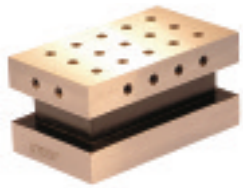


Weight. (lbs)	Overall Length	Dynamic EDP	Code No.	Price $
1.57	9"	D055311	865-877	**43.59**

Suburban

Suburban Cube

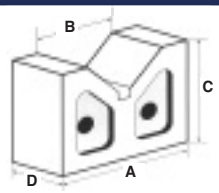
- Solid, one-piece hardened steel construction providing durable strength
- Ground on six sides with the ground surfaces flat, the cube is square and parallel within .0002"



Model No.	Dimensions	Code No.	Price $
C-36	3-1/2 x 6 x 3	251-302	**659.70**

STM

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 in 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	231-102	**69.10**
4	2-3/16	2-9/16	1-9/16	VB/C-4	231-104	**89.50**
5	2-7/16	3-1/8	2	VB/C-5	231-106	**122.20**
6	3-1/16	3-1/2	2-7/16	VB/C-6	231-108	**195.40**
8	4-1/2	5-1/2	4	VB/C-8	231-110	**473.50**
10	5	6-1/2	5	VB/C-10	231-112	**839.30**
12	5-1/8	8	6	VB/C-12	231-114	**1,229.40**

QUALITY IMPORT

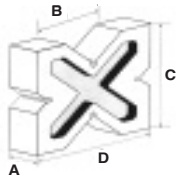
Vee Blocks - Cast Iron

Supplied in matched and numbered pairs, these vee blocks and manufactured from high quality castings, properly seasoned against distortion, and are accurately machined square and parallel. The 90° vee is centered in 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	370-556	**56.70**
1-3/4	7/8	3	2-3/8	2-5/8	2.5	370-561	**69.00**
2-1/8	1	4	2-5/8	3-1/4	5	370-566	**93.60**
2-3/8	1-1/8	5	3-1/8	4	8	370-571	**140.00**
3-1/8	1-9/16	6	3-1/2	5	15	370-576	**189.20**
3-5/8	1-13/16	7	4-1/2	6	28	370-581	**292.20**
4-1/2	2-1/4	8	5-1/2	8	44	370-586	**402.70**
5	2-1/2	10	6-5/8	10	69	370-591	**684.80**
5-1/8	2-1/2	12	8	12	132	370-596	**1,330.30**

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	231-116	**120.00**
30	100	100	20 x 30 x 40 x 50	VB/QD/100-100-30	231-118	**129.90**
35	120	120	30 x 40 x 50 x 60	VB/QD/120-120-35	231-120	**176.80**

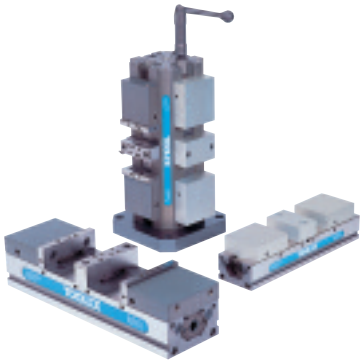
TOOLEX

RELOCK DOUBLE STATION WORKHOLDING SYSTEM

Unique Modular Design is Efficient and Accurate

Stay competitive in today's demanding manufacturing environment.

- Reduce set-up time with ReLock's modular design
- SnapLock feature allows to change or index jaws quickly
- Accurate and durable; precision manufactured from high grade materials
- Versatile array of jaws and accessories to vertical or horizontal machining applications



ReLock Workholding Systems

Size (in.)	Base Height (in.)	Base Width (in.)	Base Length (in.)	Code No.	Price $
4"	2.500	4.000	16.000	608-400	**11,577.30**
6"	3.250	6.000	20.500	608-405	**15,060.70**
8"	4.000	8.000	28.500	608-410	**39,426.10**

Single Station Conversion Plates

Size (in.)	Weight (lb)	Thickness	Code No.	Price $
4	33	.750	608-415	**270.00**
6	68	.750	608-420	**280.00**
8	110	1.00	608-425	**450.40**

Double Station Workholding Vises

Size (in.)	Weight (lb)	Clamp Pres. (lb)	Code No.	Price $
4	33	6000	608-600	**2,689.90**
6	68	12000	608-605	**2,939.90**

SnapLock Machinable Fixture Jaw Sets

- Set of 3; 2 outside jaws, 1 centre jaw

Model No.	Size (in.)	Thickness (in.)	Code No.	Price $
SSJ - 4000	4	1.500	608-445	**367.50**
SSJ - 6000	6	2.000	608-450	**653.30**
SSJ - 8000	8	2.500	608-455	**1,103.60**

SnapLock Carrier Jaws

- Set of 2 outside jaws
- Aluminum, threaded

Model No.	Size (in.)	Thread	Code No.	Price $
SCJ - 4000	4	3/8-16	608-460	**305.70**
SCJ - 6000	6	1/2-13	608-465	**616.00**
SCJ - 8000	8	5/8-11	608-470	**1,113.00**

Quick Change ToolMaker/MoldMaker Packages

Model No.	Size	Code No.	Price $
QTM–4000	4"	608-490	**3,261.80**
QTM–6000	6"	608-492	**3,919.80**
QTM–8000	8"	608-494	**4,853.10**

AccuSnap Master Jaws

- Only available for RELOCK Workholding System

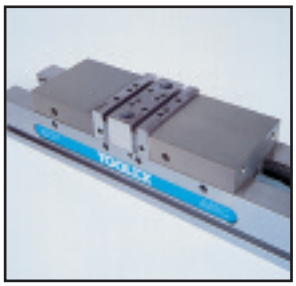
Model No.	Size	Width (in.)	Code No.	Price $
AMJ - 4035	4"	3.98	608-475	**781.70**
AMJ - 6035	6"	5.98	608-480	**900.00**
AMJ - 8035	8"	7.98	608-485	**1,227.50**

AccuSnap Parallel Sets

Model No.	Spec.	Size (in.)	Parallels	Code No.	Price $
APS - 4000	Basic	4	5 Pairs	608-500	**732.70**
APS - 4001	Adv.	4	8 Pairs	608-505	**1,222.60**
APS - 6000	Basic	6	5 Pairs	608-510	**932.50**
APS - 6001	Adv.	6	9 Pairs	608-515	**1,504.90**
APS - 8000	Basic	8	6 Pairs	608-520	**1,347.50**
APS - 8001	Adv.	8	10 Pairs	608-525	**2,057.90**

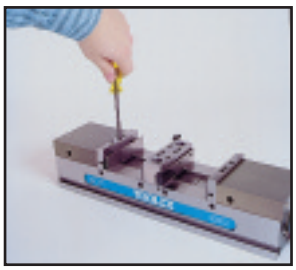
SnapLock Machinable Fixture Jaws

- Versatile to allow job customization
- Remove or index in a matter of seconds



AccuSnap Vise Jaw System

- Picture shows master jaw, parallels and modular workstop
- Highly accurate set-up and changeover



ReLock-8 Station

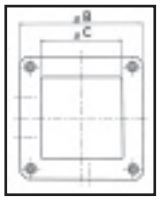
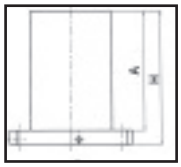
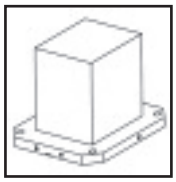
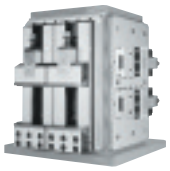
- Unibody design
- Ideal for horizontal machining centres and rotary indexers on vertical machining centres



SMW AUTOBLOK

Tombstones Only Milled

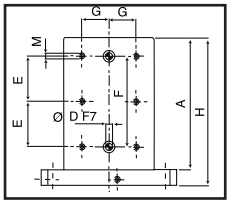
- 5th face available on request
- Special tombstones available on request

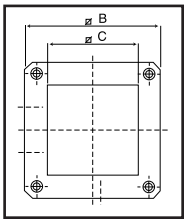





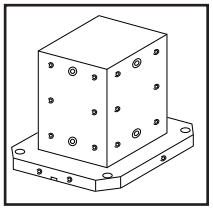
A (mm)	B (mm)	C (mm)	H (mm)	Weight (kg)	Code No.	Price $
255	250	160	295	55	485-600	**3,216.10**
335	320	200	375	91	485-605	**3,404.70**
315	400	250	355	134	485-610	**3,939.00**
415	400	250	455	158	485-615	**4,064.70**
415	500	350	455	245	485-620	**5,311.30**
515	500	350	555	280	485-625	**5,510.40**
515	630	450	560	414	485-630	**6,987.50**
615	630	450	660	459	485-635	**7,217.90**
615	630	550	660	551	485-640	**8,181.70**
815	630	550	860	665	485-645	**8,747.40**
645	800	550	700	623	485-650	**10,109.30**
845	800	550	900	735	485-655	**11,586.40**

Tombstones For Plates

- 5th face available on request
- Special tombstones available on request

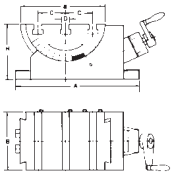
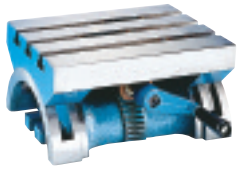






A (mm)	B (mm)	C (mm)	H (mm)	øD (mm)	M	E (mm)	F (mm)	G (mm)	Weight (kg)	Code No.	Price $
255	250	160	295	12	M 10	80	160	40	55	485-660	**4,504.70**
355	320	200	375	12	M 10	120	240	60	91	485-665	**4,693.20**
315	400	250	355	16	M 12	100	200	75	134	485-670	**5,269.40**
415	400	250	455	16	M 12	150	300	75	158	485-675	**5,583.70**
415	500	350	455	16	M 12	150	300	125	245	485-680	**6,746.50**
515	500	350	555	16	M 12	200	400	125	280	485-685	**6,987.50**
515	630	450	560	16	M 12	200	400	175	414	485-690	**8,537.90**
615	630	450	660	16	M 12	250	500	175	459	485-695	**8,956.90**
615	630	550	660	16	M 12	250	500	225	551	485-700	**9,805.50**
815	630	550	860	16	M 12	350	700	225	665	485-705	**10,465.50**
645	800	550	700	16	M 12	250	500	225	623	485-710	**11,890.20**
845	800	550	900	16	M 12	350	700	225	735	485-715	**13,964.40**

Adjustable Swivel Angle Plate

Special Features:

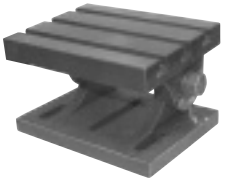
- The CL Adjustable Swivel Angle Plate is mainly used for precise angle finishing, suitable for wide purposes
- **CL-1 is Bolt Lock Style**

Model No.	A	a	B	C	D	H	T-Slots	Code No.	Price $
CL-1	252	180	125	55	14	115	3	326-126	**1,513.50**
CL-2	300	240	180	65	16	150	3	326-128	**970.70**

Swivel Angle Plate

BRE-200, BRE-300

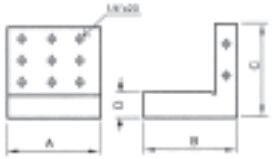
Special design for angle setting on various machine tools.

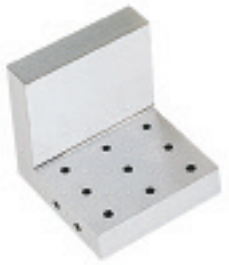



Model No.	Table B	Table A	H	T-Slot E	Weight (kg)	Code No.	Price $
BRE-200	150	200	120	10	12	326-114	**601.20**
BRE-300	255	300	190	14	47.5	326-118	**1,388.80**

Precision Steel Angle Plates

VRS Precision Steel Angle Plates
- Material: YK30 Alloy Steel
- Hardness: HRC 58
- Accuracy: 0.005/100mm





Model No.	A	B	C	D	Net Wt.	Code No.	Price $
VRS-33	75	75	100	25	2.2 kg	370-400	**373.00**
VRS-44	100	100	100	25	3.7 kg	370-402	**406.20**
VRS-46	100	100	150	25	4.5 kg	370-404	**467.50**
VRS-85	200	120	200	40	14.3 kg	370-406	**1,265.30**
VRS-1206	300	150	300	50	32.3 kg	370-408	**2,191.40**

Stepped Angle Plates

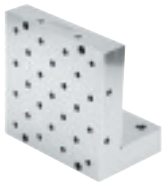
Manufactured from a single piece of hardened tool steel, these angle plates are precision ground, square and parallel.



Size (in.)	Thread Specs. of Tapped Holes	Model No.	Code No.	Price $
3 x 3 x 3	1/4" BSW	STP/3	231-282	**305.10**
4 x 4 x 4	5/16" BSW	STP/4	231-284	**453.20**

Suburban Precision Ground Angle Plates

- Solid one piece angle plates are made from hardened steel
- Square and parallel within .0002"
- Tapped holes







Model No.	Dimensions (in.)	Weight (lb)	Code No.	Price $
AP-334	3 x 3 x 4 x 1	6 lb	251-260	**383.00**
AP-444-S1	4 x 4 x 4 x 1	10 lb	251-264	**581.40**
AP-446-S2	4 x 4 x 6 x 1	14 lb	251-276	**715.40**
AP-664-S1	6 x 6 x 4 x 1-1/4	20 lb	251-278	**1,079.20**

Suburban Compound Angle Plate

Solid, single piece, hardened steel construction provides stable and reliable positioning for compound use. Comes with one clamp and all holes are tapped. Plate is square and parallel within .0002".



Model No.	Dimensions	Weight (lb)	Code No.	Price $
CAP-46	6 x 4 x 4 x 1	11	251-280	**1,296.80**

Sine Bar

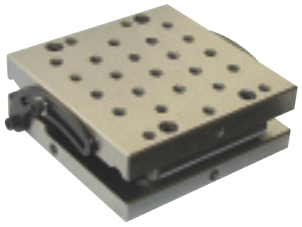
- Effectively cancels the angle being measured to check its accuracy
- Ground flat, square and parallel within 0.0002"
- Steel hardened to Rc 52



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	HRC52	3/4	SK2	1.0kg	230-760	**144.50**
YCT-S50	6-3/8	2	1-1/4	5"	0.00012	HRC52	3/4	SK2	1.9kg	230-765	**192.50**

Sine Plates

YCT-66/YCT-47 Sine Plates
Precision ground, hardened to HRC58 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	230-780	**721.00**
YCT-66	6 x 6	2.37	230-785	**768.90**
YCT-47M Magnetic	100 x 175 mm	60 mm	230-770	**1,681.80**
YCT-66M Magnetic	150 x 150 mm	60 mm	230-775	**1,849.90**

Sine Vises

- Body is one solid piece of steel, hardened like the rest of the sine vise to Rc 58-62
- Dual .200" minute steps for setting small angles with standard gauge blocks are built into the gauge block roll
- All 7-1/2" x 3" 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



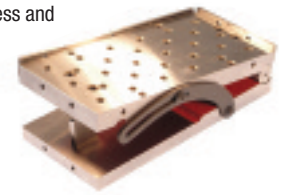
Model No.	Size (in.)	Code No.	Price $
YCT-SV25	3-1/2 x 2-1/2	230-705	**271.70**
YCT-SV30	3-1/2 x 2-7/8	230-710	**399.30**
YCT-SV200	2-3/8 x 2	230-715	**841.00**
YCT-SV250	2-7/8 x 2-1/2	230-720	**792.90**
YCT-SC300	3-3/8 x 3	230-725	**1,081.20**

Suburban SineSet® System

The complete system of bolt-together tools

Suburban Sine Plates

All plates are made of hardened steel. Squareness and parallelism .0002" and .0003". Locking strap always remains below top surface (pat. pending). Adjustable side rails drop below surface without unbolting. A .200 minute stepped gauge block roll eliminates steps in base plate. Strong, large hinge pins. Tapped holes in top plate. Side rails and locking straps included.



Model No.	Dimensions	Centre Distance of Rolls	Code No.	Price $
SP-44-S0	4 x 4 x 2	3" ± .0002"	251-942	**866.90**
SP-136 (not SineSet®)	6 x 3 x 2	5" ± .0002"	251-126	**866.90**
SP-555 (not SineSet®)	6 x 5 x 2-1/4	5" ± .0002"	251-132	**1,444.70**
SP-66-S1	6 x 6 x 2	5" ± .0002"	251-136	**1,270.70**
SP-612-S2	6 x 12 x 2-5/8	5" ± .0002"	251-134	**2,548.30**
SP-618-S2	6 x 18 x 3-3/8	5" ± .0002"	251-944	**7,258.30**
SP-812-S2	8 x 12 x 2-5/8	5" ± .0002"	251-140	**3,201.00**
SP-1212-S2	12 x 12 x 2-5/8	10" ± .0002"	251-122	**5,752.70**
SP-126-S2	12 x 6 x 2-5/8	10" ± .0002"	251-124	**2,523.90**

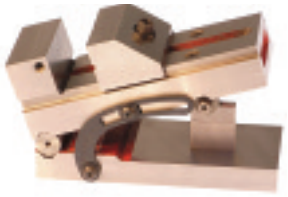
Suburban Magnetic Sine Plates

Ceramic permanent magnetic chucks can't lose their magnetism. Removable handle for on/off operation, end rails and side rails all included. Sine plate angles lock rigidly with locking straps. Squareness, parallelism and roll centre distances within .0002" and .0003". Unit features .200 minute angle steps.



Model No.	Dimensions	Centre Distance of Rolls	Code No.	Price $
MSP-66 (not SineSet®)	6 x 6 x 4-1/4	5" ± .0002"	251-086	**2,750.20**
MSP-66-S1	6 x 6 x 4-5/8	5" ± .0002"	251-936	**2,926.00**
MSP-126-S2	6 x 12 x 5-1/4	10" ± .0002"	251-066	**4,496.00**
MSP-612-S2	6 x 12 x 5-1/4	5" ± .0002"	251-082	**4,520.40**
MSP-618-S2	6 x 18 x 6	5" ± .0002"	251-938	**9,907.50**
MSP-1212-S2	12 x 12 x 5-1/4	10" ± .0002"	251-062	**12,757.40**
Magnetic Fine Pole Plates				
MSP-363-FP (not SineSet®)	3 x 6 x 4-1/4	5" ± .0002"	251-072	**1,975.60**
MSP-66-FP (not Sine Set®)	6 x 6 x 4-1/4	5" ± .0002"	251-088	**2,983.40**
MSP-126-FP-S2	6 x 12 x 5-1/4	10" ± .0002"	251-068	**4,774.50**
MSP-612-FP-S2	6 x 12 x 5-1/4	5" ± .0002"	251-084	**4,798.90**
MSP-1212-FP-S2	12 x 12 x 5-1/4	10" ± .0002"	251-064	**13,314.40**

Suburban Sine Vises

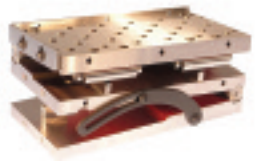


- Solid, one piece body
- Locking strap included
- Made from steel hardened to Rc 58-62
- Square and parallel within 0.0002" and 0.0003"
- Angled centre channel provides extra jaw capacity
- Provides a quick and accurate means of holding a workpiece at an angle for grinding or inspection
- Dual 0.200" minutes steps built into the gauge roll allow setting small angles with standard gauge blocks
- Moveable jaw pulls into base at 45° to 60° to insure maximum holding power and hold-down force, eliminating tilting and lifting

Model No.	Size (in.)	Code No.	Price $
SV-337 (not SineSet®)	7-1/2 x 3 x 3-5/8	251-160	**1,432.60**
SV-337-S1	7-1/2 x 3 x 3-5/8	251-162	**1,497.00**
SV-411 (not SineSet®)	11 x 4 x 4-5/8	251-166	**2,341.10**
SV-411-S2	11 x 4 x 4-5/8	251-168	**2,426.40**
SV-612 (not SineSet®)	12 x 6 x 5-1/8	251-170	**4,012.10**
SV-612-S2	12 x 6 x 5-1/8	251-172	**4,142.70**

Suburban Compound Sine Plates

Compound sine plates include two end rails and two straps for locking angle settings. Made of hardened steel, each compound sine plate has .002" deep step for minute angles and tapped holes in top plate. Squareness and parallelism .0003".



Model No.	Dimensions	Centre Distance of Rolls	Code No.	Price $
SPC-66-S1	6 x 6 x 3	5" within .0002"	251-150	**2,734.50**
SPC-612-S2	6 x 12 x 4-1/8	5" within .0002"	251-148	**4,496.00**
SPC-618-S2	6 x 18 x 5-3/8	5" within .0002"	251-940	**10,135.50**
SPC-1212-S2	12 x 12 x 4-1/8	10" within .0002"	251-144	**9,317.40**

Suburban Compound Magnetic Sine Plates

Ceramic permanent magnetic chuck. Removable handle for position on/off control, side rails, end rails all included. Strap locks sine plate securely. .200 minute angle steps with .0002" and .0003" tolerance in squareness, parallelism and roll centre distances.

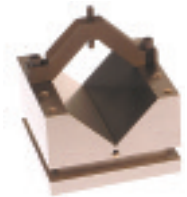
- Fine Pole: (marked FP) 1/8" poles and 1/8" separators produce shallow flux lines for holding small and thin parts

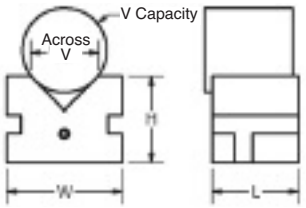


Model No.	Dimensions	Centre Distance of Rolls	Code No.	Price $
MSPC-66-S1	6 x 6 x 5-3/4	5" ± .0002"	251-102	**4,389.80**
MSPC-612-S2	6 x 12 x 6-13/16	5" & 10" ± .0002"	251-098	**6,468.10**
MSPC-1212-S2	12 x 12 x 6-13/16	10" ± .0002"	251-094	**17,510.40**
MSPC-66-FP-S1	6 x 6 x 5-3/4	5" ± .0002"	251-104	**4,596.90**
MSPC-612-FP-S2	6 x 12 x 6-13/16	5" & 10" ± .0002"	251-100	**6,746.60**
MSPC-1212-FP-S2	12 x 12 x 6-13/16	10" ± .0002"	251-096	**18,067.40**

Suburban SineSet® V-Blocks

- Provides a quick, accurate & positive means of holding workpieces for layout, machining, grinding or inspection.
- Solid one-piece steel construction, hardened to Rc 58-60.
- One reversible, swing-away clamp is provided with each v-block.
- Side slots allow easy clamping to almost any work surface.
- SineSet® models bolt directly to a SineSet® sine plate or compound sine plate of the same series. S1 models also bolt to the AP-664-S1 90° conversion plate.
- Available in both 60° and 90° models and as single vee blocks or matched pairs.
- M = Matched pairs



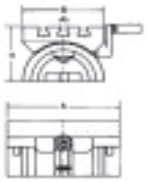


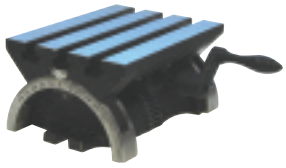
Model No.	L	W	H	Across Vee	Vee Cap.	Square Parallel & Central	Code No.	Price $
90° Vee Blocks								
VB-222-S0	2-1/2"	2-1/2"	2"	1-15/32"	1-5/8"	.0002"	251-946	**320.30**
VB-222-M-S0	2-1/2"	2-1/2"	2"	1-15/32"	1-5/8"	.0002"	251-948	**661.50**
VB-334-S1	3"	4"	3"	2-7/32"	2-7/8"	.0002"	251-950	**497.90**
VB-334-M-S1	3"	4"	3"	2-7/32"	2-7/8"	.0002"	251-952	**1,141.90**
VB-466-S2	6"	6"	4"	3-31/32"	4-3/8"	.0003"	251-954	**1,107.10**
VB-466-M-S2	6"	6"	4"	3-31/32"	4-3/8"	.0003"	251-956	**2,623.10**
60° Vee Blocks								
VB-602-M-S0	2-1/2"	2-1/2"	2"	1-15/32"	1-3/8"	.0002"	251-930	**1,577.00**
VB-604-S1	3"	4"	3"	1-31/32"	2-1/8"	.0002"	251-932	**866.90**
VB-604-M-S1	3"	4"	3"	1-31/32"	2-1/8"	.0002"	251-934	**2,041.80**

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



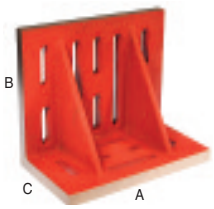


Model No.	B	Table A	H	T-Slot E	Weight (kg)	Code No.	Price $
BRA-180	130	180	91	10	7.5 kg	326-120	**345.40**
BRA-250	178	250	133	12	22.5 kg	326-122	**1,311.90**
BRA-380	260	380	185	16	69 kg	326-124	**2,277.50**

Suburban

Giant Slotted Webbed Angle Plates

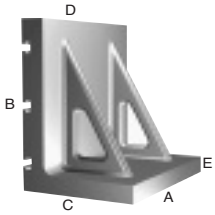
- Made of high quality fine grained cast iron, stress relieved.
- Machined finish - square and parallel within 0.002" per 6".
- Extra thickness and heavy ribbed construction.
- Multiple slots for many bolting and clamping possibilities.



Model No.	A (in.)	B (in.)	C (in.)	Wall Thickness	Weight (lb)	Code No.	Price $
GAW-161209	16	12	9	1-1/8	112	251-630	**1,079.20**
GAW-201612	20	16	12	1-1/8	200	251-632	**1,552.70**
GAW-122418	12	24	18	1-1/2	300	251-634	**3,926.80**
GAW-183024	18	30	24	1-3/4	700	251-636	**7,630.80**

Giant T-Slotted Webbed Angle Plates

- Provides an accurate vertical base for mounting vises, sub-plates, parts or fixtures.
- Standard 5/8" T-slots on a 6" grid pattern are provided on both faces.
- Made from one piece, class 40 cast iron that has been stress relieved.
- Extra heavy 2-1/2" wall thickness provides stability during milling operations.
- Faces and edges machined flat, square and parallel within 0.001" per 12".



Model No.	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	Weight (lb)	Code No.	Price $
TAP-121818	18	18	12	2-1/2	2	450	251-638	**7,232.20**
TAP-122424	24	24	12	2-1/2	2	700	251-640	**8,252.20**

Magnetic Angle Iron

- A versatile tool for layout, inspection & squaring operations.
- Combines the advantages of a universal right angle iron and a permanent magnetic chuck.
- Magnetic face is energized by turning a recessed control knob.
- Can be placed on any side for workholding.
- Heavy support rib provides structural strength and acts as a carrying handle.
- Body made from class 35-40 cast iron.

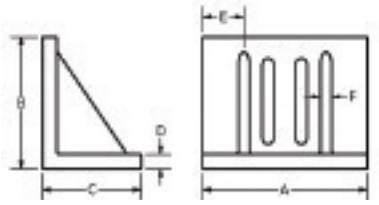


Model No.	Length	Width	Height	Flat, Square & Parallel	Weight (lbs)	Code No.	Price $
MAI-644	4-3/4	4-1/4	6-1/2	.0003"	18	251-370	**3,350.70**

Suburban

Slotted Angle Plates - Webbed Style

- Made from class 35-40 cast iron.
- Multiple clamping slots for easy mounting of workpieces.
- Ground finish (up to 20"), square and parallel within 0.0005" per 6".

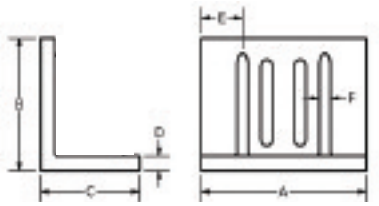




Model	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	No. Webs	Slots (in.)	Wt. (lb)	Code No.	Price $
SAW-030302-G	3-1/2	3	2-1/2	9/16	1-3/4	1/2	1	(4) 7/16)	4	251-601	**255.90**
SAW-040303-G	4-1/2	3-1/2	3	9/16	2-1/4	1/2	1	(4) 9/16	5	251-603	**243.70**
SAW-060504-G	6	5	4-1/2	11/16	3	9/16	1	(4) 11/16	13	251-605	**323.80**
SAW-070504-G	7	5-1/2	4-1/2	11/16	3-1/2	9/16	1	(4) 11/16	14	251-607	**464.80**
SAW-080605-G	8	6	5	3/4	2	5/8	2	(4) 9/16	22	251-609	**579.70**
SAW-090706-G	9	7	6	3/4	2-1/4	5/8	2	(4) 11/16	28	251-611	**712.00**
SAW-100806-G	10	8	6	7/8	2-1/2	11/16	2	(4) 11/16	37	251-613	**792.00**
SAW-120908-G	12	9	8	1	3	3/4	2	(11) 11/16	63	251-615	**1,270.70**

Slotted Angle Plates - Open End Style

- Made from class 35-40 cast iron.
- Multiple clamping slots for easy mounting of workpieces.
- Ground finish (up to 20"), square and parallel within 0.0005" per 6".



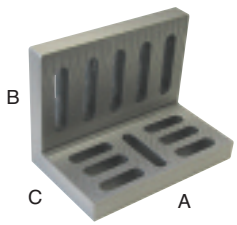


Model	A (in.)	B (in.)	C (in.)	D (in.)	Slots (in.)	Weight (lb)	Code No.	Price $
SAO-040303-G	4-1/2	3-1/2	3	5/8	(4) 9/16	4	251-617	**236.80**
SAO-060504-G	6	5	4-1/2	13/16	(7) 9/16	12	251-619	**325.50**
SAO-070504-G	7	5-1/2	4-1/2	13/16	(8) 9/16	14	251-621	**383.00**
SAO-080605-G	8	6	5	15/16	(8) 9/16	20	251-623	**447.40**
SAO-090706-G	9	7	6	15/16	(13) 11/16	24	251-625	**553.60**
SAO-100806-G	10	8	6	1-1/16	(13) 11/16	33	251-627	**858.20**
SAO-120908-G	12	9	8	1-3/16	(13) 11/16	62	251-629	**1,397.70**

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.

QUALITY IMPORT

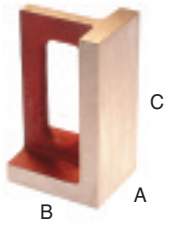


A	B	C	Webbed Code No.	Price $	Open Code No.	Price $
3	2-1/2	2	370-306	**77.20**		
3-1/2	3	2-1/2	370-311	**86.70**		
4-1/2	3-1/2	3	370-316	**98.80**	370-356	**122.80**
6	5	4-1/2	370-321	**156.40**	370-361	**180.50**
7	5-1/2	4-1/2	370-326	**190.10**	370-366	**230.90**
8	6	5	370-331	**244.30**	370-371	**269.30**
9	7	6	370-336	**304.30**	370-376	**371.40**
10	8	6	370-341	**375.00**	370-381	**420.70**
12	9	8	370-346	**575.60**	370-386	**639.20**

Suburban

Universal Right Angle Irons

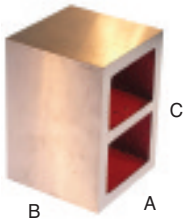
- Made of high quality fine grained cast iron, stress relieved.
- All faces and ends finished square and parallel.
- Machined finish - Square and parallel within 0.002" per 6".
- Ground finish - Square within 0.0005" per 6". Parallel within 0.00025" per 6".



Model No.										
Machined	Ground	A (in.)	B (in.)	C (in.)	Wall Thickness	Weight (lb)	Machined Code No.	Price $	Ground Code No.	Price $
URA-030405	URA-030405-G	3-3/4	4	5	3/4	10	251-642	**168.90**	251-662	**447.40**
URA-040406	URA-040406-G	4	4	6	7/8	13	251-644	**208.90**	251-664	**499.60**
URA-040506	URA-040506-G	4-1/2	5	6	7/8	16	251-646	**233.30**	251-666	**534.40**
URA-040508	URA-040508-G	4	5	8	1"	21	251-648	**315.10**	251-668	**602.30**
URA-050710	URA-050710-G	5-1/2	7	10	1-1/8	37	251-650	**456.10**	251-670	**846.00**
URA-050810	URA-050810-G	5/1/2	8	10	1-1/8	40	251-652	**483.90**	251-672	**917.30**
URA-050812	URA-050812-G	5	8	12	1-1/4	44	251-654	**496.10**	251-674	**952.20**
URA-060608	URA-060608-G	6	6	8	7/8	32	251-656	**449.10**	251-676	**886.00**
URA-080916	URA-080916-G	8	9	16	1-3/8	94	251-658	**886.00**	251-678	**1,686.70**
URA-081012	URA-081012-G	8	10	12	1-1/4	75	251-660	**778.10**	251-680	**1,268.90**

Box Parallels

- Made of high quality fine grained cast iron, stress relieved.
- All faces and ends finished square and parallel.
- Machined finish - Size ± 0.015". Square and parallel within 0.002" per 6".
- Ground finish - Size ± 0.002". Square and parallel within 0.0005" per 6".



Model No.										
Machined	Ground	A (in.)	B (in.)	C (in.)	Wall Thickness	Centre Web	Weight (lb)	Machined Code No.	Price $	Ground Code No.	Price $
BXP-040404	BXP-040404-G	4	4	4	5/8	No	12	251-682	**349.90**	251-700	**581.40**
BXP-040406	BXP-040406-G	4	4	6	3/4	No	16	251-684	**396.90**	251-702	**654.50**
BXP-040606	BXP-040606-G	4	6	6	3/4	No	20	251-686	**595.30**	251-704	**995.70**
BXP-050505	BXP-050505-G	5	5	5	3/4	No	17	251-688	**447.40**	251-706	**849.50**
BXP-051010	BXP-051010-G	5	10	10	3/4	No	73	251-690	**1,215.00**	251-708	**1,592.70**
BXP-060606	BXP-060606-G	6	6	6	3/4	Yes	25	251-692	**619.70**	251-710	**1,016.60**
BXP-060608	BXP-060608-G	6	6	8	3/4	Yes	35	251-694	**731.10**	251-712	**1,070.50**
BXP-061212	BXP-061212-G	6	12	12	3/4	Yes	105	251-696	**1,535.20**	251-714	**2,567.40**
BXP-080808	BXP-080808-G	8	8	8	5/8	Yes	71	251-698	**1,234.10**	251-716	**2,062.60**

stm

Arbor Presses

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	326-090	**117.20**
1	37	3-1/4	12	5 x 11	1-3/8	1 x 1	9-1/2	5-1/4	326-092	**168.90**
2	86	5	17	6-3/4 x 17	1-3/4	1-1/4 x 1-1/4	14	8-1/2	326-094	**384.90**
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	326-096	**608.20**
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	326-098	**1,944.30**

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	326-099	**708.90**



Te-Co & 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	Te-Co Code No.	Price $	STM Code No.	Price $
With 1" Thick Steel Step Blocks						
S-375-SS	3/8	5/16-18	607-000	**344.70**		
S-437-SS	7/16	3/8-16	607-002	**334.40**	333-546	**255.30**
S-500-SS	1/2	3/8-16	607-004	**334.40**	333-548	**232.10**
S-560-SS	9/16	3/8-16	607-006	**340.60**	333-549	**255.30**
S-562-SS	9/16	1/2-13	607-008	**366.00**	333-551	**232.10**
S-625-SS	5/8	1/2-13	607-010	**366.00**	333-552	**232.10**
S-686-SS	11/16	1/2-13	607-012	**375.20**	333-553	**269.80**
S-687-SS	11/16	5/8-11	607-014	**425.30**	333-555	**283.70**
S-750-SS	3/4	5/8-11	607-016	**431.50**	333-554	**283.70**
S-8125-SS	13/16	5/8-11	607-018	**447.80**	333-557	**312.00**
With 1-1/2" Thick Steel Step Blocks						
H-562-SS	9/16	1/2-13	607-020	**518.60**		
H-625-SS	5/8	1/2-13	607-022	**518.60**		
H-686-SS	11/16	1/2-13	607-024	**518.60**		
H-687-SS	11/16	5/8-11	607-026	**577.40**		
H-750-SS	3/4	5/8-11	607-028	**579.20**		
H-8125-SS	13/16	5/8-11	607-030	**613.10**		
H-812-SS	13/16	3/4-10	607-032	**731.90**		
H-875-SS	7/8	3/4-10	607-034	**742.90**		
H134-SS	1	3/4-10	607-036	**759.50**		
20222	1-1/16	3/4-10	607-037	**786.80**		
With 2" Thick Steel Step Blocks						
H-100-SS	1	7/8-9	607-038	**1,195.20**		
H-1062-SS	1-1/16	1-8	607-040	**1,250.40**		

Metric Kits

Model No.	Table T-Slot Size	Stud Size	Te-Co Code No.	Price $
With 25 mm Thick Steel Step Blocks				
68101	10	M8 x 1.25	608-700	**319.80**
68102	12	M10 x 1.5	608-702	**509.60**
68103	14	M10 x 1.5	608-704	**415.10**
68104	14	M12 x 1.75	608-706	**459.10**
68105	16	M12 x 1.75	608-708	**484.20**
68106	17	M12 x 1.75	608-710	**466.00**
68107	18	M16 x 2.0	608-712	**558.60**
68108	20	M16 x 2.0	608-714	**485.50**
With 38 mm Thick Steel Step Blocks				
68110	14	M12 x 1.75	608-716	**669.20**
68111	16	M12 x 1.75	608-718	**671.90**
68112	17	M12 x 1.75	608-720	**674.10**
68113	18	M16 x 2.0	608-722	**759.30**
68114	20	M16 x 2.0	608-724	**764.30**
68115	22	M20 x 2.5	608-726	**804.30**

Te-Co & 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	Te-Co Code No.	Price $	STM Code No.	Price $
With 1" Thick Steel Step Blocks					
7/16	3/8-16	607-042	**360.80**	333-530	**224.80**
1/2	3/8-16	607-044	**353.00**	333-532	**224.80**
9/16	3/8-16	607-046	**361.30**	333-534	**247.30**
9/16	1/2-13	607-048	**371.50**	333-536	**224.80**
*5/8	1/2-13	607-050	**329.40**	333-550	**186.00**
11/16	1/2-13	607-052	**357.30**	333-538	**224.80**
5/8	1/2-13	607-053	**371.20**		
11/16	5/8-11	607-054	**460.50**	333-540	**276.50**
3/4	5/8-11	607-056	**462.40**	333-542	**276.50**
13/16	5/8-11	607-058	**481.00**	333-544	**276.50**

Te-Co Machinist Clamping Kits - Metric

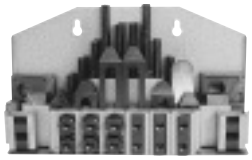
Each set contains
- 24 Studs 4 each 80, 110, 125, 150, 175, and 200mm lengths
- 6 T-slot nuts
- 6 Flange nuts
- 4 Coupling nuts
- 6 Step blocks
- 6 Serrated end clamps
- 1 T-slot cleaner
- 1 Metal holder



Table T-Slot Size (mm)	Stud Size	Weight (lb)	Code No.	Price $
With 25mm Thick Steel Step Blocks				
12	M10 x 1.5	18.5	608-650	**387.20**
14	M10 x 1.5	18.5	608-652	**393.20**
14	M12 x 1.75	24	608-654	**435.30**
16	M12 x 1.75	24	608-656	**546.70**
17	M12 x 1.75	24	608-658	**443.40**
18	M16 x 2.0	29	608-660	**538.10**
20	M16 x 2.0	29	608-662	**561.60**

Te-Co Economy Machinist Clamping Kit

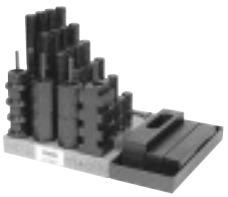
Means Great Savings!



TE-CO Tooling Components and Sowa Tool are offering an economy line of Machinist Clamp Kits at substantial savings. Of course, the same quality and high standards of the TE-CO Premium Kits are also found in these kits. The only difference between the two is that the economy line has no TE-CO logo, no flats on studs, no t-slot cleaner and stud threads are rolled, not cut. What you will find though, is a nice price tag.
Each set includes:
- 6 T-slot nuts
- 6 flange nuts
- 4 coupling nuts
- 1/2-13 x 5/8" table slot
- 6 step blocks
- 6 serrated end clamps
- 24 studs, 4 each of 3", 4", 5", 6", 7", 8"
- 1 Plastic holder

Description	Code No.	Price $
Economy Machinist Clamp Kit	608-000	**183.40**

Te-Co Milling Machine Clamping Kits



- Bridgeport type milling machines use part no. 20506
- Versatility expanded when used with step block kits
- For material information see individual components

Each Set Contains:

- 4 soft clamps – 6" long
- 1 T-nut and stud kit with includes: 4 coupling nuts, 4 flange nuts, 4 T-slot nuts, 1 T-slot cleaner
- 24 studs with flats of 4 each of: 3", 4", 5", 6", 7" and 8" long
- 1 holder (wooden base and metal tray)

Table T-Slot Size	Stud Size	Te-Co Part No.	Code No.	Price $
3/8	5/16-18	20501	608-730	**247.50**
7/16	3/8-16	20502	608-731	**219.00**
1/2	3/8-16	20503	608-732	**221.10**
9/16	3/8-16	20504	608-733	**231.60**
9/16	1/2-13	20505	608-734	**254.00**
5/8	1/2-13	20506	608-735	**260.00**
11/16	1/2-13	20507	608-736	**262.40**
11/16	5/8-11	20508	608-737	**288.40**
3/4	5/8-11	20509	608-738	**313.40**
13/16	5/8-11	20510	608-739	**324.50**
13/16	3/4-10	20511	608-740	**387.80**
7/8	3/4-10	20512	608-741	**394.20**
1	3/4-10	20513	608-742	**398.80**

Te-Co T-Nut And Stud Sets



Each set includes:

- 24 studs 4 each 3, 4, 5, 6, 7, 8" lengths
- 4 flange nuts
- 4 T-slot nuts
- 4 coupling nuts
- 1 T-slot cleaner
- 1 holder

Model No.	Table T-Slot Size	Stud Size	Code No.	Price $
375-TS	3/8	5/16-18	607-066	**107.30**
437-TS	7/16	3/8-16	607-068	**109.50**
500-TS	1/2	3/8-16	607-070	**113.50**
560-TS	9/16	3/8-16	607-072	**115.60**
562-TS	9/16	1/2-13	607-074	**121.40**
625-TS	5/8	1/2-13	607-076	**128.00**
686-TS	11/16	1/2-13	607-078	**130.50**
687-TS	11/16	5/8-11	607-080	**154.80**
750-TS	3/4	5/8-11	607-082	**167.40**
8125-TS	13/16	5/8-11	607-084	**181.60**
812-TS	13/16	3/4-10	607-086	**241.50**
875-TS	7/8	3/4-10	607-088	**245.70**
134-TS	1	3/4-10	607-090	**252.00**
1000-TS	1	7/8-9	607-092	**404.60**
1062-TS	1-1/16	7/8-9	607-094	**416.90**
1125-TS	1-1/8	7/8-9	607-096	**433.70**
10621-TS	1-1/16	1-8	607-098	**458.20**

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

Capacity	Jaw Length	Model	Code No.	Price $
1-1/4"	2"	PC/1	231-286	**11.60**
1-3/4"	2-1/2"	PC/2	231-288	**14.00**
2-1/4"	3"	PC/3	231-290	**17.60**
2-3/4"	4"	PC/4	231-292	**25.80**
3-1/2"	5"	PC/5	231-294	**40.90**
5"	6"	PC/6	231-296	**57.90**
6"	8"	PC/8	231-298	**102.90**

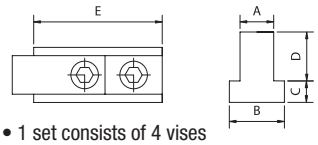
Pivot Clamp (Pair)

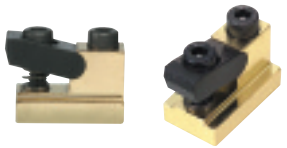


- Adjustable clamping height
- Brass plate under the clamp arm to protect the workpiece
- Spherical flange nut assures material will be tightly clamped
- Clamping arm is forged

	Table T-Slot Size (in.)	Stud Size (in.)	Code No.	Price $
Inch				
	5/8	1/2 - 13 x 5	326-750	**111.90**
	3/4	5/8 - 11 x 6	326-755	**139.70**
Metric				
	16mm	M12 x 5	326-745	**150.00**
	20mm	M16 x 6	326-746	**183.50**
	22mm	M20 x 7	326-747	**243.30**
	28mm	M24 x 8	326-748	**376.70**

T-Slot Clamp Sets



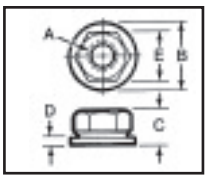


- 1 set consists of 4 vises
- For thin or small workpieces
- Good clamping force
- Quick setting
- Suitable for light duty cutting on milling, drilling, or EDM machines

Model	A	B	C	D	E	Code No.	Price $
CK-3712	11.5	18	7	16	42	333-920	**170.00**
CK-3714	13.5	22	8	18	42	333-922	**183.00**
CK-3716	15.5	25	10	20	45	333-924	**202.20**
CK-3718	17.5	28	11	24	45	333-926	**229.70**
CK-3720	19.5	32	12	26	53	333-928	**289.10**

Flange (Collar) Nuts

UNC
- Case hardened
- Black oxide finish

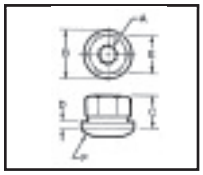




Model No.	Thread A	B	C	D	E	Te-Co Code No.	Price $	STM Code No.	Price $
Inch									
FN-14	1/4-20	5/8	5/16	3/32	1/2	607-164	**2.50**		
FN-56	5/16-18	3/4	3/8	1/8	9/16	607-166	**2.70**	333-650	**3.00**
FN-38	3/8-16	7/8	1/2	1/8	11/16	607-168	**2.90**	333-652	**3.00**
FN-76	7/16-14	1	9/16	5/32	3/4	607-170	**3.30**		
FN-12	1/2-13	1-1/8	11/16	3/16	7/8	607-172	**3.30**	333-654	**4.00**
FN-58	5/8-11	1-3/8	13/16	3/16	1-1/16	607-174	**4.10**	333-656	**4.60**
FN-34	3/4-10	1-5/8	1	1/4	1-1/4	607-176	**6.20**	333-658	**6.80**
FN-78	7/8-9	1-3/4	1-1/8	1/4	1-7/16	607-178	**8.50**	333-660	**10.40**
FN-10	1-8	2	1-1/4	1/4	1-5/8	607-180	**10.20**	333-662	**12.10**
FN-114	1-1/4-7	2-1/2	1-1/4	1/4	1-13/16	607-184	**20.80**		
Metric									
61601	M6 x 1.0	16	8	2	10	608-765	**3.50**		
61602	M8 x 1.25	19	10	2.5	13	608-766	**3.60**		
61603	M10 x 1.5	22	13	3	17	608-767	**4.40**		
61604	M12 x 1.75	27	17	4	19	608-768	**4.80**		
61605	M16 x 2.0	33	21	5	24	608-769	**5.50**		
61606	M20 x 2.5	40	25	6	30	608-770	**7.70**		
61607	M24 x 3.0	49	32	7	36	608-771	**12.70**		

Spherical Flange (Collar) Nuts

- Case hardened
- Black Oxide finish





Model No.	Thread A	B	C	D	E	F	Code No.	Price $
SFN-14	1/4-20	5/8	5/16	3/32	1/2	3/4	607-186	**3.40**
SFN-56	5/16-18	3/4	3/8	1/8	9/16	1-1/4	607-188	**3.60**
SFN-38	3/8-16	7/8	1/2	1/8	11/16	1-1/4	607-190	**3.60**
SFN-76	7/16-14	1	9/16	5/32	3/4	1-1/2	607-192	**4.00**
SFN-12	1/2-13	1-1/8	11/16	3/16	7/8	1-1/2	607-194	**4.10**
SFN-58	5/8-11	1-3/8	13/16	3/16	1-1/16	1-3/4	607-196	**5.00**
SFN-34	3/4-10	1-5/8	1	1/4	1-1/4	2-1/4	607-198	**7.20**
SFN-78	7/8-9	1-3/4	1-1/8	1/4	1-7/16	2-1/2	607-200	**9.60**
SFN-10	1-8	2	1-1/4	1/4	1-5/8	2-3/4	607-202	**11.00**
SFN-114	1-1/4-7	2-1/2	1-1/4	1/4	1-13/16	3	607-206	**23.40**

U-Clamps (Pair)

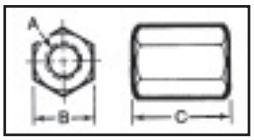
- Material: S45C
- Adjustable clamping height



Model	Dimensions (LxWxH)	Stud Size	Weight 2pcs (kg)	Code No.	Price $
VCA-404	105x45x35mm	M12x5"	1.5	326-740	**142.70**
VCA-405	126x54x40mm	M16x6"	2.6	326-741	**169.70**
VCA-406	155x58x55mm	M20x7"	4.2	326-742	**218.20**
VCA-408	190x70x65mm	M24x8"	8.2	326-743	**350.70**

Coupling (Extension) Nuts

- Case hardened
- Black oxide finish



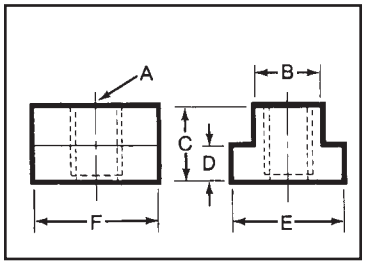


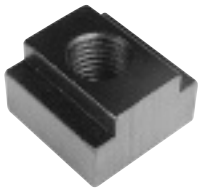
Model No.	Thread A (in/mm)	B (in/mm)	C (in/mm)	Te-Co Code No.	Price $	STM Code No.	Price $
Inch							
CN-14	1/4-20	1/2	5/8	607-208	**3.00**		
CN-56	5/16-18	9/16	7/8	607-210	**3.30**	333-670	**3.20**
CN-38	3/8-16	11/16	1	607-212	**3.60**	333-672	**3.20**
CN-76	7/16-14	3/4	1-1/4	607-214	**4.10**		
CN-12	1/2-13	7/8	1-1/4	607-216	**4.40**	333-674	**3.20**
CN-58	5/8-11	1-1/16	1-5/8	607-218	**6.40**	333-676	**4.60**
CN-34	3/4-10	1-1/4	1-7/8	607-220	**8.90**	333-678	**6.80**
CN-78	7/8-9	1-7/16	2-1/4	607-222	**13.30**	333-680	**10.40**
CN-10	1-8	1-5/8	2-1/2	607-224	**13.80**	333-682	**13.30**
Metric							
61501	M6 x 1.00	13	16	608-772	**5.30**		
61502	M8 x 1.25	14	19	608-773	**5.30**		
61503	M10 x 1.5	16	24	608-774	**5.60**		
61504	M12 x 1.75	22	32	608-775	**7.30**		
61505	M16 x 2.0	27	40	608-776	**9.40**		
61506	M20 x 2.5	32	51	608-777	**13.00**		
61507	M24 x 3.0	38	64	608-778	**17.80**		

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





Model No.	Table Slot	Thread A	B	C	D	E	F	Te-Co Code No.	Price $	STM Code No.	Price $
373	5/16	1/4-20	.304	1/4	.177	9/16	9/16	607-100	**4.40**		
374	3/8	1/4-20	.367	3/8	.224	9/16	9/16	607-102	**4.60**		
375	3/8	5/16-18	.367	3/8	.240	5/8	7/8	607-104	**3.80**	333-602	**3.20**
437	7/16	3/8-16	.427	1/2	.208	11/16	7/8	607-106	**3.70**	333-604	**3.20**
500	1/2	3/8-16	.490	1/2	.271	7/8	7/8	607-108	**3.70**	333-606	**3.20**
562	9/16	3/8-16	.552	5/8	.333	7/8	1-1/8	607-110	**4.20**	333-608	**3.40**
501	1/2	7/16-14	.490	1/2	.271	7/8	7/8	607-112	**5.10**		
502	1/2	7/16-14	.490	3/8	.208	3/4	7/8	607-114	**5.10**		
563	9/16	1/2-13	.552	5/8	.333	7/8	1-1/8	607-116	**4.30**	333-614	**3.40**
625	5/8	1/2-13	.615	5/8	.333	1	1-1/8	607-118	**4.60**	333-616	**3.40**
626	5/8	1/2-13	.615	3/4	.365	1-1/8	1-1/8	607-120	**6.30**		
687	11/16	1/2-13	.677	3/4	.427	1-1/8	1-1/4	607-122	**5.20**	333-618	**3.70**
750	3/4	1/2-13	.740	3/4	.458	1-1/4	1-1/4	607-124	**6.60**		
688	11/16	5/8-11	.677	3/4	.427	1-1/8	1-1/4	607-128	**5.40**	333-620	**4.60**
751	3/4	5/8-11	.740	3/4	.458	1-1/4	1-1/4	607-130	**5.40**	333-622	**4.60**
812	13/16	5/8-11	.802	1	.552	1-1/4	1-1/2	607-132	**8.10**	333-624	**7.20**
813	13/16	3/4-10	.802	1	.552	1-1/4	1-1/2	607-134	**8.90**	333-626	**7.20**
875	7/8	3/4-10	.865	1	.552	1-1/2	1-1/2	607-136	**10.00**	333-628	**7.20**
1000	1	3/4-10	.990	1	.615	1-5/8	1-3/4	607-138	**11.00**	333-630	**7.20**
1000-34	1	3/4-10	.990	1-1/2	.750	1-3/4	1-3/4	607-140	**16.70**		
1010	1-1/16	3/4-10	1.052	1-1/8	.677	1-5/8	2	607-142	**13.00**	333-632	**11.20**
1001	1	7/8-9	.990	1	.615	1-5/8	1-3/4	607-144	**11.60**	333-634	**11.20**
1062	1-1/16	7/8-9	1.052	1-1/8	.677	1-5/8	2	607-146	**15.70**		
1125	1-1/8	7/8-9	1.115	1-1/2	.740	1-3/4	2	607-148	**19.50**		
1063	1-1/16	1-8	1.052	1-1/8	.677	1-5/8	2	607-150	**13.50**	333-636	**13.70**
1126	1-1/8	1-8	1.115	1-1/2	.740	1-3/4	2	607-152	**19.50**		
1250	1-1/4	1-8	1.237	1-1/4	.865	2	2	607-154	**28.00**		
1310	1-5/16	7/8-9	1.302	1-1/4	.927	2	2	607-156	**27.60**		
1311	1-5/16	1-8	1.302	1-1/4	.927	2	2	607-158	**25.10**		
1375	1-3/8	1-1/4-7	1.362	1-3/4	1.115	2-1/2	2-1/2	607-162	**53.60**		

T-Slot Nuts - Metric

Model No.	Table Slot	Table Slot (in.)	Thread A (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Te-Co Code No.	Price $
61401	8	5/16	M6 x 1.0	10	6	14	19	608-750	**5.00**
61402	10	7/16	M6 x 1.0	11	6	16	22	608-751	**5.70**
61403	10	7/16	M8 x 1.25	11	6	16	22	608-752	**5.70**
61404	12	1/2	M10 x 1.5	13	7	19	22	608-753	**5.70**
61405	14	9/16	M10 x 1.5	16	9	22	29	608-754	**6.70**
61406	14	9/16	M12 x 1.75	16	9	22	29	608-755	**6.70**
61407	16	5/8	M12 x 1.75	16	9	25	29	608-756	**6.70**
61408	17	11/16	M12 x 1.75	19	11	29	32	608-757	**8.10**
61409	18	3/4	M16 x 2.0	19	11	29	32	608-758	**8.10**
61410	21	13/16	M16 x 2.0	25	14	32	38	608-759	**8.90**
61411	22	7/8	M20 x 2.5	25	14	35	38	608-760	**9.80**
61412	27	1-1/16	M24 x 3.0	29	18	41	51	608-761	**14.30**
61413	33	1-5/16	M24 x 3.0	32	24	51	51	608-762	**17.80**

Te-Co Tugger™ T-Slot Bolts

- Medium Carbon Steel.
- Heat treat quoted on request.
- Threads Class 2A UNC
- Black oxide finish



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 $
1-1/2	607-244	**5.90**	607-314	**8.10**								
2	607-248	**6.00**	607-318	**8.40**	607-388	**9.80**	607-456	**12.90**				
2-1/2	607-252	**6.40**	607-322	**8.70**	607-392	**10.10**	607-458	**13.40**				
3	607-256	**6.60**	607-326	**9.10**	607-396	**10.60**	607-460	**14.10**	607-484	**24.80**	607-508	**27.70**
3-1/2	607-258	**7.00**	607-328	**9.60**	607-398	**11.00**	607-462	**14.40**				
4	607-260	**7.20**	607-330	**10.00**	607-400	**11.50**	607-464	**15.30**	607-486	**26.60**	607-510	**29.80**
4-1/2	607-278	**7.60**	607-332	**10.30**	607-402	**11.60**	607-466	**15.40**				
5	607-280	**7.80**	607-334	**10.40**	607-404	**12.20**	607-468	**16.20**	607-488	**28.40**	607-512	**32.60**
5-1/2	607-282	**8.10**	607-336	**10.70**	607-408	**12.50**	607-470	**17.00**				
6	607-284	**8.30**	607-338	**11.10**	607-410	**13.60**	607-472	**17.80**	607-490	**30.30**	607-514	**35.20**
7	607-286	**8.80**	607-340	**11.40**	607-412	**14.40**	607-474	**18.80**	607-492	**32.10**	607-516	**37.00**
8			607-342	**11.80**	607-414	**15.10**	607-476	**20.60**	607-494	**33.90**	607-518	**38.70**
9			607-344	**12.90**	607-416	**16.40**	607-478	**22.00**	607-496	**35.80**	607-520	**41.50**
10			607-346	**14.20**	607-418	**17.70**	607-480	**23.30**	607-498	**37.70**	607-522	**43.70**
12			607-348	**15.40**	607-420	**19.00**	607-482	**24.80**	607-500	**39.30**	607-524	**46.80**
14									607-502	**41.20**	607-526	**49.10**
16									607-504	**43.10**	607-528	**51.30**
18									607-506	**44.90**	607-530	**53.20**

Driver Studs - Inch

- Black Oxide finish
- Medium carbon steel
- Most studs have wrench flats
- Special lengths and sizes will be quoted on request



Length	Te-Co 1/4-20 Code No.	Price $	Te-Co 5/16-18 Code No.	Price $	STM 5/16-18 Code No.	Price $	Te-Co 3/8-16 Code No.	Price $	STM 3/8-16 Code No.	Price $	Te-Co 7/16-14 Code No.	Price $	Te-Co 1/2-13 Code No.	Price $	STM 1/2-13 Code No.	Price $
1-1/2	607-532	**2.10**	607-560	**2.40**			607-586	**2.10**			607-614	**3.40**	607-642	**2.20**		
2	607-534	**2.20**	607-562	**2.50**	333-702	**2.20**	607-588	**2.10**			607-616	**3.30**	607-644	**2.20**	333-733	**2.10**
2-1/2	607-536	**2.20**	607-564	**2.50**			607-590	**2.10**			607-618	**3.40**	607-646	**2.20**		
3	607-538	**2.20**	607-566	**2.60**	333-704	**2.10**	607-592	**2.10**	333-718	**2.20**	607-620	**3.50**	607-648	**2.20**	333-734	**2.10**
3-1/2	607-540	**2.20**	607-568	**2.60**			607-594	**2.10**			607-622	**3.60**	607-650	**2.30**		
4	607-542	**2.30**	607-570	**2.70**	333-706	**2.40**	607-596	**2.20**	333-720	**2.70**	607-624	**3.70**	607-652	**2.40**	333-736	**2.40**
4-1/2	607-544	**2.30**	607-572	**2.70**			607-598	**2.20**			607-626	**3.70**	607-654	**2.40**		
5	607-546	**2.30**	607-574	**2.70**	333-708	**3.00**	607-600	**2.20**	333-722	**3.00**	607-628	**3.70**	607-656	**2.50**	333-738	**2.70**
5-1/2	607-548	**2.30**	607-575	**2.80**			607-602	**2.30**			607-630	**3.80**	607-658	**2.50**		
6	607-550	**2.30**	607-576	**2.80**	333-710	**3.20**	607-604	**2.30**	333-724	**3.00**	607-632	**3.90**	607-660	**2.60**	333-740	**3.00**
6-1/2	607-552	**2.40**	607-578	**2.90**			607-606	**2.40**			607-634	**4.00**	607-662	**2.80**		
7	607-554	**2.40**	607-580	**3.00**	333-712	**3.20**	607-608	**2.40**	333-726	**3.20**	607-636	**4.00**	607-664	**2.90**	333-742	**3.20**
7-1/2	607-556	**2.40**	607-582	**3.00**			607-610	**2.40**			607-638	**4.10**	607-666	**3.00**		
8	607-558	**2.40**	607-584	**3.00**	333-714	**3.70**	607-612	**2.40**	333-728	**3.70**	607-640	**4.10**	607-668	**3.10**	333-744	**3.40**
9													607-670	**5.80**	333-745	**4.00**
10													607-672	**6.60**		
12													607-674	**8.00**		
14													607-676	**8.90**	333-748	**5.10**
16													607-678	**11.30**	333-749	**5.50**

Driver Studs - Inch, cont'd

- Black oxide finish
- Medium carbon steel
- Most studs have wrench flats
- Special lengths and sizes will be quoted on request



Length	Te-Co 5/8-11 Code No.	Price $	STM 5/8-11 Code No.	Price $	Te-Co 3/4-10 Code No.	Price $	STM 3/4-10 Code No.	Price $	Te-Co 7/8-9 Code No.	Price $	STM 7/8-9 Code No.	Price $	Te-Co 1-8 Code No.	Price $	STM 1-8 Code No.	Price $
1-1/2	607-688	**3.00**														
2	607-690	**2.80**														
2-1/2	607-692	**2.70**														
3	607-694	**2.80**	333-757	**3.00**	607-734	**3.40**	333-780	**3.40**	607-774	**7.60**	333-804	**4.30**	607-814	**9.20**	333-827	**8.10**
3-1/2	607-696	**3.00**			607-736	**3.70**			607-776	**8.00**			607-816	**9.60**		
4	607-698	**3.00**	333-759	**3.40**	607-738	**3.90**	333-782	**4.00**	607-778	**8.60**	333-806	**5.10**	607-818	**9.90**	333-829	**9.40**
4-1/2	607-700	**3.20**			607-740	**4.30**			607-780	**9.20**			607-820	**10.50**		
5	607-702	**3.40**	333-761	**4.00**	607-742	**4.40**	333-784	**4.60**	607-782	**9.80**	333-808	**5.80**	607-822	**11.20**	333-831	**10.90**
5-1/2	607-704	**3.40**			607-744	**4.60**			607-784	**10.50**			607-824	**11.70**		
6	607-706	**3.60**	333-763	**4.30**	607-746	**4.80**	333-786	**5.10**	607-786	**10.70**	333-810	**6.50**	607-826	**12.10**	333-833	**13.30**
6-1/2	607-708	**3.80**			607-748	**5.10**			607-788	**11.20**			607-828	**12.60**		
7	607-710	**4.00**	333-765	**4.60**	607-750	**5.30**	333-788	**5.50**	607-790	**12.00**	333-812	**7.70**	607-830	**12.90**	333-835	**16.20**
7-1/2	607-712	**4.30**			607-752	**5.60**			607-792	**12.40**			607-832	**13.70**		
8	607-714	**4.30**	333-767	**4.80**	607-754	**5.60**	333-790	**6.30**	607-794	**13.40**	333-814	**8.80**	607-834	**14.40**	333-837	**19.00**
9	607-716	**7.40**	333-768	**5.50**	607-756	**10.30**	333-791	**7.20**	607-796	**15.30**			607-836	**18.10**		
10	607-718	**8.20**	333-769	**6.00**	607-758	**11.20**	333-792	**8.10**	607-798	**16.70**	333-816	**9.40**	607-838	**19.10**	333-839	**22.20**
12	607-720	**9.10**	333-770	**6.50**	607-760	**12.60**	333-793	**9.40**	607-800	**17.90**	333-817	**10.90**	607-840	**21.30**	333-840	**25.00**
14	607-722	**10.60**	333-771	**8.00**	607-762	**13.70**	333-794	**11.90**	607-802	**19.50**	333-818	**13.50**	607-842	**23.50**	333-841	**28.00**
16	607-724	**12.10**	333-772	**9.00**	607-764	**15.00**	333-795	**13.30**	607-804	**21.20**	333-819	**16.10**	607-844	**25.50**	333-842	**29.30**
18	607-726	**13.20**	333-773	**9.40**	607-766	**16.10**	333-796	**13.50**	607-806	**22.90**	333-820	**18.70**	607-846	**28.30**	333-843	**34.70**
20	607-728	**14.90**	333-774	**10.90**	607-768	**17.40**	333-798	**14.80**	607-808	**24.50**	333-821	**21.50**	607-848	**30.70**	333-844	**39.90**
22	607-730	**17.00**			607-770	**19.40**			607-810	**27.50**			607-850	**35.70**		
24	607-732	**18.40**			607-772	**21.00**			607-812	**31.80**			607-852	**38.70**		

Driver Studs - Metric

- Black oxide finish
- Medium carbon steel
- Most studs have wrench flats
- Special lengths and sizes will be quoted on request



Length (mm)	M6 x 1 Code No.	Price $	M8 x 1.25 Code No.	Price $	M10 x 1.5 Code No.	Price $	M12 x 1.75 Code No.	Price $	M16 x 2.0 Code No.	Price $	M20 x 2.5 Code No.	Price $	M24 x 3.0 Code No.	Price $
50	608-848	**3.70**	608-857	**3.00**	608-866	**2.90**	608-876	**3.50**						
65	608-849	**4.00**	608-858	**3.10**	608-867	**3.00**	608-877	**3.60**						
80	608-850	**4.50**	608-859	**3.20**	608-868	**3.00**	608-878	**3.80**	608-886	**4.40**	608-895	**5.60**		
95	608-851	**4.70**	608-860	**3.30**	608-869	**3.10**	608-879	**4.00**	608-887	**4.70**	608-896	**6.10**		
100													608-904	**9.20**
110	608-852	**4.70**	608-861	**3.40**	608-870	**3.10**	608-880	**4.10**	608-888	**4.90**	608-897	**6.60**		
125							608-881	**4.20**	608-889	**5.40**	608-898	**7.30**	608-905	**10.60**
140	608-853	**5.20**	608-862	**3.90**	608-872	**3.40**	608-882	**4.30**						
150	608-854	**5.30**	608-863	**4.00**	608-873	**3.50**	608-883	**4.80**	608-890	**5.60**	608-899	**8.10**	608-906	**11.80**
175	608-855	**5.60**	608-864	**4.20**	608-874	**3.60**	608-884	**5.20**	608-891	**5.80**	608-900	**8.50**	608-907	**12.60**
200	608-856	**5.70**	608-865	**4.50**	608-875	**3.70**	608-885	**5.40**	608-892	**6.30**	608-901	**9.20**	608-908	**13.30**
250									608-893	**8.80**	608-902	**12.40**	608-909	**18.10**
300									608-894	**8.90**	608-903	**12.80**	608-910	**19.20**

Driver Studs Various Lengths - Metric

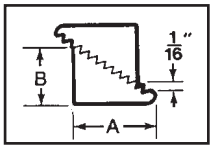
- Black oxide finish
- Medium carbon steel



Model No.	Thread (mm)	O.A.L. (mm)	Long Thread Length (mm)	Short Thread Length (mm)	Code No.	Price $
60251	M6 x 1.0	50	20	12	608-810	**3.80**
60252	M6 x 1.0	65	20	12	608-811	**4.10**
60253	M6 x 1.0	80	27	12	608-812	**4.60**
60254	M6 x 1.0	95	27	12	608-813	**4.80**
60255	M6 x 1.0	110	31	12	608-814	**4.80**
60351	M8 x 1.25	50	20	12	608-815	**3.10**
60352	M8 x 1.25	65	20	12	608-816	**3.20**
60353	M8 x 1.25	80	27	12	608-817	**3.30**
60354	M8 x 1.25	95	31	12	608-818	**3.50**
60355	M8 x 1.25	110	31	12	608-819	**3.60**
60356	M8 x 1.25	140	35	12	608-820	**4.00**
60451	M10 x 1.5	50	20	16	608-821	**3.00**
60452	M10 x 1.5	65	20	16	608-822	**3.10**
60453	M10 x 1.5	80	27	16	608-823	**3.10**
60454	M10 x 1.5	95	31	16	608-824	**3.20**
60455	M10 x 1.5	110	35	16	608-825	**3.20**
60456	M10 x 1.5	140	35	16	608-826	**3.60**
60551	M12 x 1.75	50	20	16	608-827	**3.60**
60552	M12 x 1.75	65	20	16	608-828	**3.70**
60553	M12 x 1.75	80	27	16	608-829	**3.90**
60554	M12 x 1.75	95	31	16	608-830	**4.10**
60555	M12 x 1.75	110	39	16	608-831	**4.30**
60556	M12 x 1.75	140	39	16	608-832	**4.50**
60557	M12 x 1.75	175	39	16	608-833	**5.40**
60558	M12 x 1.75	200	39	16	608-834	**5.60**
60651	M16 x 2.0	80	21	18	608-835	**4.60**
60652	M16 x 2.0	110	47	18	608-836	**5.00**
60653	M16 x 2.0	150	47	18	608-837	**6.00**
60654	M16 x 2.0	175	47	18	608-838	**6.00**
60655	M16 x 2.0	200	47	18	608-839	**6.50**
60656	M16 x 2.0	250	47	18	608-840	**9.10**
60751	M20 x 2.5	80	27	20	608-841	**5.80**
60752	M20 x 2.5	110	47	20	608-842	**6.90**
60753	M20 x 2.5	150	55	20	608-843	**8.40**
60754	M20 x 2.5	175	55	20	608-844	**8.90**
60755	M20 x 2.5	200	55	20	608-845	**9.60**
60851	M24 x 3.0	160	35	100	608-846	**12.10**
60852	M24 x 3.0	300	35	100	608-847	**19.40**

Steel Step Blocks

- Case hardened
- Black oxide finish
- Teeth match all serrated end clamps





NOTE:

2 pieces=1 block

Width (in.)	A (in.)	B (in.)	Height Adj. Range (in.)	Te-Co Code No.	Price $	STM Code No.	Price $
1	1-1/16	11/16	3/4-1-5/8	608-005	**8.00**	333-875	**10.70**
1	1-39/64	1-1/16	1-1/8-2-1/2	608-010	**10.80**	333-876	**15.20**
1	3-3/4	2-15/32	2-1/2-6	608-015	**27.50**	333-877	**36.80**
1-1/2	2-17/32	1-43/64	1-3/4-4	608-020	**19.70**	333-878	**22.10**
1-1/2	3-3/4	2-15/32	2-1/2-6	608-025	**38.60**	333-879	**43.60**
1-1/2	5-21/64	3-7/16	3-1/2-9	608-030	**70.30**	333-880	**93.30**
2	2-17/32	1-43/64	1-3/4-4	608-035	**31.90**		
2	3-3/4	2-15/32	2-1/2-6	608-040	**49.80**		
2	5-21/64	3-7/16	3-1/2-9	608-045	**88.70**		
2	7-3/8	4-3/4	4-7/8-10-1/2	608-050	**229.50**		

Te-Co Steel Step Block Clamp Kits

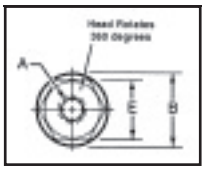
- Kit contains 10 blocks and one holder
- Versatility is expanded when a T-Nut and Stud Kit is used
- Two halves = one block
- Aluminum step blocks also available



Model No.	Contains 4 ea.	Contains 4 ea.	Contains 2 ea.	Kit Code No.	Price $
20801	608-005	608-010	608-015	607-898	**133.90**
20805	608-020	608-025	608-030	607-900	**395.60**
20807	608-035	608-040	608-045	607-902	**508.10**

Swivel Flange Nuts

- Black oxide finish
- Case hardened
- 12L14 material

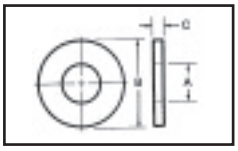




Thread A	B	Overall Height	Flange Height	E	Weight (lb/100)	Model No.	Code No.	Price $
1/4-20	5/8	3/8	1/8	1/2	2	42001	608-290	**5.00**
5/16-18	3/4	7/16	9/64	9/16	3	42002	608-291	**5.20**
3/8-16	7/8	17/32	5/32	11/16	4	42003	608-292	**5.80**
1/2-13	1-1/8	23/32	7/32	7/8	11	42004	608-293	**6.60**
5/8-11	1-3/8	29/32	1/4	1-1/16	18	42005	608-294	**8.10**
3/4-10	1-5/8	1-1/64	9/32	1-1/4	28	42006	608-295	**10.00**
7/8-9	1-3/4	1-1/8	7/16	1-7/16	41	42007	608-296	**14.30**
1-8	2	1-16/64	15/32	1-5/8	57	42008	608-297	**18.00**

Flat Washers

- Black oxide finish
- Case hardened
- C1010 material

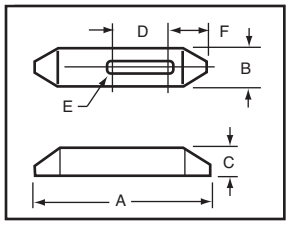




Stud Size	A	B	C	Te-Co Code No.	Price $	STM Code No.	Price $
3/16	13/64	1/2	3/32	608-100	**0.20**	333-900	**1.30**
1/4	9/32	5/8	1/8	608-105	**0.20**	333-902	**1.90**
5/16	11/32	3/4	1/8	608-110	**0.20**	333-904	**2.40**
3/8	13/32	7/8	1/8	608-115	**0.30**	333-906	**2.70**
7/16	15/32	1	1/8	608-120	**0.40**	333-908	**3.00**
1/2	17/32	1-1/8	1/8	608-125	**0.40**	333-910	**3.00**
5/8	21/32	1-3/8	1/8	608-130	**0.40**		
3/4	25/32	1-5/8	5/32	608-135	**0.60**		
7/8	29/32	1-3/4	5/32	608-140	**0.90**		
1	1-1/32	2	3/16	608-145	**1.30**		
1-1/8	1-5/32	2-1/4	7/32	608-150	**2.70**		
1-1/4	1-9/32	2-1/2	9/32	608-155	**4.20**		

Plain Clamps

- Case hardened
- Black oxide finish

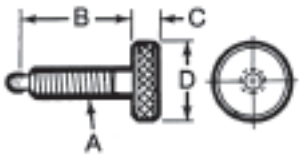




Model No.	A	B	C	D	Stud Size E	F	Weight (lb/100)	Te-Co Code No.	Price $	STM Code No.	Price $
Inch											
P-3825	2-1/2	1	1/2	13/16	5/16 and 3/8	27/32	24	607-948	**12.80**		
P-384	4	1	5/8	1-7/16	5/16 and 3/8	1-1/32	48	607-950	**17.20**		
P-386	6	1-1/8	3/4	2-3/16	5/16 and 3/8	1-5/32	105	607-952	**22.30**		
P-1225	2-1/2	1-1/8	1/2	11/16	1/2	29/32	24	607-954	**15.00**	333-862	**15.20**
P-124	4	1-1/4	3/4	1-5/16	1/2	1-5/32	67	607-956	**20.00**	333-864	**26.70**
P-126	6	1-1/4	7/8	2-1/16	1/2	1-9/32	37	607-958	**24.70**	333-866	**43.90**
P-5825	2-1/2	1-1/4	5/8	9/16	5/8	31/32	31	607-960	**17.40**	333-868	**16.10**
P-584	4	1-1/2	3/4	1-3/16	5/8	1-9/32	83	607-962	**21.90**	333-870	**34.00**
P-586	6	1-1/2	7/8	1-15/16	5/8	1-13/32	150	607-964	**28.20**	333-872	**43.60**
P-344	4	1-1/2	3/4	1-1/16	3/4	1-11/32	75	607-966	**23.40**		
P-346	6	1-1/2	1	1-15/16	3/4	1-15/32	164	607-968	**35.20**		
P-348	8	1-3/4	1-1/8	2-3/16	3/4	1-29/32	321	607-970	**47.30**		
P-16	6	2	1-1/4	1-11/16	7/8 and 1	1-27/32	274	607-972	**57.10**		
P-18	8	2	1-3/8	1-15/16	7/8 and 1	2-1/32	425	607-974	**73.50**		
P-110	10	2	1-1/2	2-15/16	7/8 and 1	2-1/32	618	607-976	**92.70**		
Metric	**(mm)**	**(mm)**	**(mm)**	**(mm)**	**(mm)**	**(mm)**					
30401M	64	25	13	21	M6-M8-M10	21	24	608-780	**12.80**		
30402M	102	25	16	37	M6-M8-M10	26	48	608-781	**17.20**		
30403M	152	29	19	56	M6-M8-M10	29	105	608-782	**22.30**		
30404M	64	29	13	18	M12	23	24	608-783	**15.00**		
30405M	102	32	16	33	M12	29	67	608-784	**20.00**		
30406M	152	32	19	52	M12	29	37	608-785	**24.70**		
30407M	64	32	16	14	M16	25	31	608-786	**17.40**		
30408M	102	38	19	30	M16	31	83	608-787	**21.90**		
30409M	152	38	22	49	M16	34	150	608-788	**28.20**		
30410M	102	38	19	27	M20	33	75	608-789	**23.40**		
30411M	152	38	25	49	M20	37	164	608-790	**35.20**		
30412M	203	45	29	56	M20	48	321	608-791	**47.30**		
30413M	152	51	32	43	M24	44	274	608-792	**57.10**		
30414M	203	51	35	49	M24	52	425	608-793	**73.50**		
30415M	254	51	38	75	M24	52	618	608-794	**92.70**		

Knurled Head Swivel Screw Clamps

- 12L14 steel
- Black oxide finish
- Use when finger tightening provides adequate pressure



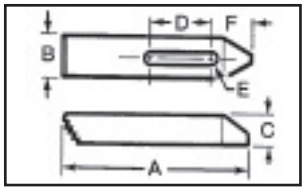


*see page H31 for pads

Thread A	B	C	D	Use w/ Small Pad	Use w/ Large Pad	Use w/ Ball Pad	Use w/ "V" Pad	Weight (lb/100)	Model No.	Code No.	Price $
1/4-20	1-15/32	5/16	1	31501	31601	31701	31801	8	31321	608-250	**7.20**
1/4-20	1-31/32	5/16	1	31501	31601	31701	31801	12	31322	608-251	**7.30**
5/16-18	1-5/16	3/8	1-1/8	31502	31602	31702	31802	9	31331	608-252	**7.30**
5/16-18	1-31/32	3/8	1-1/8	31502	31602	31702	31802	13	31332	608-253	**7.70**
5/16-18	2-15/32	3/8	1-1/8	31502	31602	30102	31802	14	31333	608-254	**8.10**
3/8-16	1-7/16	7/16	1-1/4	31503	31603	31703	31803	18	31341	608-255	**8.10**
3/8-16	1-15/16	7/16	1-1/4	31503	31603	31703	31803	19	31342	608-256	**8.30**
3/8-16	2-7/16	7/16	1-1/4	31503	31603	31703	31803	20	31343	608-257	**8.50**
3/8-16	2-15/16	7/16	1-1/4	34503	31603	31703	31803	21	31344	608-258	**8.70**
1/2-13	2-15/16	7/16	1-1/4	31504	31604	31704	31804	26	31354	608-259	**9.40**

Serrated Clamps

- Case hardened
- Black oxide finish
- Teeth match all step blocks

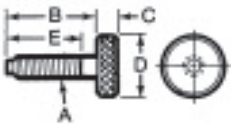




Model No.	A	B	C	D	Stud Size E	F	Weight (lb/100)	Te-Co Code No.	Price $	STM Code No.	Price $
Inch											
S-3825	2-1/2	1	1/2	13/16	5/16 or 3/8	27/32	23	607-918	**17.70**		
S-384	4	1	5/8	1-7/16	5/16 or 3/8	1-1/32	49	607-920	**18.90**		
S-386	6	1-1/8	3/4	2-3/16	5/16 or 3/8	1-5/32	106	607-922	**23.70**		
S-1225	2-1/2	1-1/8	1/2	11/16	1/2	29/32	27	607-924	**15.90**	333-850	**15.20**
S-124	4	1-1/4	3/4	1-5/16	1/2	1-5/32	72	607-926	**22.30**	333-852	**26.70**
S-126	6	1-1/4	7/8	2-1/16	1/2	1-5/32	134	607-928	**27.30**	333-854	**39.90**
S-5825	2-1/2	1-1/4	5/8	9/16	5/8	31/32	33	607-930	**27.10**	333-856	**16.10**
S-584	4	1-1/2	3/4	1-3/16	5/8	1-7/32	87	607-932	**29.40**	333-858	**30.90**
S-586	6	1-1/2	7/8	1-15/16	5/8	1-11/32	160	607-934	**32.90**	333-860	**43.60**
S-344	4	1-1/2	3/4	1-1/16	3/4	1-9/32	81	607-936	**30.10**		
S-346	6	1-1/2	1	1-15/16	3/4	1-15/32	170	607-938	**42.00**		
S-348	8	1-3/4	1-1/8	2-3/16	3/4	1-29/32	330	607-940	**56.80**		
S-16	6	2	1-1/4	1-11/16	7/8 or 1	1-23/32	275	607-942	**82.30**		
S-18	8	2	1-3/8	1-15/16	7/8 or 1	1-1/32	440	607-944	**78.20**		
S-110	10	2	1-1/2	2-15/16	7/8 or 1	2-1/32	601	607-946	**92.50**		
Metric	**(mm)**	**(mm)**	**(mm)**	**(mm)**	**(mm)**	**(mm)**					
30501M	64	25	13	21	M6-M8-M10	21	23	608-795	**19.20**		
30502M	102	25	16	37	M6-M8-M10	26	29	608-796	**25.80**		
30503M	152	29	19	56	M6-M8-M10	29	106	608-797	**32.30**		
30504M	64	29	13	18	M12	23	27	608-798	**19.90**		
30505M	102	32	16	33	M12	29	72	608-799	**22.30**		
30506M	152	32	19	52	M12	29	134	608-800	**34.10**		
30507M	64	32	16	14	M16	25	33	608-801	**27.10**		
30508M	102	38	19	30	M16	31	87	608-802	**37.40**		
30509M	152	38	22	49	M16	34	160	608-803	**44.90**		
30510M	102	38	19	27	M20	33	81	608-804	**39.10**		
30511M	152	38	25	49	M20	37	170	608-805	**54.50**		
30512M	203	45	29	56	M20	48	330	608-806	**73.80**		
30513M	152	51	32	43	M24	44	275	608-807	**79.20**		
30514M	203	51	35	49	M24	52	440	608-808	**101.70**		
30515M	254	51	38	75	M24	52	601	608-809	**115.60**		

Dog Point Knurled Head Screws

- 12L14 steel
- Black oxide finish
- Case hardened
- Knurled head allows better grip
- Use for light clamping or holding
- Dog point prevents damage to end threads



*see page H31 for pads

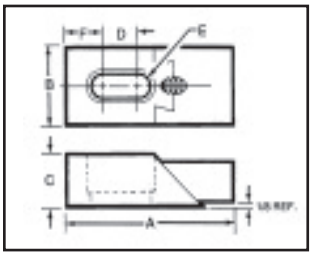


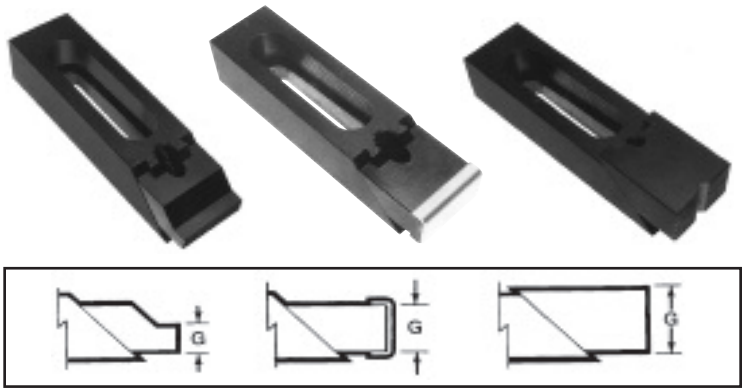
Thread A	B	C	D	E	Weight (lb/100)	Model No.	Code No.	Price $
10-24	1	1/4	3/4	3/4	3	43801	608-260	**4.40**
10-24	1-1/2	1/4	3/4	1-1/4	3	43802	608-261	**4.40**
10-24	2	1/4	3/4	1-3/4	3	43803	608-262	**4.60**
10-32	1-1/2	1/4	3/4	1-3/8	3	43804	608-263	**4.60**
1/4-20	2	5/16	1	1-3/4	5	43805	608-264	**5.10**
1/4-20	2-1/2	5/16	1	2-1/4	9	43806	608-265	**5.00**
1/4-20	1-1/2	5/16	1	1-1/4	9	43807	608-266	**5.00**
5/16-18	1-1/2	3/8	1-1/8	1-1/4	6	43808	608-267	**5.70**
5/16-18	2	3/8	1-1/8	1-3/4	11	43809	608-268	**5.90**
5/16-18	2-1/2	3/8	1-1/8	2-1/4	13	43810	608-269	**6.10**
3/8-16	2	7/16	1-1/4	1-3/4	13	43813	608-270	**6.20**
3/8-16	2-1/2	7/16	1-1/4	2-1/4	24	43811	608-271	**6.60**
3/8-16	3	7/16	1-1/4	2-3/4	27	43812	608-272	**7.20**
1/2-13	3	7/16	1-1/4	2-3/4	28	43814	608-273	**8.00**
1/2-13	3-1/2	7/16	1-1/4	3-1/4	30	43815	608-274	**8.30**

TE-CO

Nuzzler® Edge Clamps

- Black oxide finish
- Noses have serrations for better gripping of non-finished or semi-finished workpieces
- Edge clamps feature a double action, adjustable nose which exerts clamping pressures both downward and inward through a 45° angle



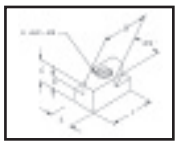


Low Grip (Style L) Standard Grip (Style S) High Grip (Style H)

A	B	C	D	E	F	Nose Style	G	Wrench Size	Weight (lb/100)	Model No.	Code No.	Price $
1-7/8	1	5/8	1/4	5/16	13/32	L	1/8	5/32	25	33817	608-200	**61.80**
2-3/8	1	5/8	3/4	5/16	5/16	L	1/8	5/32	29	33819	608-201	**64.20**
2-7/8	1	5/8	1-1/4	5/16	5/16	L	1/8	5/32	35	33821	608-202	**68.20**
2-5/16	1-1/4	5/8	3/8	3/8	7/16	L	1/8	5/32	38	33801	608-203	**63.30**
2-3/4	1-1/4	5/8	13/16	3/8	1/2	L	1/4	3/16	44	33890	608-204	**68.20**
4-1/8	1-1/4	5/8	2	3/8	1-1/16	L	1/4	3/16	63	33803	608-205	**70.30**
4-11/16	1-1/4	5/8	2-3/16	3/8	15/16	L	1/4	3/16	73	33892	608-206	**72.20**
3-5/16	1-1/2	3/4	3/4	1/2	11/16	L	3/8	1/4	81	33805	608-207	**72.00**
5-3/16	1-1/2	3/4	2-1/2	1/2	5/8	L	3/8	1/4	117	33807	608-208	**75.70**
3-7/8	1-1/2	7/8	1-1/4	1/2	1/2	L	1/4	1/4	100	33823	608-209	**68.20**
5-5/16	1-1/2	7/8	2	1/2	7/8	L	1/4	1/4	141	33825	608-210	**73.80**
7-1/4	1-1/2	7/8	3	1/2	1-3/8	L	1/4	1/4	189	33827	608-211	**79.60**
5-13/16	1-1/2	1-1/4	2-1/4	1/2	1-1/16	L	3/8	1/4	207	33809	608-212	**119.20**
7-1/8	1-1/2	1-1/4	3-5/16	1/2	1-3/16	L	3/8	1/4	252	33812	608-213	**122.70**
5-1/4	2	1-1/4	1-3/8	3/4	27/32	L	3/8	5/16	235	33829	608-214	**190.70**
1-7/8	1	5/8	1/4	5/16	13/32	S	5/8	5/32	30	33818	608-215	**64.20**
2-3/8	1	5/8	3/4	5/16	5/16	S	5/8	5/32	35	33820	608-216	**70.30**
2-7/8	1	5/8	1-1/4	5/16	5/16	S	5/8	5/32	40	33822	608-217	**72.20**
2-5/16	1-1/4	5/8	3/8	3/8	7/16	S	5/8	3/16	43	33802	608-218	**68.20**
2-3/4	1-1/4	5/8	13/16	3/8	1/2	S	5/8	3/16	49	33891	608-219	**72.20**
4-1/8	1-1/4	5/8	2	3/8	11/16	S	5/8	3/16	73	33804	608-220	**74.50**
4-11/16	1-1/4	5/8	2-3/16	3/8	15/16	S	5/8	3/16	76	33893	608-221	**76.10**
3-5/16	1-1/2	3/4	3/4	1/2	11/16	S	3/4	1/4	88	33806	608-222	**77.20**
5-3/16	1-1/2	3/4	2-1/2	1/2	5/8	S	3/4	1/4	123	33808	608-223	**79.60**
3-7/8	1-1/2	7/8	1-1/4	1/2	1/2	S	7/8	1/4	112	33824	608-224	**73.80**
5-5/16	1-1/2	7/8	2	1/2	7/8	S	7/8	1/4	155	33826	608-225	**77.70**
7-1/4	1-1/2	7/8	3	1/2	1-3/8	S	7/8	1/4	205	33828	608-226	**84.90**
5-13/16	1-1/2	1-1/4	2-1/4	1/2	1-1/16	S	3/4	1/4	216	33810	608-227	**128.50**
7-1/8	1-1/2	1-1/4	3-5/16	1/2	1-3/16	S	3/4	1/4	255	33813	608-228	**132.40**
6-1/8	1-1/2	1-1/4	2-1/4	1/2	1-1/16	H	1	1/4	240	33811	608-229	**138.10**
7-3/8	1-1/2	1-1/4	3-5/16	1/2	1-3/16	H	1	1/4	286	33814	608-230	**142.00**
5-1/4	2	1-1/4	1-3/8	3/4	27/32	H	1-1/4	5/16	296	33815	608-231	**183.60**
6-7/16	2-1/2	1-1/2	2	7/8	15/16	H	1-1/2	1/2	541	33816	608-232	**280.80**

Quarter Turn T-Slot Nuts

- Black oxide finish

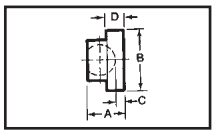




Thread A	English Table Slot B (in.)	Metric* Table Slot (mm)	C	D	E	F	Model No.	Code No.	Price $
3/8-16	7/16	12	1/2	0.208	0.438	0.75	41450	608-275	**4.70**
3/8-16	1/2	12	1/2	0.271	0.5	1	41451	608-276	**4.70**
1/2-13	9/16	15	5/8	0.333	0.563	0.94	41452	608-277	**5.30**
1/2-13	5/8	16	5/8	0.333	0.625	1.25	41453	608-278	**5.90**
5/8-11	11/16	18	3/4	0.427	0.688	1.38	41454	608-279	**6.50**
5/8-11	3/4	20	3/4	0.458	0.75	1.5	41455	608-280	**6.90**

* English T-Slot Nut will fit this size metric machine T-Slot

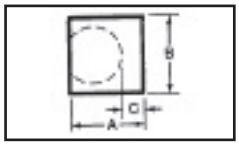
Large Pads For Swivel Screw Clamps





Fits Body Thread	A	B	C	D	Internal Thread (L.H.)	Weight (lbs/100)	Model No.	Code No.	Price $
1/4-20	5/16	3/8	1/8	1/8	8-36	1	31601	608-285	**1.70**
5/16-18	23/64	1/2	5/32	5/32	12-28	1	31602	608-286	**2.00**
3/8-16	7/16	9/16	3/16	3/16	1/4-28	1	31603	608-287	**2.30**
1/2-13	27/64	3/4	1/8	3/16	5/16-24	2	31604	608-288	**2.60**

Small Pads For Swivel Screw Clamps

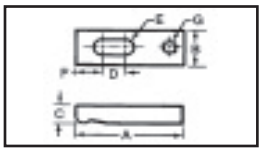




Fits Body Thread	A	B	C	Internal Thread (L.H.)	Weight (lb/100)	Model No.	Code No.	Price $
1/4-20	0.193	3/16	1/16	8-36	1	31501	608-281	**1.80**
5/16-18	19/64	1/4	3/64	12/28	1	31502	608-282	**2.00**
3/8-16	21/64	19/64	1/16	1/4-28	1	31503	608-283	**2.10**
1/2-13	25/64	13/32	1/16	5/16-24	2	31504	608-284	**2.10**

Tapped End Clamps

- Black oxide finish
- Case hardened

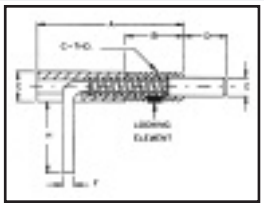




A	B	C	D	Stud Size E	F	G	Model No.	Code No.	Price $
2	5/8	3/8	1/2	1/4	7/16	1/4-20	30902	608-300	**12.80**
2-1/2	5/8	3/8	1/2	1/4	9/16	1/4-20	30903	608-301	**13.80**
2-3/4	1	1/2	7/16	5/16	13/16	5/16-18	30905	608-302	**15.60**
3-1/4	1	1/2	13/16	5/16	7/8	5/16-18	30906	608-303	**16.00**
4	1	1/2	7/8	5/16	15/16	5/16-18	30907	608-304	**16.90**
3	1-1/4	5/8	3/4	3/8	9/16	3/8-16	30908	608-305	**17.40**
4	1-1/4	5/8	1	3/8	3/4	3/8-16	30909	608-306	**17.60**
5	1-1/4	5/8	1-1/2	3/8	3/4	3/8-16	30910	608-307	**19.70**
4	1-1/4	5/8	1	1/2	3/4	1/2-13	30912	608-308	**20.00**
4-1/2	1-1/4	5/8	1-1/2	1/2	13/16	1/2-13	30913	608-309	**20.20**
5	1-1/4	5/8	1-1/2	1/2	1-1/4	1/2-13	30914	608-310	**20.50**
6	1-1/4	5/8	1-1/2	1/2	2-1/4	1/2-13	30916	608-311	**22.80**
4-1/2	1-1/2	3/4	1	5/8	7/8	5/8-11	30917	608-312	**22.80**
5	1-1/2	3/4	1-1/2	5/8	15/16	5/8-11	30918	608-313	**26.10**
5-1/2	1-1/2	3/4	1-1/2	5/8	1-7/16	5/8-11	30919	608-314	**27.60**
6	1-1/2	3/4	1-1/2	5/8	2	5/8-11	30920	608-315	**28.50**

Hand Retractable Spring Plungers Quick Release "L" Handle

- Plunger has a slight taper for easy alignment
- Nylon locking element is standard on all sizes
- Built in drive wrench for rapid installation and alignment
- Plunger can be completely withdrawn into the body and locked into a retracted position





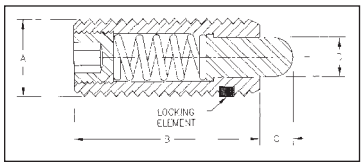
End Force Initial	End Force Final	A	B	Thread C	D	Hex E	Dia. F	+.000 -.001 G	H	Model No.	Code No.	Price $
.50	2.50	1.25	.50	1/4-20	.38	1/4	.101	.155	.50	54301	608-320	**18.30**
.75	3.75	2.00	1.00	3/8-16	.56	3/8	.134	.234	.74	54302	608-321	**21.60**
1.00	5.00	2.11	1.11	1/2-13	.75	1/2	.108	.313	1.00	54303	608-322	**25.00**

Standard Spring Plungers Heavy End

- Carbon & Stainless Steel Bodies
- Heavy End Forces

Carbon & Stainless Steel Nose

- Steel Body Plungers:
  –12L14 Steel Body
  –Black Oxide Finish
  –Case Hardened 12L14 Steel Nose, Black Oxide Finish
- Stainless Steel Body Plungers:
  –303 Stainless Steel Body and Nose
- Excellent wear resistance





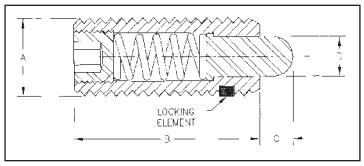
Thread A	B (in.)	C (in.)	Ball Dia. D (in.)	End Force Initial (lb)	End Force Final (lb)	Carbon Steel Code No.	Price $	Stainless Steel Code No.	Price $
6-32	17/32	.062	.046	1.50	4.50	609-062	**6.80**	609-075	**11.30**
6-32	3/8	.062	.046	1.00	1.60	609-063	**6.60**	609-076	**11.30**
8-32	5/8	.093	.070	2.70	7.30	609-064	**6.60**	609-077	**11.10**
10-32	3/4	.125	.093	2.90	11.10	609-065	**6.40**	609-078	**11.10**
1/4-20	1	.187	.119	3.00	13.00	609-066	**6.40**	609-079	**10.60**
1/4-28	1	.187	.119	3.00	13.00	609-067	**6.40**	609-080	**10.80**
1/4-20	3/4	.125	.119	2.00	9.00	609-068	**6.40**	609-081	**10.10**
5/16-18	1	.187	.135	3.00	15.00	609-069	**6.40**	609-082	**11.10**
3/8-16	1-1/8	.187	.186	5.50	14.50	609-070	**6.50**	609-083	**12.40**
1/2-13	1-1/4	.250	.248	6.60	17.40	609-071	**6.60**	609-084	**11.70**
5/8-11	1-1/2	.312	.310	10.50	25.50	609-072	**8.60**	609-085	**21.70**
3/4-10	1-3/4	.312	.374	6.70	37.30	609-073	**12.40**	609-086	**27.70**
1-8	2-13/32	.500	.499	16.00	68.00	609-074	**17.50**	609-087	**58.30**

Standard Spring Plungers Light End

- Carbon & Stainless Steel Bodies
- Light End Forces

Carbon & Stainless Steel Nose

- Steel Body Plungers:
  –12L14 Steel Body
  –Black Oxide Finish
  –Case Hardened 12L14 Steel Nose, Zinc Plated
- Stainless Steel Body Plungers:
  –303 Stainless Steel Body and Nose
- Excellent wear resistance

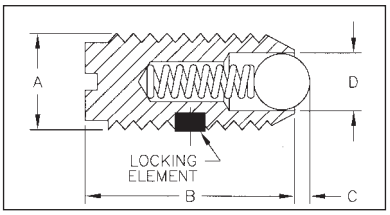




Thread A	B (in.)	C (in.)	Ball Dia. D (in.)	End Force Initial (lb)	End Force Final (lb)	Carbon Steel Code No.	Price $	Stainless Steel Code No.	Price $
6-32	17/32	.062	.046	.50	1.50	609-088	**6.60**	609-100	**11.30**
8-32	5/8	.093	.070	.70	2.30	609-089	**6.60**	609-101	**10.60**
10-32	3/4	.125	.093	1.30	2.70	609-090	**6.40**	609-102	**10.20**
1/4-20	3/4	.125	.119	.25	2.00	609-091	**5.80**	609-103	**10.00**
1/4-20	1	.187	.119	1.00	4.00	609-092	**6.60**	609-104	**9.00**
1/4-28	1	.187	.119	1.00	4.00	609-093	**6.40**	609-105	**10.30**
5/16-18	1	.187	.135	1.50	4.50	609-094	**6.40**	609-106	**9.20**
3/8-16	1-1/8	.187	.186	2.80	7.20	609-095	**6.50**	609-107	**11.10**
1/2-13	1-1/4	.250	.248	2.70	9.30	609-096	**6.40**	609-108	**11.70**
5/8-11	1-1/2	.312	.310	3.50	10.50	609-097	**8.60**	609-109	**21.70**
3/4-10	1-3/4	.312	.374	4.00	16.00	609-098	**12.30**	609-110	**40.20**
1-8	2-13/32	.500	.499	4.00	31.00	609-099	**17.50**	609-111	**58.30**

Te-Co Ball Plungers

- Material:
  - Steel Body: 12L14 Steel
  - Stainless Steel Body: 303 Stainless Steel
  - Ball: 440 Stainless Steel or Nylon
- Smallest and lightest spring loaded device
- Side-load tolerant
- Controlled end forces
- Screwdriver installation
- Many sizes conform to TCMAI standards
- Bodies are color coded to indicate end forces:
  - Plain or Zinc = Light Force
  - Black = Standard Force
  - Gold = Heavy Force

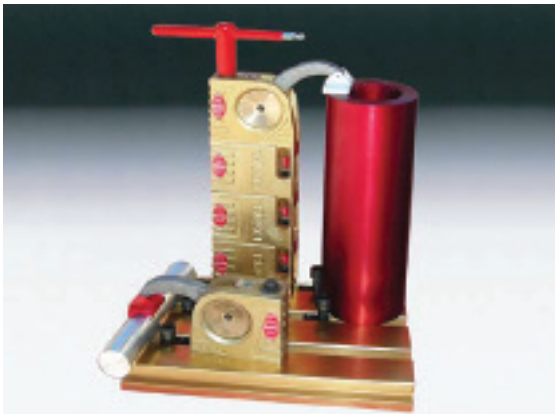




Thread A	B	C	Ball Dia. D	End Force Initial (lb)	End Force Final (lb)	Steel Body: Stainless Steel Ball Code No.	Steel Body: Price $	Steel Body: Nylon Ball Code No.	Steel Body: Price $	Stainless Steel Body: Stainless Steel Ball Code No.	Stainless Steel Body: Price $	Stainless Steel Body: Nylon Ball Code No.	Stainless Steel Body: Price $
Inch													
4-48	3/16	.020	.062	.12	.50	608-915	**7.20**	608-938	**7.30**	608-961	**7.40**	608-984	**7.40**
5-40	1/4	.020	.062	.25	.75	608-916	**6.60**	608-939	**6.80**	608-962	**7.10**	608-985	**7.10**
6-40	5/16	.023	.078	.50	1.00	608-917	**6.50**	608-940	**6.60**	608-963	**6.70**	608-986	**6.70**
8-36	11/32	.025	.093	.50	1.25	608-918	**5.80**	608-941	**6.00**	608-964	**6.10**	608-987	**6.10**
8-32	11/32	.025	.093	.50	1.25	608-919	**6.00**	608-942	**6.00**	608-965	**4.00**	608-988	**6.10**
10-32	33/64	.025	.093	.50	1.50	608-920	**5.60**	608-943	**5.70**	608-966	**6.70**	608-989	**6.70**
10-32	33/64	.025	.093	1.50	3.00	608-921	**5.70**	608-944	**5.70**	608-967	**6.80**	608-990	**6.80**
10-32	33/64	.025	.093	2.00	5.00	608-922	**5.60**	608-945	**5.70**	608-968	**6.80**	608-991	**6.80**
1/4-20	17/32	.035	.125	2.00	4.00	608-923	**5.60**	608-946	**5.70**	608-969	**7.30**	608-992	**7.40**
1/4-20	17/32	.035	.125	3.00	7.00	608-924	**5.70**	608-947	**5.70**	608-970	**7.30**	608-993	**7.40**
1/4-20	17/32	.035	.125	4.00	12.00	608-925	**5.70**	608-948	**5.70**	608-971	**7.30**	608-994	**7.40**
5/16-18	37/64	.040	.156	2.00	4.50	608-926	**5.60**	608-949	**5.70**	608-972	**8.30**	608-995	**8.40**
5/16-18	37/64	.040	.156	4.00	9.00	608-927	**5.70**	608-950	**5.70**	608-973	**8.30**	608-996	**8.40**
5/16-18	37/64	.040	.156	6.00	17.00	608-928	**5.90**	608-951	**5.70**	608-974	**8.30**	608-997	**8.40**
3/8-16	5/8	.048	.187	2.50	5.00	608-929	**5.80**	608-952	**5.70**	608-975	**9.20**	608-998	**9.20**
3/8-16	5/8	.048	.187	5.00	10.00	608-930	**5.80**	608-953	**5.70**	608-976	**9.20**	608-999	**9.20**
3/8-16	5/8	.048	.187	6.00	21.00	608-931	**5.70**	608-954	**5.70**	608-977	**9.20**	609-000	**9.20**
1/2-13	3/4	.072	.281	3.00	6.00	608-932	**6.20**	608-955	**6.30**	608-978	**9.20**	609-001	**9.20**
1/2-13	3/4	.072	.281	6.00	12.00	608-933	**6.20**	608-956	**6.30**	608-979	**9.20**	609-002	**9.20**
1/2-13	3/4	.072	.281	6.00	30.00	608-934	**5.80**	608-957	**6.30**	608-980	**9.20**	609-003	**9.20**
5/8-11	63/64	.096	.375	4.50	9.00	608-935	**7.50**	608-958	**7.50**	608-981	**12.20**	609-004	**12.30**
5/8-11	63/64	.096	.375	9.00	18.00	608-936	**7.50**	608-959	**7.50**	608-982	**12.20**	609-005	**12.30**
5/8-11	63/64	.096	.375	7.00	50.00	608-937	**7.50**	608-960	**7.50**	608-983	**12.20**	609-006	**12.30**
Metric	**(mm)**	**(mm)**	**(mm)**										
M4 x 0.7	9	.8	2.5	.90	2.25	609-007	**6.80**	609-023	**6.80**	609-036	**9.70**	609-049	**10.70**
M5 x 0.8	13	.6	2.38	.50	1.50	609-008	**6.90**						
M5 x 0.8	13	.6	2.38	1.50	3.00	609-009	**6.90**						
M5 x 0.8	13	.6	2.38	2.00	4.90	609-010	**6.90**						
M6 x 1.0	14	1	3.5	2.00	2.90	609-011	**7.10**	609-024	**7.20**	609-037	**9.90**	609-050	**10.80**
M6 x 1.0	14	1	3.5	.45	1.35	609-012	**7.10**	609-025	**7.20**	609-038	**9.90**	609-051	**10.80**
M6 x 1.0	14	1	3.5	6.25	8.95	609-013	**7.10**	609-026	**7.20**	609-039	**9.90**	609-052	**10.80**
M8 x 1.25	16	1.5	5	3.35	6.70	609-014	**7.60**	609-027	**7.60**	609-040	**10.10**	609-053	**11.10**
M8 x 1.25	16	1.5	5	1.11	2.25	609-015	**7.60**	609-028	**7.60**	609-041	**10.10**	609-054	**11.10**
M8 x 1.25	16	1.5	5	8.95	13.40	609-016	**7.60**	609-029	**7.60**	609-042	**10.10**	609-055	**11.10**
M10 x 1.5	19	2	6	4.45	7.80	609-017	**8.00**	609-030	**8.10**	609-043	**10.20**	609-056	**11.30**
M10 x 1.5	19	2	6	1.80	3.35	609-018	**8.00**	609-031	**8.10**	609-044	**10.20**	609-057	**11.30**
M10 x 1.5	19	2	6	13.40	20.00	609-019	**8.00**	609-032	**8.10**	609-045	**10.50**	609-058	**11.60**
M12 x 1.75	22	2.5	8	6.70	12.25	609-020	**9.90**	609-033	**9.90**	609-046	**10.50**	609-059	**11.60**
M12 x 1.75	22	2.5	8	2.25	4.50	609-021	**9.90**	609-034	**10.00**	609-047	**10.50**	609-060	**11.60**
M12 x 1.75	22	2.5	8	16.75	25.65	609-022	**10.00**	609-035	**10.10**	609-048	**10.50**	609-061	**11.60**

MITEE-BITE PRODUCTS LLC **Workholding Specialists**

Kopal® Clamps



Need a quick and easy way to clamp parts with top pressure? Check out this versatile line-up of clamps! From the strong but compact Piccolo to the heavy-duty Big Block.

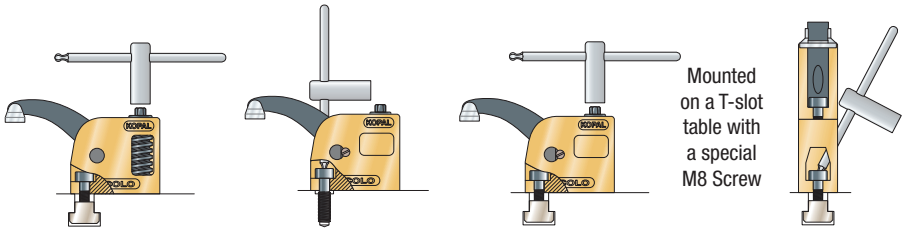
The worm and gear design ensures the clamps will not loosen with use yet the clamps are easy to set up and break down. This is ideal for short cycle times and odd shaped parts.

The modular design also allows adjusting clamping height by stacking the riser blocks, and the use of an extension arm increases reach!

PICCOLO

Up to 1460 lbs. (6500N) Holding Force

When the arm is released, the Piccolo remains in position in the slot.



MONO BLOC

Up to 3600 lbs. (16000N) Holding Force

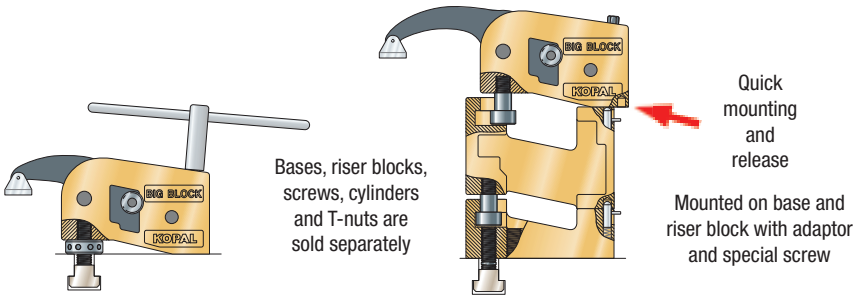
1. Slide the T-nut and the screw into the slot
2. Position and tighten the clamp onto the table using the clamping key provided
3. Clamp the workpiece using the same key
4. Proceed with machining



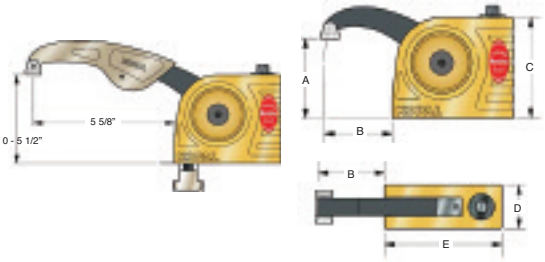
BIG BLOCK

Up to 9000 lbs. (40000N) Holding Force

When the workpiece is released, the Big Block can either remain fixed in the slot, or slide in the slot.



Part No.	Description	A	B	C	D	E	Code No.	Price $
25500	Piccolo	-.60"-2.28"	2.125"	2.5"	1.250"	2.87"	604-486	**485.40**
25705	Mono Bloc	0"-4"	2.375"	3.5"	1.563"	4.25"	604-184	**588.30**
08035	Big Block	-70"-5.32"	5.700"	4.1"	2.350"	6.38"	604-485	**1,317.90**

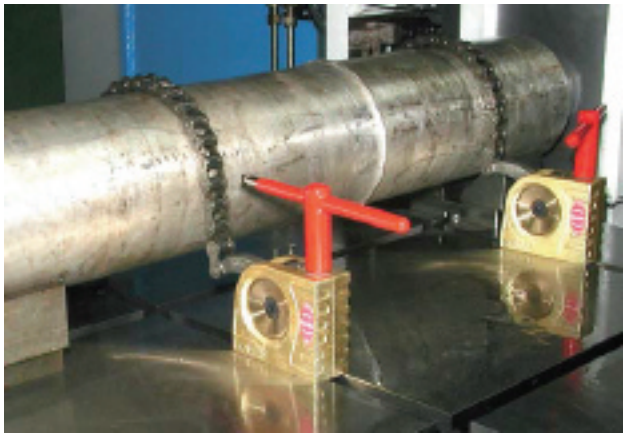


Mono-Bloc with extension arm increases range to 5 1/2".

For more information please call today for a MITEE-BITE Catalogue or CD ROM also for product videos visit www.miteebite.com

MITEE-BITE PRODUCTS LLC **Workholding Specialists**

Mono-Bloc Chain Clamp



The Mono-Bloc Chain Clamp is a simple and rapid workholding solution for a wide array of applications.

The Chain Clamp offers fast and powerful clamping with forces to 3,600 lbs. (16000N).

Additional lengths of chain can be added for large applications.





To prevent marring or scratching on delicate pieces use the protective chain clips. (25045) Minimum radius 6".

Mono-Bloc

Part No.	Description	A	B	C	D	E	Code No.	Price $
25040	Mono-Bloc Chain	0" - 4"	2.375"	3.5"	1.563"	4.25"	604-478	**1,020.80**

Parts for the Mono-Bloc

Part No.	Description	Code No.	Price $
25041	Master Link	604-479	**10.00**
25042	Extra Chain (1 meter)	604-480	**98.80**
25043	Anchor	604-481	**250.00**
25045	Protective Clips (5/pk)	604-482	**41.70**
25720	Wrench	604-187	**49.10**

Deluxe Mono-Bloc Start-up Kit

High-impact plastic storage/carrying case with room to store tools listed below and space to store additional T-nuts for other size mills.

Kit includes: (2) Mono-Bloc Clamps with 2 5/8" arm, (2) Standard-Duty Riser Blocks,
(1) Extension Arm,
(1) Standard-duty T-Wrench,
(2) M10x35mm screws,
(2) M10x40mm screws,
(2) T-nuts
(choose from chart below).



Mono-Bloc Start-up Kit

Part No.	T-Slot Size	Code No.	Price $
25725	1/2"	604-338	**1,801.30**
25727	9/16"	604-197	**1,801.30**
25729	5/8	604-198	**1,801.30**
25731	3/4"	604-199	**1,801.30**

Individual Mono-Bloc Items

Part No.	Description	Code No.	Price $
25705	Mono-Bloc Clamp with 2 5/8" Arm (Includes T-wrench)	604-184	**588.30**
25710	Standard-Duty Riser Block	604-185	**179.10**
25515	Replacement Swivel Shoe	604-186	**19.70**
25720	T-Wrench for Mono-Bloc	604-187	**49.10**
25540	Extension Arm	604-188	**152.20**
25310	Worm Gear	604-483	**143.00**

Special Screws And T-Nuts For Mono-Bloc

Part No.	Part Description	Code No.	Price $
25730	M10x35mm Screw for 9/16" T-Nut	604-189	**19.70**
25733	M10x40mm Screw for 5/8" & 3/4" T-Nut	604-190	**23.00**
25736	M10x45mm Screw for 13/16" & 7/8" T-Nut	604-191	**19.70**
25747	1/2"xM10 T-Nut (12mm)	604-484	**22.60**
25748	9/16"xM10 T-Nut (14mm)	604-192	**27.10**
25751	5/8"xM10 T-Nut (16mm)	604-193	**27.10**
25754	3/4"xM10 T-Nut (18mm)	604-194	**31.70**
25757	13/16"xM10 T-Nut (20mm)	604-195	**29.60**
25760	7/8"xM10 T-Nut (22mm)	604-196	**24.70**

For more information please call today for a MITEE-BITE Catalogue or CD ROM also for product videos visit www.miteebite.com

MITEE-BITE PRODUCTS LLC Workholding Specialists

Original Fixture Clamps

The Cam Action MITEE-BITE Fixture Clamp is made up of two simple components: a hardened steel socket cap screw with an offset head and a hexagonal washer.
- Low profile makes computer programming easier
- Cam action provides fast, strong clamping
- Small size allows more parts per load
- Simple design keeps cost low.

NOTE: Clockwise rotation is recommended.
Workpiece stop should be on the right of clamp.







Part No.	A	B	C	D	E	F	*G	Torque (ft/lbs)	Holding Force	Clamps Per Pack	Code No.	Price $ Per Pack
Inch												
10202	8-32	5/64	.030	.312	.110	.350	.150	1.5	205 lbs	10	604-000	**84.50**
10207	10-32	3/32	.040	.500	.160	.340	.250	2.5	350 lbs	10	604-001	**89.00**
10204	1/4-20	1/8	.040	.625	.190	.470	.308	6.2	800 lbs	10	604-002	**89.00**
10205	5/16-24	3/16	.040	.812	.190	.460	.400	8.3	800 lbs	12	604-003	**111.50**
10201	5/16-18	3/16	.040	.812	.190	.460	.400	8.3	800 lbs	12	604-004	**111.50**
10206	3/8-16	3/16	.050	.812	.250	.710	.400	20.8	2,000 lbs	10	604-005	**102.50**
10208	1/2-13	5/16	.100	1.000	.375	.900	.500	65.0	4,000 lbs	8	604-006	**111.50**
10210	5/8-11	3/8	.100	1.187	.500	1.125	.590	100.0	6,000 lbs	4	604-007	**84.50**
Metric								**(N.m.)**				
50204	M4	3mm	.76mm	7.93mm	2.80mm	9.6mm	3.80mm	2.0 N.m.	910 N	10	604-008	**84.50**
50206	M6	4mm	1.01mm	15.86mm	4.75mm	11.2mm	7.80mm	8.5 N.m.	3,558 N	10	604-009	**89.00**
50208	M8	5mm	1.01mm	20.61mm	4.75mm	15.0mm	10.15mm	11.3 N.m.	3,558 N	12	604-010	**111.50**
50210	M10	7mm	1.27mm	20.61mm	6.35mm	19.0mm	10.15mm	28.0 N.m.	8,895 N	10	604-011	**102.50**
50212	M12	8mm	2.03mm	25.38mm	9.52mm	22.8mm	12.70mm	88.0 N.m.	17,790 N	8	604-012	**111.50**
50216	M16	12mm	2.54mm	30.13mm	12.70mm	28.5mm	15.00mm	125.0 N.m.	26,680 N	4	604-013	**84.50**
Stainless Steel Washer & Screw												
10214	8 - 32	5/64	.030	.312	.110	.350	.150	1.5 (ft/lbs)	205 lbs	10	604-476	**63.80**
10203	1/4-20	1/8	.040	.625	.190	.470	.308	6.2 (ft/lbs)	800 lbs	4	604-014	**95.80**
10213	5/16-18	3/16	.040	.812	.250	.460	.400	8.3 (ft/lbs)	800 lbs	4	604-015	**81.50**
50214	M4	3mm	.76mm	7.93mm	2.80mm	9.6mm	3.80mm	2.0(N.m.)	910N	10	604-477	**63.80**
50205	M6	4mm	1.01mm	15.86mm	4.75mm	11.2mm	7.80mm	8.5 (N.m.)	3,558 N	4	604-016	**99.60**
50207	M8	5mm	1.01mm	20.60mm	6.35mm	15.0mm	10.15mm	11.30 (N.m.)	3,558 N	4	604-017	**128.30**

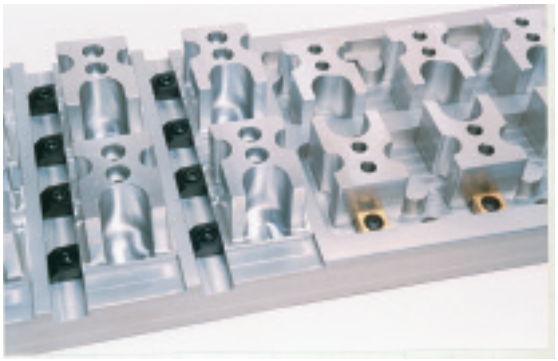
***G** - Location to drill and tap from edge of workpiece.

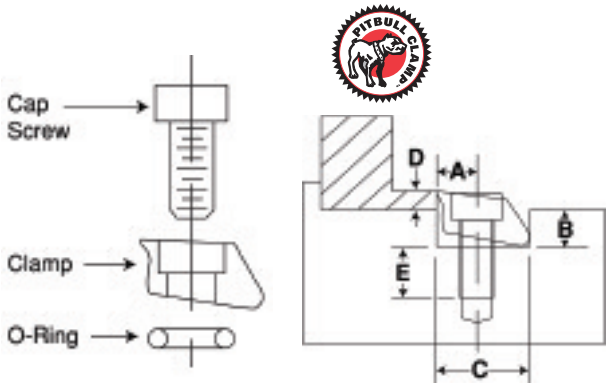
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MITEE-BITE PRODUCTS LLC Workholding Specialists

Pitbull® Clamps

The Revolutionary Pitbull® Clamp remains the lowest, highest holding force clamp in the industry today.
High vertical and horizontal clamping forces are generated, considering the size of the Pitbull® Clamps.
It uses a standard cap screw and an oil resistant O-ring.
The Pitbull® Clamp is available in 5 sizes and several styles, a tool steel knife edge for aggressive stock removal, a tool steel blunt edge for general purpose and a brass version to help prevent marring the workpiece.





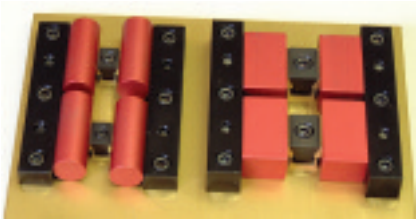
Part No.	Description	A	B	Clamping Width C	D	E	Screw Size	Max Torque (ft/lbs)	Holding Force (Lbs)	Total Throw	Clamps Per Pack	Code No.	Price $ Per Pack
Inch													
26000	Tool Steel, Knife Edge	.150	.140	.375	.075	.260	4-40	1.30	650	.0075	8	604-079	**124.40**
26010	Tool Steel, Blunt Edge	.150	.140	..375	.075	.260	4-40	1.30	650	.0075	8	604-080	**124.40**
26015	Brass, Blunt Edge	.150	.140	.375	.075	.220	4-40	.41	200	.0075	8	604-081	**124.40**
26020	Tool Steel, Knife Edge	.200	.187	.500	.100	.390	8-32	3.70	1,500	.0160	8	604-082	**132.00**
26030	Tool Steel, Blunt Edge	.200	.187	.500	.100	.390	8-32	3.70	1,500	.0160	8	604-083	**132.00**
26040	Brass, Blunt Edge	.200	.187	.500	.100	.340	8-32	2.00	400	.0160	8	604-084	**132.00**
26050	Tool Steel, Knife Edge	.300	.280	.750	.150	.570	1/4-20	14.50	3,600	.0240	6	604-085	**128.00**
26060	Tool Steel, Blunt Edge	.300	.280	.750	.150	.570	1/4-20	14.50	3,600	.0240	6	604-086	**128.00**
26065	Brass, Blunt Edge	.300	.280	.750	.150	.440	1/4-20	4.10	950	.0240	6	604-087	**128.00**
26070	Tool Steel, Knife Edge	.400	.450	1.000	.250	.710	3/8-16	30.00	6,000	.0500	4	604-088	**138.50**
26075	Tool Steel, Blunt Edge	.400	.450	1.000	.250	.710	3/8-16	30.00	6,000	.0500	4	604-089	**138.50**
26080	Tool Steel, Knife Edge	.600	.640	1.500	.375	.770	1/2-13	108.30	12,000	.0750	2	604-090	**121.10**
26085	Tool Steel, Blunt Edge	.600	.640	1.500	.375	.770	1/2-13	108.30	12,000	.0750	2	604-091	**121.10**

Metric also available, call for more information

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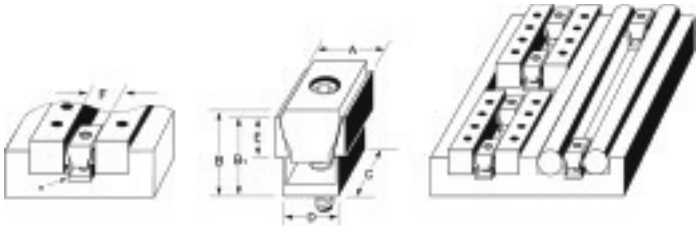
MITEE-BITE PRODUCTS LLC Workholding Specialists

Uniforce Clamps



The Mitee-Bite Uniforce Clamp, a compact, economical workholding device enables you to fixture more parts on the machine table. This simple efficient wedge design provides equilateral clamping force on both sides of the aluminum channel to hold two parts with one clamping action.





visit www.miteebite.com for the "Mitee-Bite Challenge" and more product detail

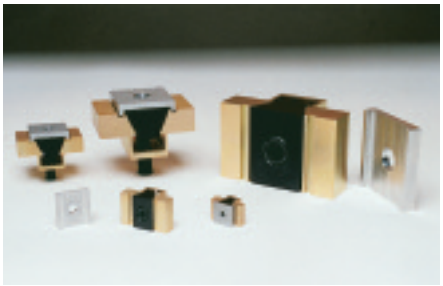
Part No.	Model	A	B	B1	C	*D	E	*F	Thread Size	Maximum Spread	Max Torque (ft/lbs)	Holding Force (lbs)	Clamps Per Pack	Key Size	Code No.	Price $ Per Pack
Inch																
60250	250	.240	.27	.250	.320	.210	.140	.250	2-56	.260	.5	200	6	5/64	604-037	**104.60**
60375	375	.360	.38	.375	.470	.310	.185	.375	4-40	.390	1.1	310	6	3/32	604-038	**104.60**
60500	500	.485	.58	.500	.625	.410	.220	.500	8-32	.530	2.5	500	8	9/64	604-039	**104.60**
60750	750	.735	.77	.750	.940	.635	.375	.750	1/4-20	.785	10.8	1,500	6	3/16	604-040	**106.50**
61000	1000	.980	1.02	1.000	1.250	.820	.500	1.000	5/16-18	1.050	10.4	2,000	4	1/4	604-041	**104.60**
61500	1500	1.470	1.52	1.500	1.875	1.215	.750	1.500	1/2-13	1.560	28.3	3,500	2	3/8	604-042	**174.20**
62000	2000	1.960	2.03	2.000	2.500	1.625	1.000	2.000	5/8-11	2.080	55.0	6,000	2	1/2	604-043	**264.00**

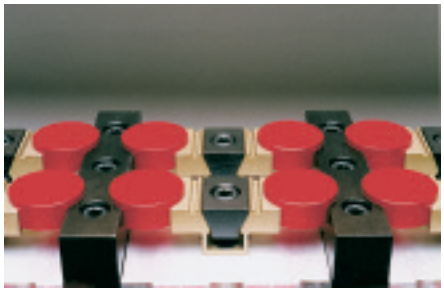
***D -** A milled slot wider than D dimension will insure the clamp remains in line with workpiece. Clamp sides should not come in contact with slot walls during expansion.

***F -** The distance needed between workpieces for clamp clearance. Drill and tap mounting hole on the center of F dimension.

Metric also available, call for more information

Machinable Uniforce Clamps

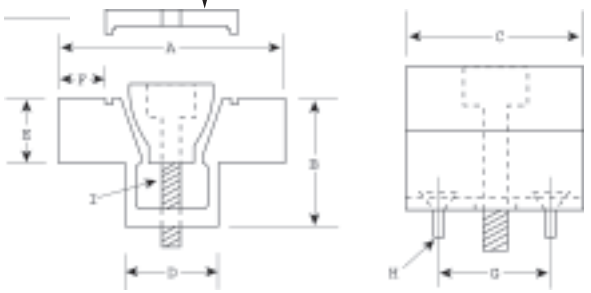




Locking plate is used only to machine jaws, remove to clamp workpiece.

When clamp is used to hold flat stock, use locking plate to machine faces parallel

Now you can hold those round and unusual shape parts with ease. This compact method of workholding will allow more parts per load at a lower price than vise soft jaws.
The compact Mitee-Bite Uniforce Clamp is available with extra material on the clamping jaws so it can be machined to conform to the shape of your workpiece. The specially designed steel wedge spreads the clamping force uniformly on both sides of the 7075-T6 aluminum channel. A unique locking plate is provided to make the clamp rigid while machining the jaws to your specifications, without vibration.



Model	Part No.	Description	*A	B	C	D	E	*F	G	*H	I	Max Torque (ft/lbs)	Holding Force (lbs)	Code No.	Price $
Inch															
500	60050	With Locking Plate	1.125	.50	.62	.420	.25	.18	.400	2-56	8-32	2.5	500	604-058	**35.50**
750	60075	With Locking Plate	1.500	.75	.94	.632	.37	.26	.625	6-32	1/4-20	10.8	1,500	604-060	**37.50**
1000	60100	With Locking Plate	2.000	1.00	1.25	.820	.50	.39	.812	6-32	5/16-18	10.4	2,000	604-062	**51.80**
1500	60150	With Locking Plate	3.000	1.50	1.87	1.215	.75	.62	1.200	10-32	1/2-13	28.3	3,500	604-064	**143.60**
2000	60200	With Locking Plate	4.000	2.00	2.50	1.625	1.00	.80	1.625	1/4-20	5/8-11	55.0	6,000	604-066	**235.40**

***A -** The distance needed between workpieces for clamp clearance, drill and tap mounting holes on the center of "A" dimension.

***F -** The amount of machinable stock on the jaws.

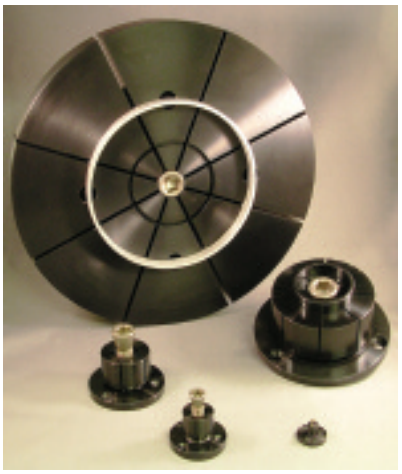
***H -** Mounting screws included

Metric also available, call for more information

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MITEE-BITE PRODUCTS LLC **Workholding Specialists**

ID Xpansion™ Clamp



The ID Xpansion™ Clamp is the ideal way to hold multiple parts on an inside diameter for machining on your VMC or HMC. These machinable clamps are produced in 12 sizes and can hold internal diameters from .160 to 9.85.

- Low Profile
- Ideal for Secondary Operations on Lathe Parts
- Easily Machined to Size on Lathe or Mill
- Excellent for Palletized Setups
- Allows More Parts Per Workcube or Fixture Plates
- Clamp Body Made of Mild Steel for Machinability
- Tighten with Hex Key or Hydraulic Pull Cylinders
- Longer screws are available for hydraulic applications (pull cylinders)





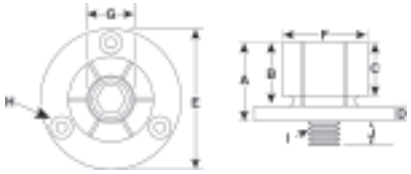
Model #00 - #6 ID Xpansion® Clamps

- Expand clamp approximately .002" to .003" (.1mm) over relaxed diameter and machine to fit workpiece bore, either on lathe or mill.
- If machining the clamp on lathe use the nut provided on the back of the clamp to tighten the tapered screw. This nut is used only while machining the clamp.
- Machine a pocket in the fixture, for the close tolerance "E" dimension and drill and tap mounting holes per "H" column. Drill and tap a hole from the "I" column in the center of the pocket for the tapered screw.
- A recessed dowel pin may be installed into the flange for additional rigidity if required.
- Range of expansion .005" to .025" (.2 to .5mm) depending upon size.

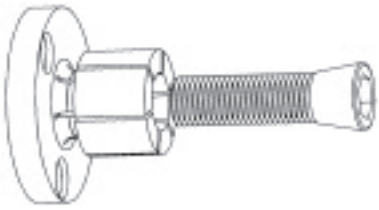
Model #7 - #10 ID Xpansion® Clamps

- Locking ring provided to ensure segments remain rigid while machining clamps to size.
- Insert ring and tighten drive screw, machine clamp to bore size. Remove ring to clamp workpiece.
- Aggressive material removal is not recommended when machining clamps to size.





Machining/Locking ring included on models #7-#10
to ensure the segments remain rigid while machining the clamp



Part No.	Model	A	B	C	D	E (+.000/-.002)	F	*G	*H	I	J	Max Torque (ft/lbs)	Holding Force (Lbs)	Code No.	Price $
Inch															
31000	#00	.42	.30	.24	.12	.787	.29	.16	2-56 on .540 BHC	2-56	.16	0.5	250	604-123	**61.20**
31050	#0	.86	.63	.59	.23	1.170	.49	.28	6-32 on .82 BHC	8-32	.30	3.6	950	604-124	**61.20**
31100	#1	.98	.75	.59	.23	1.240	.56	.48	6-32 on .910 BHC	1/4-20	.50	13.3	1,900	604-125	**61.20**
31150	#2	.98	.75	.59	.23	1.476	.79	.53	6-32 on 1.140 BHC	5/16-18	.56	27.6	2,500	604-126	**65.10**
31200	#3	1.13	.88	.69	.25	1.969	1.06	.71	8-32 on 1.550 BHC	3/8-16	.71	49.3	4,500	604-127	**84.70**
31250	#4	1.25	1.00	.81	.25	2.205	1.39	.90	8-32 on 1.790 BHC	1/2-13	.71	120.0	5,900	604-128	**104.50**
31300	#5	1.56	1.25	1.06	.31	2.736	1.65	1.15	10-32 on 2.200 BHC	5/8-11	.79	224.0	10,000	604-129	**133.90**
31350	#6	1.56	1.25	1.06	.31	2.972	2.03	1.15	10-32 on 2.515 BHC	5/8-11	.79	224.0	10,000	604-130	**146.90**
31400	#7	1.79	1.48	1.27	.31	4.232	3.06	1.15	1/4-20 on 3.646 BHC	5/8-11	.79	224.0	10,000	604-131	**233.50**
31450	#8	1.79	1.48	1.27	.31	5.232	4.06	1.15	1/4-20 on 4.648 BHC	5/8-11	.79	224.0	10,000	604-132	**286.60**
31500	#9	1.79	1.48	1.27	.31	5.232	6.89	1.15	1/4-20 on 4.648 BHC	5/8-11	.79	224.0	10,000	604-438	**806.80**
31550	#10*	1.79	1.48	1.27	.31	6.000	9.85	1.15	1/4-20 on 5.250 BHC	5/8-11	.79	125.0	6,000	604-440	**1,416.60**

***G -** Minimum diameter the "F" dimension can be machined or turned down ***H -** (3) Mounting screws included - (4) for model numbers #9 and #10
***Model #10** Made from 7075-T6 Aluminum
Metric also available, call for more information

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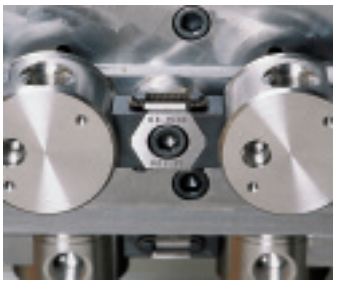
MITEE-BITE PRODUCTS LLC Workholding Specialists

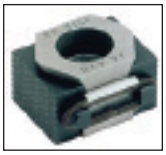
OK-VISE® Clamps



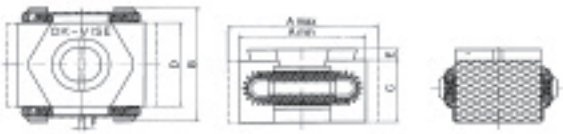
The OK-Vise Clamp
With clamping capabilities up to 33,000 lbs, the OK-Vise is one of the strongest workholding products available in the Machine Tool Industry today.

Three Dimensional Machining
Due to the low-profile design of the OK-Vise Clamps, it is possible to execute flexible three-directional machining of workpieces with one fastening. This feature creates improved accuracy. The single wedge clamp locks the workpiece to prevent any movement.



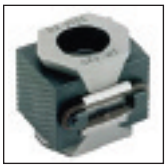


Single-Wedge OK-Vise Clamps
Strong lateral clamping with a single wedge design

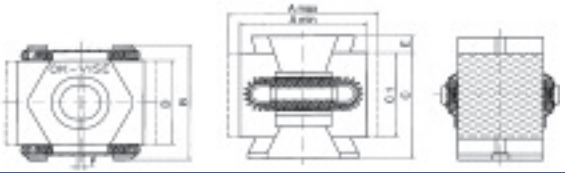


Part No.	Model	Min.	A Optimum	Max.	B	C	D	E	F	Mounting Screw (Included)	Max Torque (ft/lbs)	Pressing Force of Jaws (lbs)	Hardness of Jaws HRC	Code No.	Price $
*47100	AK2-VT-SO	.79"	.90"	.98"	.86"	.43"	.59"	.16"	.060"	10-32 x 3/4	7	2,000	48-52	604-442	**118.50**
*47110	BK2-VT-S	1.06"	1.14"	1.22"	1.14"	.59"	.83"	.10"	.060"	5/16-18 x 3/4	30	5,500	48-52	604-068	**238.50**
47105	BK2-VT-O	1.06"	1.14"	1.22"	1.14"	.59"	.83"	.10"	.060"	5/16-18 x 3/4	30	5,500	48-52	604-468	**186.70**
*47103	BK2-VT-SO	1.06"	1.14"	1.22"	1.14"	.59"	.83"	.10"	.060"	5/16- 18 x 3/4	30	5,500	48-52	604-469	**133.40**
47115	BK2-VT	1.06"	1.14"	1.22"	1.14"	.59"	.83"	.10"	.060"	5/16-18 x 3/4	30	5,500	48-52	604-069	**238.50**
47113	BK2-VT-SS	1.06"	1.14"	1.22"	1.14"	.59"	.83"	.10"	.060"	5/16-18 x 3/4	30	5,500	48-52	604-470	**170.40**
47130	DK2-VTI	1.65"	1.77"	1.93"	1.61"	.87"	1.18"	.16"	.080"	1/2-13 x 1-1/4	110	14,500	48-52	604-070	**353.60**
47160	FK2-VT	2.24"	2.40"	2.60"	2.20"	1.14"	1.65"	.20"	.145"	5/8-11 x 1-1/2	250	24,900	48-52	604-071	**617.20**

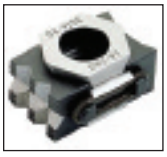
*47100, 47110 and 47103 have smooth jaws.



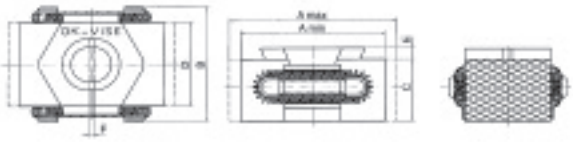
Double-Wedge OK-Vise Clamps
The double-wedge clamps generate a pull-down action pressing the workpiece down towards the fixture base.



Part No.	Model	Min.	A Optimum	Max.	B	C	C1	D	E	F	Mounting Screw (Included)	Max Torque (ft/lbs)	Pressing Force of Jaws (lbs)	Hardness of Jaws HRC	Code No.	Price $
47150	DK2-WTI	1.65"	1.77"	1.93"	1.61"	1.42"	1.18"	1.18"	.20"	.080"	1/2-13 x 1-1/2	110	20,000	48-52	604-072	**499.30**
47180	FK2-WT	2.24"	2.40"	2.65"	2.20"	1.97"	1.65"	1.65"	.20"	.145"	5/8-11 x 2-1/4	250	33,000	48-52	604-073	**838.80**



Machinable Single-Wedge OK-Vise Clamps
Additional material is added to these machinable jaws

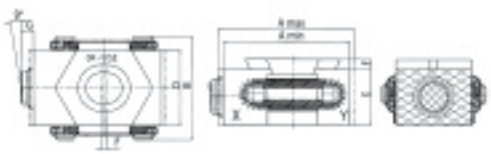


Part No.	Model	Min.	A Optimum	Max.	B	C	D	E	F	Mounting Screw (Included)	Max Torque (ft/lbs)	Pressing Force of Jaws (lbs)	Hardness of Jaws HRC	Code No.	Price $
*47120	BK2-VT-S+3	1.30"	1.38"	1.46"	1.14"	.59"	.83"	.10"	.060"	5/16-18 x 3/4	30	5,000	30-34	604-074	**334.00**
47140	DK2-VTI+5	2.05"	2.17"	2.32"	1.61"	.87"	1.18"	.16"	.080"	1/2-13 x 1-1/4	110	12,000	30-34	604-075	**507.90**
47170	FK2-VT+5	2.64"	2.80"	2.99"	2.20"	1.14"	1.65"	.20"	.145"	5/8-11 x 1-1/2	250	22,000	30-34	604-076	**729.40**

*47120 has smooth jaw.



Special Model OK-Vise Clamps
OK-Vise low-profile clamp with a self adjusting steel ball used when clamping castings and workpieces with irregular shapes.

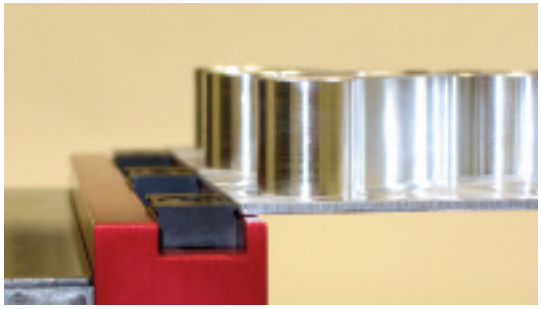


Part No.	Model	Min.	A Optimum	Max.	B	C	D	E	F	G	H	K	L	Mounting Screw (Included)	Max Torque (ft/lbs)	Pressing Force of Jaws (lbs)	Code No.	Price $
47112	BK2-VT-T	1.18	1.26	1.34	1.14	0.59	0.83	0.10	-	0.30	0.47	.83	M5	5/16-18 x 3/4 SHCS	30	5,000	604-471	**291.70**
47145	DK2-VTI-T	1.81	1.93	2.09	1.61	0.87	1.18	0.16	-	0.43	0.71	1.10	M5	1/2-13 x 1-1/4 SHCS	110	12,000	604-472	**411.70**
47175	FK2-VT-T	2.40	2.56	2.76	2.20	1.14	1.65	0.19	-	0.57	1.02	1.57	M5	5/8-11 x 1-1/2 SHCS	250	22,000	604-473	**530.00**
47185	BK2-VT-B	1.18	1.26	1.34	1.14	.59	.83	.10	.060	.12	-	-	-	5/16-18 x 3/4	30	5,500	604-077	**422.20**
47190	DK2-VTI-B	1.85	1.97	2.12	1.61	.87	1.18	.16	.080	.20	-	-	-	1/2-13 x 1-1/4	110	12,000	604-078	**610.10**
47187	BK2-VT-E	1.54	1.61	1.69	1.14	0.59	0.83	0.10	-	-	-	-	-	5/16-18 x 3/4 SHCS	30	5,000	604-474	**366.70**
47186	DK2-VTI-E	2.44	2.56	2.72	1.61	0.86	1.18	0.15	-	-	-	-	-	1/2-13 x 1-1/4 SHCS	110	12,000	604-475	**470.00**

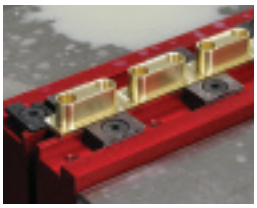
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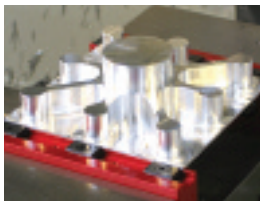
TalonGrip™ Vise Jaws



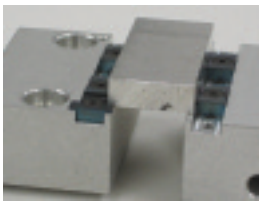
MITEE-BITE Products introduces a new and innovative product that will increase the functionality of your standard 4 and 6 inch (100mm and 150mm) vises. **TalonGrip**™ is a simple bolt system that will allow you to perform aggressive machining operations while clamping on as little as .060 (1.5mm) of an inch. Ideal for small lot sizes, difficult applications or proto-type work when building a fixture would not be beneficial. TalonGrips are also available individually for fixturing with Pitbull and Dyna-Force clamps or for soft jaw applications.



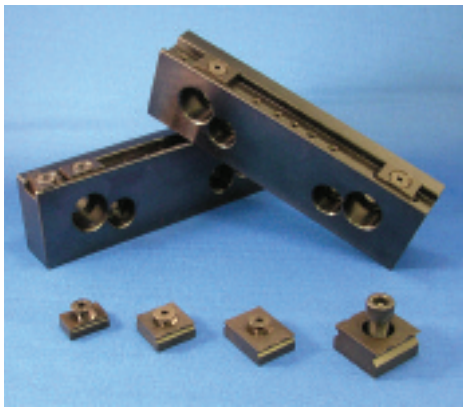
Multiple Parts

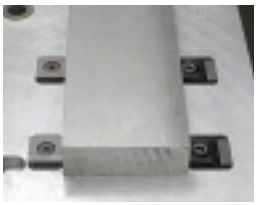


Aggressive stock removal

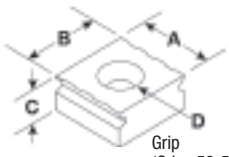


Soft Jaws

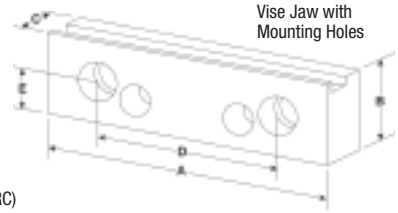




Fixture Application
with Pitbull Clamps



Grip
(Grips 52-54 RC)



Vise Jaw with
Mounting Holes

Steel Vise Jaw Set (Set Includes 4 TalonGrips, 1 stop with M5 Screws)

Part No.	Vise	A Inch (Metric)	B Inch (Metric)	C Inch (Metric)	D Inch (Metric)	E Inch (Metric)	Code No.	Price $
With Mounting Holes								
32044	4" (100mm)	4.0" (100)	1.48" (37.59)	1.0" (25.4)	2.5" (63.5)	.688" (17.47)	604-410	**250.00**
32066	4"/6" (100mm/150mm)	6.0" (150)	1.73" (43.94)	1.0" (25.4)	2.5"/3.88" (63.5/98.55)	.688"/.94" (17.47/23.87)	604-412	**283.40**
32068	6" (150mm)	8.0" (200)	1.73" (43.94)	1.0" (25.4)	3.88" (98.55)	.94" (23.87)	604-414	**316.70**
32088	6"/8" (150mm/200mm)	8.0" (200)	2.45" (62.23)	1.25" (31.75)	3.87"/4.75" (98.3/120.65)	.94"/1.218" (23.87/30.94)	604-466	**416.70**
Without Mounting Holes								
33044	4" (100mm)	4.0" (100)	1.48" (37.59)	1.0" (25.4)	-	-	604-411	**250.00**
33066	4"/6" (100mm/150mm)	6.0" (150)	1.73" (43.94)	1.0" (25.4)	-	-	604-413	**283.40**
33068	6" (150mm)	8.0" (200)	1.73" (43.94)	1.0" (25.4)	-	-	604-415	**316.70**

Vise Jaw Grips & Stops

Part No.	Description	A Inch (Metric)	B Inch (Metric)	C Inch (Metric)	D Inch (Metric)	Recommended Gripping Height	No. of Grips Per Pack	Code No.	Price $ Per Pack
Inch									
32050	Extra Grips	.75"	.500"	.250"	10-32	.060-.075	2	604-416	**40.90**
32020	Extra Stop	.75"	.500"	.250"	10-32	-	1	604-421	**25.00**
Metric									
33050	Extra Grips	19.05mm	12.7mm	6.35mm	M5	1.5mm-1.9mm	2	604-418	**40.90**
33020	Extra Stop	19.05mm	12.7mm	6.35mm	M5	-	1	604-423	**25.00**
33030	Extra Stop	19.05mm	19.05mm	7.92mm	M5	-	1	604-467	**25.00**

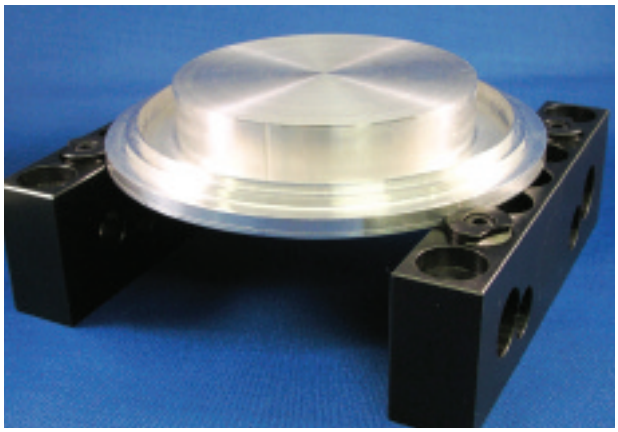
Fixture Grips

Part No.	A Inch (Metric)	B Inch (Metric)	C Inch (Metric)	D Inch (Metric)	Recommended Gripping Height	No. of Grips Per Pack	Code No.	Price $ Per Pack
Inch								
32075	.75"	.750"	.312"	10-32	.060"-.120"	2	604-424	**45.90**
32100	.75"	1.000"	.312"	10-32	.060"-.120"	2	604-428	**50.50**
32150	1.00"	1.000"	.500"	5/16-18	.060"-.120"	1	604-429	**43.40**
Metric								
33075	19.05mm	19.05mm	7.92mm	M5	1.5mm-3.0mm	2	604-426	**45.90**
33100	19.05mm	25.4mm	7.92mm	M5	1.5mm-3.0mm	2	604-430	**50.50**
33150	25.4mm	25.4mm	12.7mm	M5	1.5mm-3.0mm	1	604-431	**43.40**

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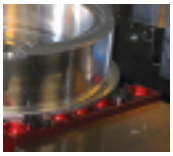
VersaGrip™ Vise Jaws



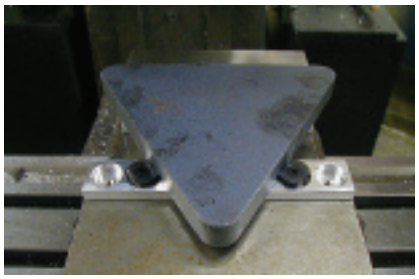
VersaGrip™, as the name implies, offers the versatility of clamping standard vise work as well as providing a solution for difficult applications that would normally require fixturing or machining soft-jaws. By simply replacing your current jaws with the VersaGrip system you can securely hold odd shaped parts while machining at speeds and feeds you never thought possible.

This system can accommodate a wide range of part sizes as well as holding multiple parts in a single cycle.
The hardened (52-54 RC)
VersaGrip has penetrating teeth designed to bite into your workpiece preventing lateral and horizontal movement.
These grips will hold flame cut parts, castings, even parts with a negative draft!





Large dimensions



Odd Shaped parts





Multiple parts

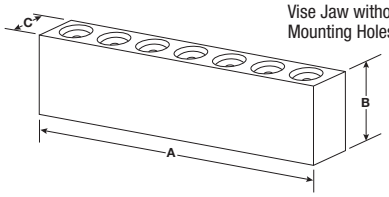


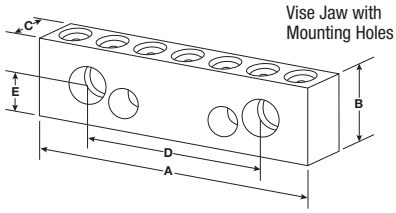
Tombstone application

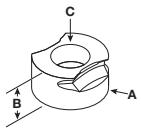
TalonGrip™ & VersaGrip™ 6" Combo Kit

Part No.	Contents of Kit	Code No.	Price $
33006	32066 TalonGrip Vise Jaw Set 32166 VersaGrip Vise Jaw Set	604-464	**591.70**

NOTE: All Jaws designed to fit on a 4" or 6" Vise







Steel Vise Jaw Set (Set Includes 4 VersaGrips)

Part No.	Vise	A Inch (Metric)	B Inch (Metric)	C Inch (Metric)	D Inch (Metric)	E Inch (Metric)	Code No.	Price $
With Mounting Holes								
32166	4"/6" (100mm/150mm)	6.0" (150)	1.88" (47.75)	1.0" (25.4)	2.5"/3.88" (63.5/98.55)	.688"/.94" (17.47/23.87)	604-432	**308.40**
32168	6" (150mm)	8.0" (200)	1.88" (47.75)	1.0" (25.4)	3.88" (98.55)	.94" (23.87)	604-434	**333.40**
Without Mounting Holes								
33166	6" (150mm)	8" (200mm)	1.88" (47.75)	1.0" (25.4)	-	-	604-433	**308.40**
33168	8" (200mm)	8" (200mm)	1.88" (47.75)	1.0" (25.4)	-	-	604-435	**333.40**

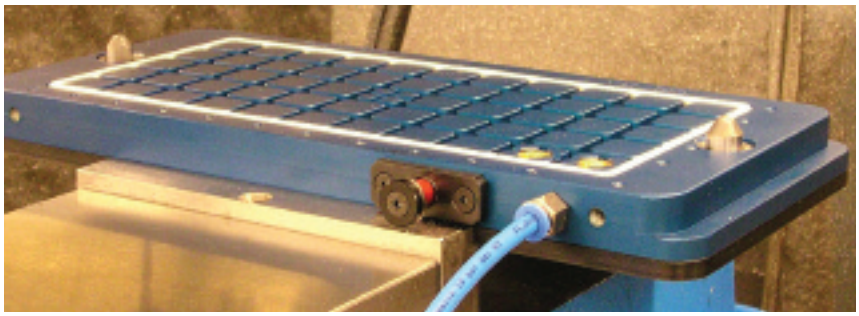
VersaGrip™

Part No.	A Inch (Metric)	B Inch (Metric)	C Inch (Metric)	Recommended Gripping Height	No. of Grips Per Pack	Code No.	Price $
33175	.750"	.375"	10-32	.060-.140	2	604-465	**58.40**
32175	19.05	9.52	M5	1.55mm-3.5mm	2	604-436	**58.40**

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Vacmagic® VM100

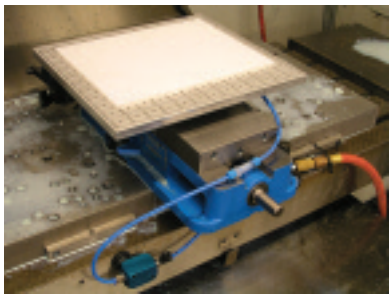


VM100 Base Unit (45375) in Vise

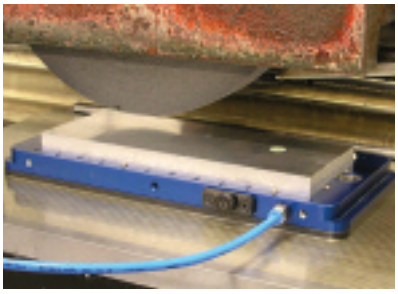
The Simplest and Most Versatile Vacuum System on the Market

The **VM100** was primarily designed for grinding non-ferrous material on a magnetic chuck. During the early stages of R & D it was discovered the VM100 could be much more. Clamp the VM100 in vise to reduce set-up time, use as a pallet changer or mount to a grid plate or T-slot table. The VM100 uses the same patented method as the VM300 to produce a vacuum strong enough for industrial applications but still operates on shop air! No need for vacuum pumps and coolant traps. We include everything necessary to get your VM100 running within minutes of opening the box.

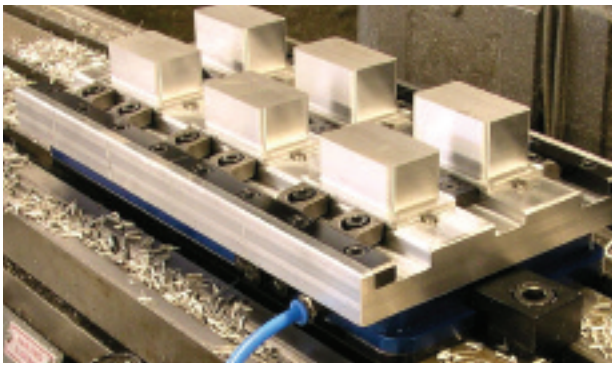
- Operates on 70-100 PSI shop air, eliminating vacuum pumps and coolant traps.
- Will accept the standard VM300 vacuum pallet, increasing your vacuum platform to over 14" x 12" (360mm x 315mm).
- Make your own vacuum fixtures - we can help with the design and produce the fixture for your custom application.
- Remove 12mm pins when grinding/machining thin material, use set screws to locate and aid in holding force.



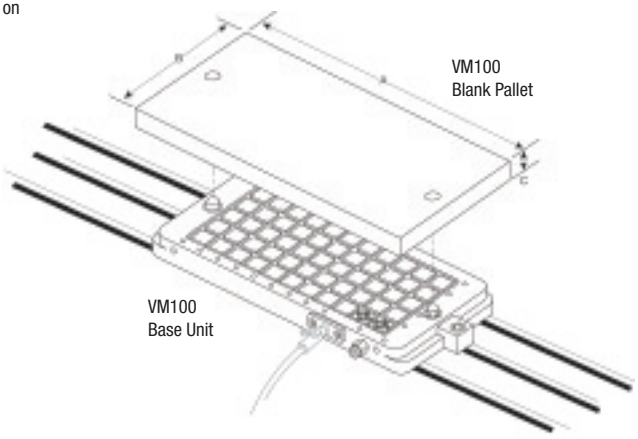
VM100 Base Unit (45375) with VM300 Vacuum Pallet (45150)



VM100 Base Unit (45375) on a Magnetic Chuck



VM100 Base Unit (45375) with a Production Pallet (VM100 Blank Pallet - 45325)



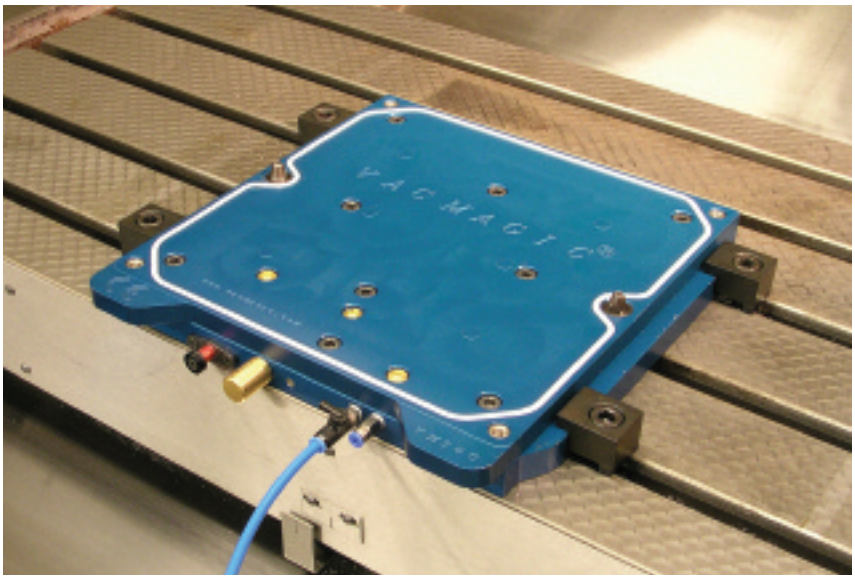
Part No.	Description	A - Length Inch (Metric)	B -Width Inch (Metric)	C -Height Inch (Metric)	Code No.	Price $
VM100						
45300	**Complete System:** Base Unit , 2 blank pallets, VM100 vacuum pallet				604-444	**3,399.80**
45325	Blank Pallet	12.5" (318mm)	5.875" (150mm)	1.0" (25mm)	604-446	**200.00**
45375	Base Unit with Mounting Clamps	12.375" (315mm)	5.5" (140mm)	1.0" (25mm)	604-450	**2,599.90**
45150	VM300 Vacuum Pallet (optional, not included in VM100 system)	14.2" (360mm)	12.4" (315mm)	0.63" (16mm)	604-402	**680.00**
VM300						
45101	**Complete System:** Base Unit, 2 Blank Pallets, 1 Vacuum Pallet, Vacuum Gasket				604-336	**6,979.60**
45130	Blank Pallet: 19mm thick	14.2" (360mm)	12.4" (315mm)	0.75" (19mm)	604-404	**550.00**
45135	1" Thick Blank Pallet	14.93" (379mm)	14.93" (379mm)	1.0" (25mm)	604-459	**500.00**
45150	VM300 Vacuum Pallet	14.2" (360mm)	12.4" (315mm)	0.63" (16mm)	604-402	**680.00**
45160	VM300 Large Vacuum Pallet	33.625" (859mm)	14.5" (368mm)	.625" (16mm)	604-452	**1,624.90**
45175	Base Unit (Receiver) Includes: safety switch, required hoses	12.75" (323mm)	13.0" (330mm)	1.375" (35mm)	604-400	**5,199.70**
Gasket Material (for VM300 & VM100)		**Diameter**				
45110	Black Vacuum Gasket - per 5 ft. length	.170			604-337	**15.00**
45111	Black Vacuum Gasket - by the foot	.170			604-454	**3.00**
45115	Black Vacuum Gasket - by the foot	.070			604-460	**2.50**
45118	Black Vacuum Gasket - per 5 ft. length	.125			604-456	**15.00**
45119	Black Vacuum Gasket - by the foot	.188			604-461	**2.50**
45114	White Vacuum Gasket - by the foot	.170			604-458	**3.00**
45116	White Vacuum Gasket - by the foot	.070			604-462	**2.50**
45117	White Vacuum Gasket - by the foot	.125			604-463	**2.50**

Black Gasket - Excellent for long cycles and aggressive coolants.
White Gasket - Excellent for small parts, water based coolant or running dry.

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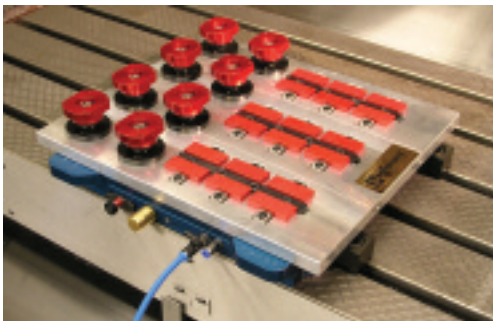
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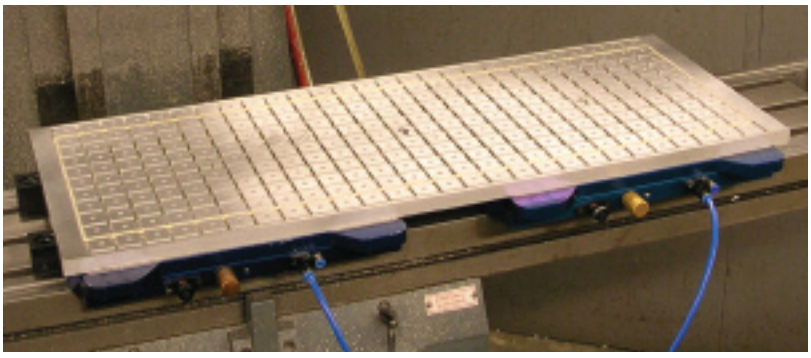
Vacmagic® VM300



The All-in-One Pallet Changer and Vacuum System
In a relatively short amount of time the VM300 has established itself as the vacuum system to which all others are measured. Capabilities include traditional vacuum applications using our standard vacuum pallet and custom vacuum applications (ie. machining blank pallet to suit specific part geometry) and the ability to perform as a rock solid pallet changer.

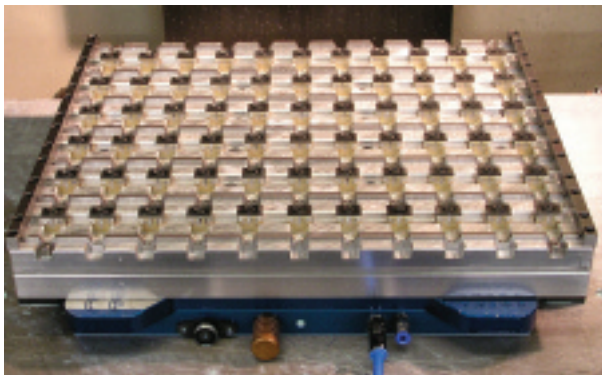
- Simple design keeps cost low
- Quick-change - swap pallets in 30 seconds or less
- Productivity maximized - load pallets while machining
- Easy to install and set-up
- Precise repeatability
- Reliable and easy to use - virtually maintenance free
- Flexible pallet design - limited only by your imagination!
- No pumps - uses standard shop air





Two VM300 Base Units (45175) and large Vacuum Pallet (45160)

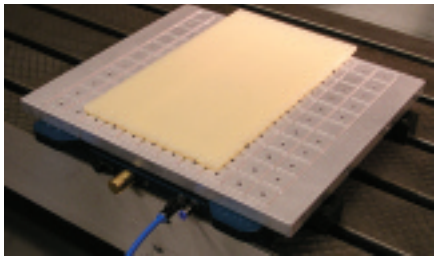
MWP METALWORKING PRODUCTION AWARDS 06 WINNER



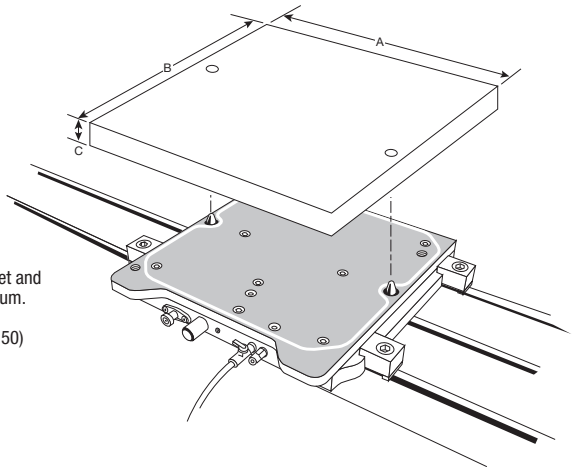
VM300 Base Unit (45175) with a
Production Pallet (VM300 Blank Pallet - 45130)

Tech Data

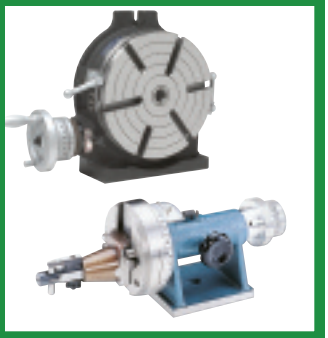
Air Supply Requirements	70 psi (5 bar) 2 CFM (55 LPM)
Low Pressure Safety Switch	included
Vacuum Indicator	included
Hardened Locator Pins	included



Workpiece placed over gasket and pushed down to create vacuum. Now ready for machining. (VM300 Vacuum Pallet - 45150)



For more information please call today for a MITEE-BITE Catalogue or CD ROM also for product videos visit www.miteebite.com













ACCESSORIES

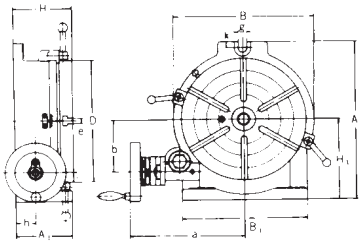
STM Horizontal & Vertical Rotary And Dividing Tables	I 2
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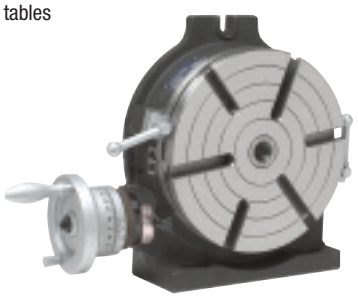
SOWA
METALWORKING SOLUTIONS

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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	Table OD A1	Table OD D	Height H	H1	Base Dim. A	Base Dim. B	T-Slot Width	Bolt Slots	Centre Sleeve	Weight (kg/lb)	Worm Gear	Table Code No.	Table Price $	Tailstock Code No.	Tailstock Price $	Indexing Plates Code No.	Indexing Plates Price $
HV-4	70	110	80	85	145	115	11	12	MT-2	7.5	90:1	326-498	**755.10**	326-552	**321.20**	326-549	**247.90**
	2.76	4.33	3.15	3.35	5.71	4.53	0.43	0.47	MT-2	16.50	90:1						
HV-6	78	150	80	100	200	160	11	15	MT-2	12	90:1	326-500	**755.10**	326-552	**321.20**	326-549	**247.90**
	3.07	5.91	3.11	3.94	7.87	6.30	0.43	0.59	MT-2	26.4	90:1						
HV-8	100	200	105	135	265	220	14	17	MT-3	30.0	90:1	326-505	**1,168.70**	326-553	**321.20**	326-550	**337.20**
	3.94	7.87	4.13	5.31	10.43	8.66	0.55	0.67	MT-3	66.1	90:1						
HV-10	110	250	115	165	325	280	14	17	MT-3	45.0	90:1	326-510	**1,452.10**	326-554	**326.10**	326-551	**337.20**
	4.33	9.84	4.53	6.50	12.80	11.02	0.55	0.67	MT-3	99.0	90:1						
HV-12	130	300	135	195	388	330	16	18	MT-4	85	90:1	326-515	**1,808.10**	326-554	**326.10**	326-551	**337.20**
	5.12	11.81	5.32	7.68	15.27	12.99	0.63	0.71	MT-4	187.0	90:1						
HV-14	130	350	140	230	450	380	16	18	MT-4	100	90:1	326-520	**2,312.80**	326-555	**486.50**	326-551	**337.20**
	5.12	13.78	5.51	9.06	17.72	14.95	0.63	0.71	MT-4	220.0	90:1						
HV-16	150	406	155	255	500	430	16	18	MT-4	135	90:1	326-525	**3,414.10**	326-555	**486.50**	326-551	**337.20**
	5.90	15.98	6.10	10.03	19.69	16.93	0.63	0.71	MT-4	297	90:1						

Tailstocks for Rotary Tables

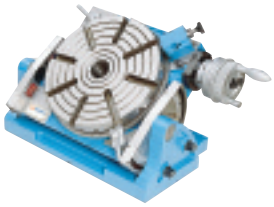


Model No.	Adjustable Highest (mm)	Adjustable Lowest (mm)	For Models	Net Weight (kg)	Code No.	Price $
TS-1	108	80	HV-4,HV-6, BS-0	3.9	326-552	**321.20**
TS-2	145	115	HV-8, CC-6, SX-6, BS-1, BS-2	5.5	326-553	**321.20**
TS-3	200	130	HV-10, HV-12, CC-8, SX-8, BS-2	8.1	326-554	**326.10**
TS-4	260	190	HV-14, HV-16	11.9	326-555	**486.50**

Universal Tilting Rotary Table

Model VU-100, VU-150, VU-300

- Tilting range 90º 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 & 24 holes in 15º around, insures rapid accurate spacing
- Minimum set-up time
- Rugged construction



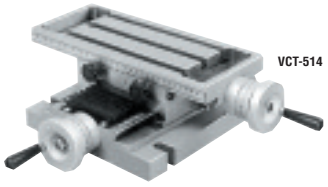
	VU-100 Code No.	VU-100 Price $	VU-150 Code No.	VU-150 Price $	VU-300 Code No.	VU-300 Price $
	326-560	**1,435.50**	326-562	**1,643.20**	326-175	**6,798.30**

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

Precision Cross Slide Table





Model VCT-830, Model VCT-514

- A heavy, rugged slide in all kinds of positioning, milling, drilling, microscopic viewing and staging
- Adjustable bases for heavy loads, small jig boring, precision cut-off

Model No.	Table (mm)	Height (mm)	Travel (mm)	Base (mm)	Dial Grad. (mm)	Net Weight (kg)	Code No.	Price $
VCT-514	350 x 150	130	175 x 150	300 x 220	0.02	38	230-950	**2,681.60**
VCT-830	210 x 730	150	350 x 165	360 x 285	0.02	80	230-955	**2,974.40**

Cross Table VCT-512

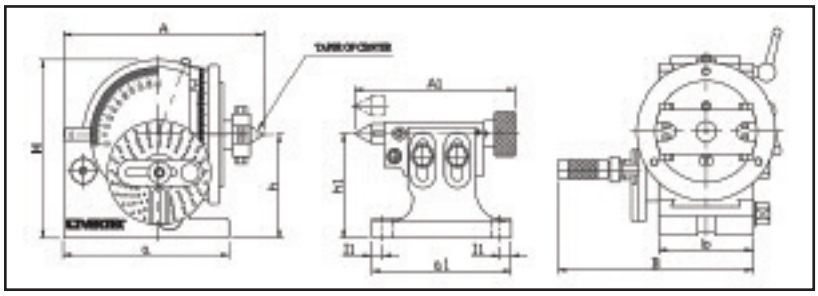
Applied in general machines such as compounding machine, drilling machine, etc., or large objects of special shape which cannot be clamped by common vises.

- 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	230-965	**970.70**

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 90º down to – 10º 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	365	272	132.7	213	134	16	MT4	M55 x P3	65	3.4	326-054	**2,924.90**	326-055	**512.10**
	9.29	14.37	10.71	5.22	8.39	5.28	0.63			143					

Semi-Universal Index Centre BS-0 & BS-1

Standards of Accuracy (Tolerances):

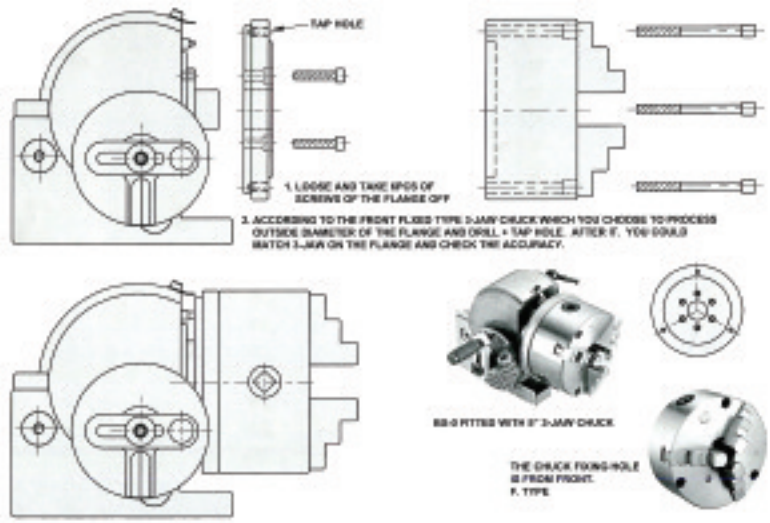
Testing Objective	**Tolerances Unit (max. in. permit)**
1. True running of centre:	.0006
2. True running of inside taper of dividing spindle:	
• Measured at spindle nose	.0004
• Measured at arbor 8" long	.0012
3. Axial movement of dividing spindle	.0004
4. Dividing accuracy of worm drive, maximum cumulative 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	177	188	100	160	91	16	MT2	M30 x P3	20	0.8	326-050	**1,308.00**	326-051	**225.30**
	6.81	6.97	7.40	3.94	6.30	3.58	0.63			44					
BS-1	220	245	230	128	205	114	16	MT3	M40 xP3	33	1.3	326-052	**1,697.50**	326-053	**228.60**
	8.66	9.65	9.06	5.04	8.07	4.49	0.63			72.6					

How To Install A 3-Jaw Chuck



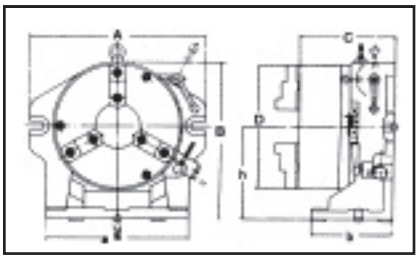
Simple Index

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 .00 (.0004)	per 12"
2. True running of axial movement of table surface	.0008
3. True running of centre boss	.0006
4. Squareness of base to angle face .0008	per 12"
5. True running of chuck centre	.0016
6. Dividing accuracy individual spacing error	± 35"

Options

Description	Code No.	Price $
Optional Tailstock for CC-6	326-553	**321.20**
Optional Tailstock for CC-8	326-554	**326.10**
Optional Dividing Plates	326-152	**337.20**

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,	165	3-62	60-120	34	260	218	138	166	220	130	130	16	35		CC-6	
8,12,24	6.5	0.12-2.44	2.36-4.72	1.34	10.24	8.58	5.43	6.54	8.66	5.12	5.12	0.63	77.1	0.64	326-136	**1,591.10**
2,3,4,6,	210	3-100	10-220	63	312	257.25	169.3	210	258	48	149.2	16	54		CC-8	
8,12,24	8.27	0.12-3.94	0.39-8.66	2.48	12.28	10.13	6.67	8.27	10.16	5.83	5.87	0.63	119.0	1.8	326-138	**2,214.60**

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"	326-140	**2,181.20**
SX-8	8"	326-142	**2,870.70**

Options

Description	Code No.	Price $
Optional Tailstock for SX-6	326-553	**321.20**
Optional Tailstock for SX-8	326-554	**326.10**
Optional Dividing Plates	326-152	**337.20**



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



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	326-552	**321.20**
TS-2	145	115	HV-8, CC-6, SX-6, BS-1, BS-2	5.5	326-553	**321.20**
TS-3	200	130	HV-10, HV-12, CC-8, SX-8, BS-2	8.1	326-554	**326.10**
TS-4	260	190	HV-14, HV-16	11.9	326-555	**486.50**

Rapidex

Complete with chuck

- Simple and rapid operation
- Dividual number 24 notch (15ºeach)
- Table scale 1º, for angular indexing
- Table bore 30mm
- Horizontal / Vertical & 2 direction
- Suitable for milling & drilling machine using



Model No.	Chuck Outer Diameter	Code No.	Price $
VSI-4	4”	326-564	**1,011.30**
VSI-5	5”	326-566	**1,110.50**

Suburban

Collet Master™ Index Fixture



- 48 index positions, +/- 45 arc seconds every 7-1/2 degrees
- Uses all standard 5C collets.
- Two sealed, pre-loaded ball bearings in spindle.
- Hardened & Ground base held square and parallel to spindle within 0.0002".
- Maximum spindle runout is 0.0001".
- Drawbar and fitted wooden case included.
- Optional faceplate & v-block available for eccentric forms.

Model No.	Centre Height	O.A.L.	Indexing Accuracy	Weight (lb)	Code No.	Price $
CM-5C	3-5/8"	6-1/2"	+/-45 Sec.	9 lb	251-550	**2,040.00**

Optional Faceplate & V-Block For Collet Master Index Fixture



Model No.	Faceplate Diameter	V-Block Capacity	Weight	Code No.	Price $
CM-5C-FVB	6-1/2"	1-3/8"	15 lbs	251-552	**962.60**

Mini-Master™ Index Fixture



- 72 position index plate allows an index every 5 degrees +/-15 arc seconds.
- Spindle rides in sealed, preloaded ball bearings.
- Light weight for easy handling.
- Uses standard ER-25 spring collets.
- Spindle runout 0.0002" T.I.R.
- 3" height is ideal for small machine set-ups.
- Hardened steel base is ground square and parallel with spindle axis within 0.0002".
- Fitted wooden case included.

Model No.	Centre Height	Collet Capacity	Through Hole	Weight (lb)	Code No.	Price $
MM-25R	1-7/8"	All ER-25	5/8"	4 lbs	251-566	**1,526.50**

Spin-Master™ Index Fixture



- Uses standard 5C collets.
- 2-5/16" spindle travel for flute grinding.
- Runout on hardened and ground spindle is 0.0005" T.I.R.
- 3-7/8" x 4-5/32" base ground parallel to spindle.
- Sides of base ground parallel to spindle axis.
- Index plate with 36 holes for direct indexing in 10° steps & is graduated in 5° increments. 10 vernier holes provide 1° indexing.

Model No.	Centre Height	Collet Capacity	Through Hole	Weight (lb)	Code No.	Price $
SM-5C	2-3/4"	All 5C	1-1/4"	15 lbs	251-564	**1,369.90**

STM

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	326-110	**166.60**

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.



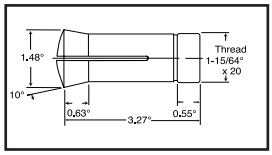
Model No.	Code No.	Price $
C1-108	326-108	**1,021.90**

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"

GS STM

5C Collets

- Made of tool steel, hardened and ground to maintain original accuracy





Size	GS Code No.	Price $	STM Code No.	Price $
1/8	325-317	**29.60**	325-315	**17.30**
3/16	325-322	**29.60**	325-320	**17.30**
1/4	325-327	**29.60**	325-325	**17.30**
5/16	325-332	**29.60**	325-330	**17.30**
3/8	325-337	**29.60**	325-335	**17.30**
7/16	325-342	**29.60**	325-340	**17.30**
1/2	325-347	**29.60**	325-345	**17.30**
9/16	325-354	**29.60**	325-350	**17.30**
5/8	325-357	**29.60**	325-355	**17.30**
11/16	325-362	**29.60**	325-360	**17.30**
3/4	325-367	**29.60**	325-365	**17.30**
13/16	325-372	**29.60**	325-370	**17.30**
7/8	325-377	**29.60**	325-375	**17.30**
15/16	325-382	**29.60**	325-380	**17.30**
1	325-387	**29.60**	325-385	**17.30**
5C Collet Set 1/8-1"			325-310	**198.80**

5C Collet Chucks For Mounting With Adapter Plates



Features:

- The simple wrench operated scroll provides uniform, distortion free clamping of workpieces and low collet exchange times

Application:

- The type 3911 collet chuck is designed for use with 5C collets and can be used for turning, facing, boring, grinding and milling operations
- The type 3960 collet chuck allows for fine adjustment to the required concentricity by means of 4 radially arranged adjusting screws

Description	Size	Capacity	Weight (lb)	Code No.	Price $
3911	5”	1/16 - 1/8	10	425-405	**868.30**
3960 Fine Adjustment	5”	1/16 - 1/8	12	440-409	**1,185.40**

Adapters For 5C Collet Chucks

Chuck Size (in.)	Spindle	Code No.	Price $
5	A6	425-410	**325.00**
5	A8	425-415	**327.20**

5C Collet Stop

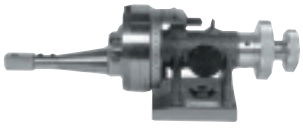
- Fit any 5C ID threaded collets
- They are hardened and oxidized



Description	Code No.	Price $
5C adjustable collet stops	425-430	**32.40**

QUALITY IMPORT

Low Profile Radius And Angle Dresser



An extremely accurate and versatile unit which may be used on all OD, ID and surface grinding operations. Knob “A” controls radius dressing and Knob “B” controls angle dressing. At no time are the hands near the point of contact. All moving parts are lapped and the unit has adjustable gibs for take of future wear.

Model No.	Code No.	Price $
C1-330	326-106	**1,087.20**

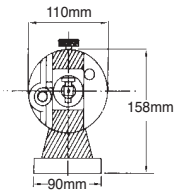
Specifications

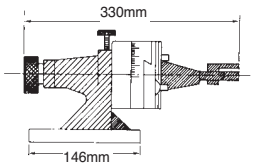
Max. Dia. of Wheel	10"
Convex Radii	0 - 1-5/8"
Concave Radii	0 - 4"
Tangent Travel	1.20"
Either side of Centre	
Centre line of tool	3.4"
Overall length	16.61"
Weight	27 lbs.

V-TDB Radius And Angle Dresser



- Positive setting of the diamond to absolute centre with the special gauge included with the dresser.
- 4 x 90º graduation in full 360º circle. 6 minute vernier reading.
- Chrome plated
- One push-pull type knob for radius and angle control and for safer and faster operations.
- Net weight: 10.5 kg





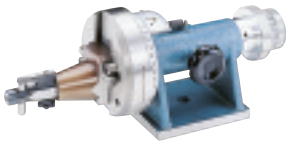
Model No.	Code No.	Price $
V-TDB	326-570	**1,577.10**

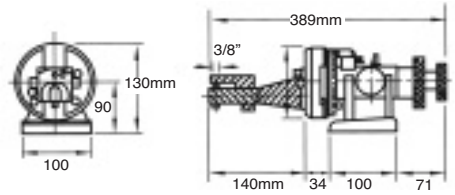
Specifications

Convex dressing range	0.8R-40R
Concave dressing range	0-40R
Max. wheel dressing diameter	250mm
Max. wheel extending diameter	375mm

V-TDG Radius And 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	326-572	**1,961.30**

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”

YUASA

Yuasa Radius And Angle Dressers

- Extremely Accurate & Versatile
- Useable on all OD / ID surface grinding operations.
- Independent or Simultaneous Radii & Angular operation
- Adjustable gibs
- All moving parts are lapped
- Gauge block setting for precise radii
- Knob A controls Radii & Knob B controls angular movements



Model No.	Code No.	Price $
550-000	325-600	**3,341.70**
550-001N	325-605	**4,724.00**
**553-308	325-607	**1,222.70**

** Optional extension adapter for 1-5/8" to 6" concave radii and convex radii

Specifications	Model 550-000	Model 550-001N
Weight lbs/(kg)	16 (7.2)	23 (10.4)
Maximum diameter of wheel	8"	12"
Convex radii	0-1 3/16"	0-1 5/8" (6"**)
Concave radii	1/32"-1 3/16"	1/32"-1 5/8"***(6"**)
Tangent travel either side of centre	1.20"	2"
Centre line of tool	3"	3.4"
Overall length	13.66"	16.61"

Specifications	Maximum Variation
Face plate to dresser arm squareness (per 2")	0.0005 (0.012)
Face plate to base squareness	0.0006 (0.015)
Centre runout of dovetail groove to wheel center	0.0006 (0.015)

STM

Screw Jack Sets

Features:
- Material: S45C
- Support heavy weight
- Suitable for irregular workpieces.
- Rapid Setting & Fixed





Sets

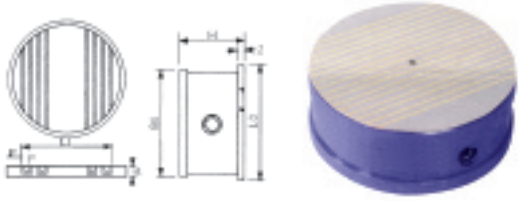
Model No.	Set Includes	Code No.	Price $
VSJ-A	VSJ-70 70-85mm Adj. Capacity Screw Jack - 2 pcs. VSJ-150 100-150mm Adj. Capacity Screw Jack - 2 pcs. Pads included: 1A, 2A, 3A, 4A, 5A, 6A - 1ea.	333-400	**309.30**
VSJ-B	VSJ-150 100-150mm Adj. Capacity Screw Jack - 2 pcs. VSJ-250 140-230mm Adj. Capacity Screw Jack - 2 pcs. Pads included: 1A, 2A, 3A, 4A, 5A, 6A - 1ea.	333-410	**512.20**

Pads

Model No.	Code No.	Price $
1A	333-415	**47.50**
2A	333-420	**39.40**
3A	333-425	**34.30**
4A	333-430	**44.70**
5A	333-435	**34.30**
6A	333-440	**31.70**

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	230-626	**2,003.60**

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

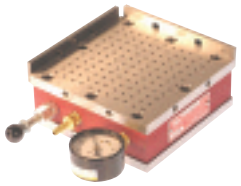


Model	Block Dimensions (mm)	Code No.	Price $
VCP-5	2" x 1" x 1"	230-638	**67.80**

Suburban

Vacuum Chucks

- Vacuum gauge and relief valve included
- All chucks have back and end rail for positive location of workpieces
- Provide an excellent means to hold non-magnetic workpieces for machining or grinding
- Designed to be bolted directly with little or no indicating to a SineSet sine plate or compound sine plate of the same size and series



Chuck Model No.	Size	Recommended Pump Size	Weight (lb)	Code No.	Price $
VC-66-S1	6 x 6 x 2-1/4	1/4 HP or larger	15	251-420	**1,128.00**
VC-612-S2	6 x 12 x 2-1/4	1/2 HP or larger	28	251-422	**1,540.50**
VC-618-S2	6 x 18 x 2-1/4	1/2 HP or larger	41	251-424	**2,045.20**

Electromagnetic Chucks & Controls

- Top plate has 1/8" steel poles and 1/16" Stainless Steel separators
- Chucks are completely sealed against dirt and liquids
- Can be used on EDM machines
- Longitudinal (lengthwise) or transverse (crosswise) pole models available
- 2 clamps, back rail and side rail included
- Chuck controls must be used.



Model No.	Size	Watts	Weight (lb)	Code No.	Price $
Transverse Poles					
EMCB-612-T	6 x 12 x 3-3/4	72	75	251-450	**3,206.20**
EMCB-618-T	6 x 18 x 3-3/4	130	117	251-452	**4,506.40**
EMCB-815-T	8 x 15 x 3-3/4	125	132	251-454	**4,271.50**
EMCB-818-T	8 x 18 x 3-3/4	150	160	251-456	**6,092.10**
EMCB-824-T	8 x 24 x 4	220	210	251-458	**7,221.80**
EMCB-1015-T	10 x 15 x 3-3/4	160	165	251-460	**6,142.60**
EMCB-1024-T	10 x 24 x 3-3/4	240	255	251-462	**9,115.50**
EMCB-1036-T	10 x 36 x 4	350	370	251-464	**12,283.40**
EMCB-1216-T	12 x 16 x 4	200	200	251-466	**7,310.50**
EMCB-1218-T	12 x 18 x 4	225	225	251-468	**8,022.40**
EMCB-1224-T	12 x 24 x 4	280	310	251-470	**10,078.10**
EMCB-1230-T	12 x 30 x 4	390	371	251-472	**12,198.10**
EMCB-1236-T	12 x 36 x 4	430	442	251-474	**15,207.60**
Longitudinal Poles					
EMCB-612-L	6 x 12 x 3-3/4	72	75	251-476	**1,812.00**
EMCB-618-L	6 x 18 x 3-3/4	130	117	251-478	**2,771.10**
EMCB-815-L	8 x 15 x 3-3/4	125	132	251-480	**3,187.10**
EMCB-818-L	8 x 18 x 3-3/4	150	160	251-482	**3,601.30**
EMCB-824-L	8 x 24 x 4	220	210	251-484	**4,595.20**
EMCB-1015-L	10 x 15 x 3-3/4	160	165	251-486	**3,637.90**
EMCB-1024-L	10 x 24 x 3-3/4	240	255	251-488	**7,084.20**
EMCB-1036-L	10 x 36 x 4	350	370	251-490	**10,300.90**
EMCB-1216-L	12 x 16 x 4	200	200	251-492	**5,710.90**
EMCB-1218-L	12 x 18 x 4	225	225	251-494	**5,832.80**
EMCB-1224-L	12 x 24 x 4	280	310	251-496	**8,356.60**
EMCB-1230-L	12 x 30 x 4	390	371	251-498	**9,914.40**
EMCB-1236-L	12 x 36 x 4	430	442	251-500	**11,449.60**

- Specifically matched to the input requirements of Suburban's electromagnetic chucks.
- 115 volts AC input.
- 0-110 volts DC output.
- Controls with automatic release cycle free the operator from manual demagnetizing.
- Automatic release models also have touchpad controls for easy operation.



Model No.	Features	Code No.	Price $
CC-150-MV	0-150W variable power control c/w manual release	251-513	**1,612.70**
CC-150-AV	Same as CC-150-MV plus automatic release control	251-515	**3,398.00**
CC-300-AV	0-300W variable power control with automatic release control	251-517	**3,785.10**
CC-500-AV	0-500W variable power control with automatic release control	251-519	**4,024.30**

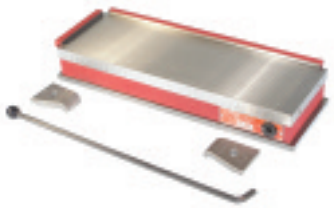
Vacuum Pumps



Pump Model No.	Description	Weight (lb)	Code No.	Price $
VCP-14-MM*	1/4 HP, hose and fittings	31	251-426	**1,279.40**
VCP-34-MM*	3/4 HP, hose and fittings	56	251-430	**1,993.00**

Magnetic Surface Grinder Chucks

For use on surface grinders, chucks have laminated one piece top plates. Two tie down clamps, two rails and removable on/off handle included. Ceramic magnet cannot lose magnetism.

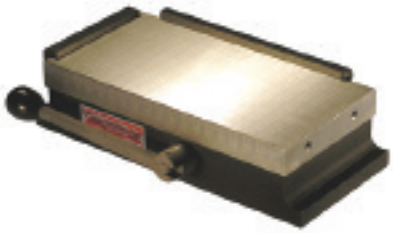


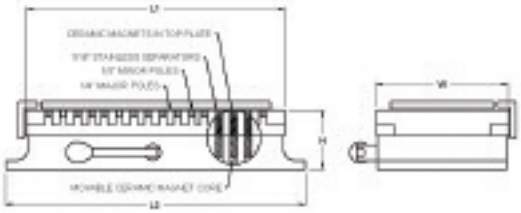
Model No.	Width (in.)	Length (in.)	Code No.	Price $
Standard (1/4" Poles & 1/8" Separators)				
MCB-47	4	7	251-022	**1,046.10**
MCB-510	5	10	251-026	**1,392.50**
MCB-612	6	12	251-030	**1,862.50**
MCB-614	6	14	251-034	**2,088.80**
MCB-618	6	18	251-038	**2,473.40**
MCB-812	8	12	251-039	**2,335.90**
MCB-815	8	15	251-046	**2,823.30**
MCB-818	8	18	251-050	**3,415.10**
MCB-824	8	24	251-054	**4,562.10**
MCB-1015	10	15	251-055	**4,424.60**
MCB-1018	10	18	251-057	**5,312.30**
MCB-1024	10	24	251-059	**7,467.20**
MCB-1212	12	12	251-061	**3,589.10**
MCB-1218	12	18	251-063	**6,786.60**
MCB-1224	12	24	251-065	**8,400.10**
Fine Pole (1/8" Poles & 1/8" Separators)				
MC-36-FP	3	6	251-020	**1,016.60**
MCB-47-FP	4	7	251-024	**1,117.50**
MCB-510-FP	5	10	251-028	**1,500.40**
MCB-612-FP	6	12	251-032	**2,132.30**
MCB-614-FP	6	14	251-036	**2,351.60**
MCB-618-FP	6	18	251-040	**2,838.90**
MCB-812-FP	8	12	251-041	**2,670.10**
MCB-815-FP	8	15	251-048	**3,206.20**
MCB-818-FP	8	18	251-052	**3,794.50**
MCB-824-FP	8	24	251-056	**5,133.00**
MCB-1015-FP	10	15	251-067	**4,835.40**
MCB-1018-FP	10	18	251-069	**5,690.00**
MCB-1024-FP	10	24	251-071	**7,851.80**
MCB-1212-FP	12	12	251-073	**4,003.40**
MCB-1218-FP	12	18	251-075	**7,207.80**
MCB-1224-FP	12	24	251-077	**9,296.50**

Suburban

Magnum Force™ Surface Grinding Chucks

- Made with ceramic magnets for superior holding power.
- Stationary magnets in the top plate and a movable magnet core provide an average holding power of 90-100 pounds per square inch. This is twice the power of a standard chuck.
- Chucks are lubricated and sealed against dirt and liquids.
- A rigid work surface is provided by laminated and brazed top plate.
- These chucks provide maximum holding power of both small & large parts, due to combination fine / standard pole spacing.
- Low height for more work clearance.
- Two hold-down clamps, one side rail and one end rail are included.



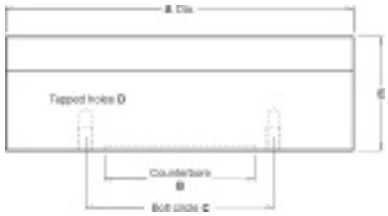


Model No.	L1	L2	W	H	Code No.	Price $
DBM-44	4”	4-3/4”	4”	2-3/8”	251-322	**1,944.30**
DBM-48	8”	9-1/8”	4”	2-3/8”	251-324	**2,053.90**
DBM-510	10”	11-1/8”	5”	2-3/4”	251-326	**2,376.00**
DBM-512	12”	13-1/8”	5”	2-3/4”	251-328	**2,734.50**
DBM-66	6”	7-1/8”	6-1/2”	2-3/4”	251-330	**2,283.70**
DBM-610	10”	11-1/8”	6”	2-3/4”	251-332	**2,443.80**
DBM-612	12”	13-1/8”	6”	2-3/4”	251-334	**2,682.30**
DBM-614	14”	15-1/2”	6”	2-3/4”	251-336	**3,155.70**
DBM-618	18”	20”	6”	2-3/4”	251-338	**3,531.70**
DBM-815	15”	15-3/4”	8”	2-3/4”	251-340	**4,280.20**
DBM-818	18”	18-3/4”	8”	2-3/4”	251-342	**5,157.40**
DBM-820	20”	20-3/4”	8”	2-3/4”	251-344	**5,855.40**
DBM-824	24”	24-3/4”	8”	2-3/4”	251-346	**6,019.00**
DBM-1015	15”	15-3/4”	10”	2-3/4”	251-348	**5,938.90**
DBM-1018	18”	18-3/4”	10”	2-3/4”	251-350	**7,026.80**
DBM-1020	20”	20-3/4”	10”	2-3/4”	251-352	**8,311.40**
DBM-1218	18”	18-3/4”	12”	3-1/2”	251-356	**8,802.20**
DBM-1224	24”	24-3/4”	12”	3-1/2”	251-358	**11,792.50**

Round Permanent Magnetic Chucks

- Permanent ceramic magnets for superior holding power, never lose their strength.
- Back surface of the aluminum chuck body has tapped holes and turned counterbore for convenient mounting on machines.
- All models are watertight except 5-1/4" dia. which uses the swing-type on-off method.
- Standard pole models have 1/4" poles & 1/8" separators, fine pole models have 1/8" poles & 1/8" separators.

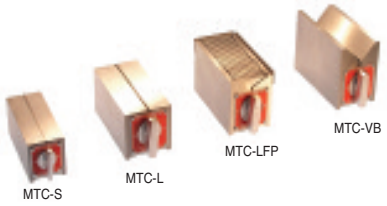




Model No.	A	B	C	D	E	Weight (lb)	Code No.	Price $
Standard								
RMC-5	5-1/4	3 x 1/8	4”	(4)1/4-20	2-13/16	15	251-876	**1,063.50**
RMC-6	6-1/4	3 x 1/8	4”	(4)1/4-20	2-15/16	17	251-877	**1,639.70**
RMC-9	9-1/4	4 x 3/16	5”	(4)3/8-16	2-15/16	36	251-878	**2,898.10**
RMC-12	12-1/4	4 x 3/16	5”	(4)3/8-16	2-15/16	60	251-879	**4,193.10**
RMC-15	15-1/4	6 x 1/4	7-3/8	(6)5/16-18	3-3/4	120	251-880	**8,179.10**
RMC-16	16”	8 x 3/16	9”	(6)3/8-16	2-15/16	96	251-881	**8,391.40**
RMC-20	20”	11 x 1/4	12-13/32	(6)3/8-16	4-1/8	205	251-882	**13,740.30**
Fine Pole								
RMC-6-FP	6-1/4	3 x 1/8	4”	(4)1/4-20x1/2	2-15/16	18	251-883	**2,057.40**
RMC-8-FP	7-3/4	4 x 3/16	4”	(4)3/8-16x1/2	2-15/16	26	251-884	**2,670.10**
RMC-10-FP	10”	4 x 3/16	5”	(4)3/8-16x1/2	2-15/16	43	251-885	**3,589.10**
RMC-12-FP	12-1/4	4 x 3/16	5”	(4)3/8-16x1/2	2-15/16	62	251-886	**5,026.90**

Magnetic Toolmakers’ Chucks

- All models precision ground flat, square and parallel to an overall accuracy of 0.0005".
- Top, bottom and end magnetize simultaneously.
- Model MTC-VB has "V" capacity of 2-3/4" dia.
- Model MTC-LFP has 3/16" x 1/16" fine pole construction for holding small or thin parts; and removable side and end rails.



Model No.	Length	Width	Height	Weight (lb)	Code No.	Price $
MTC-S	5”	2”	2”	6	251-868	**771.10**
MTC-L	5-1/2	2-3/4	2-1/2	11	251-869	**922.60**
MTC-LFP	5-1/2	2-3/4	3”	12	251-870	**1,002.60**
MTC-VB	5-1/2	2-3/4	3-5/8	13	251-871	**1,002.60**
MTC-VB-M**	5-1/2	2-3/4	3-5/8	26	251-872	**2,306.30**

** Matched pair of MTC-VB

Suburban

Lift Master™ - Permanent Magnetic Lifts

- Allows one person to do the material loading and handling that once required two or more.
- Quick-release handle disengages the lift with a simple cam action.
- Uses max-C-mag ceramic magnets to ensure powerful holding force, with no chance for demagnetization.
- Grips and holds any ferrous material instantly.
- Designed for efficient, trouble free, low maintenance service.



Model No.	Length	Width	Height	Max Lift Cap. (lb)	Weight (lb)	Code No.	Price $
LM-800	6-5/8	3-3/8	2-1/2	800*	20	251-873	**1,543.40**
LM-1600	8-1/2	4-7/8	2-1/2	1600*	30	251-874	**2,137.50**
LM-3000	11-1/4	6-3/8	2-1/2	3000*	45	251-875	**2,840.70**

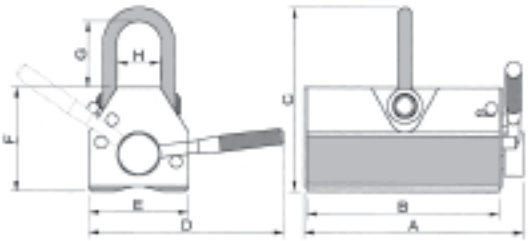
* Capacity based on clean, flat rigid CRS.
Derate for other conditions

STM

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.



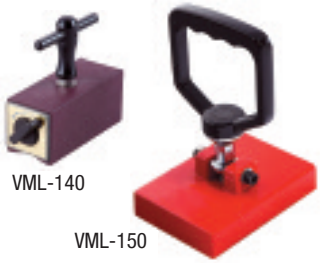


Model No.	Capacity (lbs)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	G (in.)	H (in.)	Weight (lbs)	Code No.	Price $
VML-100	220	4.2	3.3	4.7	4.9	2.4	2.8	1.6	1.2	5.5	230-600	**787.10**
VML-300	660	7.1	6.1	6.1	7.3	3.6	3.7	2.0	1.6	18.9	230-605	**1,862.30**
VML-600	1320	10	8.8	8.3	10.2	4.5	4.7	3.0	2.0	46	230-610	**2,990.00**
VML-1000	2200	11	9.6	11.3	14.6	6.5	6.7	3.8	3.4	101	230-615	**4,983.40**
VML-2000	4400	16.6	15	13.7	20.2	8.5	8.5	4.1	4.8	259	230-620	**9,782.90**

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.



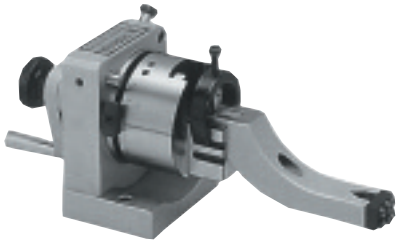


VML-140

VML-150

Model	Capacity (kgf)	Length (mm)	Width (mm)	Height (mm)	Code No.	Price $
VML-140	140	120	50	55	230-602	**108.90**
VML-150	150	140	100	140	230-604	**278.80**

Punch Former - YCT-PB



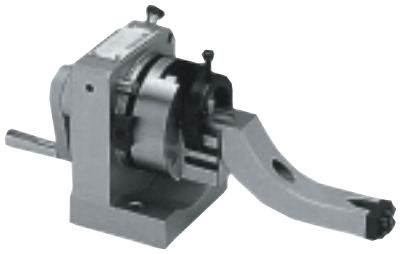
Punch former is the great dressing instrument. Precision forming of grinding wheels can be done by assembling an arm with the main body. Any combination of tangents or radii form of the grinding wheel may be dressed accurately by easy operation. Maximum grinding wheel diameter of 200 mm can be dressed accurately and safely. The height from the base to roller's centre is 80mm. Movement of each side can reach 12.5 mm 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
- Besides the round, radius and multi-angle punches, any special forms can be ground precisely
- By using this attachment, it can be ground either concave or convex radius shape
- Capacity from 4 mm to 30 mm

Style	Code No.	Price $
Off set	230-730	**3,567.40**

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

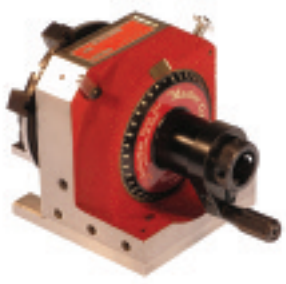
Style	Code No.	Price $
Through hole	230-735	**2,842.00**

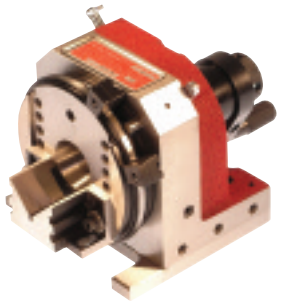
Suburban

Suburban Master-Grind™

5C Collet and V-Block Combination

- Built-in sine bar for setting angles between hard index locations
- 2 heavy duty 4" diameter tapered roller bearings in spindle
- Spindle runout .00005"
- Square and parallel within .0002"
- Extra large 1-5/8" V-block capacity
- Horizontal or vertical V-block mounting
- 72 position index plate for hard index every 5° +/- 15 arc seconds
- Fitted wooden case included





Model No.	V-Block Capacity	Collet Capacity	Through Hole	Centre Height	Base Height	Base Length	Base Width	Weight	Code No.	Price $
MG-5CV-S1	1-5/8	all 5c	1-1/4	3	6	4	5	22	251-400	**4,478.60**

Suburban Master-Grind™ Accessories

Motor Drive Kit:

- 1/15 HP, reversible, variable speed, 60 to 300 rpm
- Can be mounted on either side of the index fixture
- Includes mounting bracket, motor pulley, drive belt and screws





Baseplate and Tailstock

- Tailstock has 1/2" diameter spring loaded centre with lock screw
- 1/2" 5C collet and steel 60° headstock centre included
- Base plate and edge guide are hardened and ground





Model No.	Description	Weight	Code No.	Price $
MG5-BTS	Baseplate/tailstock	22	251-405	**1,799.40**
MG5-MD	Motor drive kit	5	251-410	**1,749.30**

DM213 Fast Drill Sharpener 13mm Capacity

Model DM213



Patented Features

- Double-bearing grinding unit (reduces wear).
- Drill tightening design with bearing device.
- Adjustable trimming angle.

Standard Accessories

- ER20 Collets, ranged from 2.5mm-13mm (12pcs).
- CBN Diamond wheel #200x1pc (for High Speed drill).
- 3mm and 4mm Hexagon (Hex.) wrench x 1 pc each.

Drill Diameter: Ø2mm - Ø13mm
Point Angle: 85° ~ 140°
Power Supply: AC110 / AC220 50/60HZ
Motor: 90W
R.P.M: 6000RPM
Weight: 10 kg

Model DM213

Code No.	Price $
326-130	**2,354.30**

Replacement Wheels for Model DM213

Description	Code No.	Price $
CBN Wheel for HSS	326-141	**192.50**
Diamond Wheel for Carbide	326-143	**192.50**
CBN Wheel for Drills under 4mm	326-145	**192.50**

ER20 Collets for Model DM213

Size (mm)	ER20 Code No.	Price $	Size (mm)	ER20 Code No.	Price $
1.5-2.5*	326-151	**47.20**	8-9	337-480	**29.60**
2-3*	326-153	**47.20**	9-10	337-481	**29.60**
3-4*	326-155	**47.20**	10-11	337-482	**29.60**
4-5*	326-157	**47.20**	11-11.5	337-469	**29.60**
5-6	337-477	**29.60**	11-12	337-483	**29.60**
6-7	337-478	**29.60**	12-13	337-484	**29.60**
7-8	337-479	**29.60**			

* 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

Model DM1226



Patented Features

- Double-bearing grinding unit (reduces wear).
- Drill tightening design with bearing device.
- Adjustable trimming angle.

Standard Accessories

- ER 40 Collets, ranged from 12mm-26mm (15pcs). Optional Collets 8~11mm, 27~30mm
- CBN Diamond wheel #200x1pcs (for High Speed drill).
- 3mm and 4mm Hexagon (Hex.) wrench x 1 pc each.

Drill Diameter: Ø8mm - Ø30mm
Point Angle: 85° ~ 140°
Power Supply: AC110 / AC220 50/60HZ
Motor: 450W
R.P.M: 4000RPM
Weight: 25 kg

Model DM1226

Code No.	Price $
326-134	**5,357.10**

Replacement Wheels for Model DM1226

Description	Code No.	Price $
CBN Wheel for HSS	326-154	**480.70**
Diamond Wheel for Carbide	326-156	**480.70**

ER40 Collets for Model DM1226

Size (mm)	ER40 Code No.	Price $	Size (mm)	ER40 Code No.	Price $
7-8*	326-165	**53.10**	18.5-19.5	337-496	**41.40**
8-9*	326-166	**53.10**	19-20	337-522	**41.40**
9-10*	326-167	**53.10**	20-21	337-523	**41.40**
10-11*	326-168	**53.10**	21-22	337-524	**41.40**
11-12	337-511	**41.40**	22-23	337-525	**41.40**
12-13	337-513	**41.40**	23-24	337-526	**41.40**
13-14	337-514	**41.40**	24-25	337-527	**41.40**
14-15	337-515	**41.40**	25-26	337-528	**41.40**
15-16	337-517	**41.40**	26-27*	326-158	**53.10**
16-17	337-518	**41.40**	27-28*	326-159	**53.10**
17-18	337-519	**41.40**	28-29*	326-160	**53.10**
18-19	337-521	**41.40**	29-30*	326-161	**53.10**

* 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	326-365	**160.70**
VHL-700FT	400	88	1.7	326-370	**160.70**

Replacement Parts For VHL-600/700-FT Lamps




Description	Code No.	Price $
12V/20W Halogen Bulb	326-371	**53.90**
Replacement Glass	326-372	**5.80**

Magnetic Base With Working Beam

- 110V



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	326-884	**105.30**

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	230-660	**74.90**

Water-Proof Halogen Lamps

Features:
- Water proof lighting head with reinforced glass resists large temperature fluctuations of cutting oil.
- 110 voltage



VHL-400L



VHL-500S



VHL-500L

Model No.	Arm Length (mm)	Base Width (mm)	Weight (kgs.)	Code No.	Price $
VHL-400L	400 x 400	79	3.8	326-335	**262.80**
VHL-400M	220 x 220	79	3.5	326-340	**262.80**
VHL-400S	-	60	2.8	326-345	**205.10**
VHL-500L	400 x 400	79	4	326-350	**262.80**
VHL-500M	220 x 220	79	3.8	326-355	**262.80**
VHL-500S	-	79	2.7	326-360	**205.10**

Replacement Parts For VHL-400/500 Lamps




Description	Code No.	Price $
12V/50W Halogen Bulb	326-361	**29.90**
Replacement Glass	326-362	**8.50**

Magnetic Base With Magnifying Glass

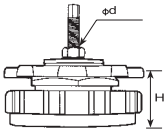
- 2X magnification
- M8x1.25 threaded mount



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	326-880	**120.30**

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	231-450	**138.50**
SB-6	95	16x110L	1000	40mm	231-452	**207.90**
SB-8	100	20x120L	2500	40mm	231-454	**244.60**
SB-10	125	24x180L	4000	40mm	231-456	**471.10**

Chip Collector with Flexible Arm

Flexible Magnetic Pick-Up Tool
- 21" in length
- 12 lb capacity



Model No.	Code No.	Price $
VCC-20	230-640	**45.20**

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

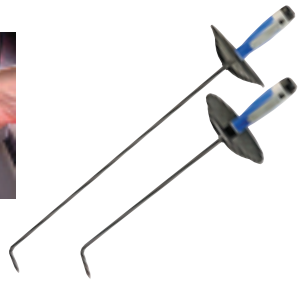


Model No.	Code No.	Price $
VCC-21	230-645	**46.60**

Chip Hooks - SP2500 & SP2550

For removing chips and clean the chip trays on your machines.
Black finished steel hooks.
The Chip Hooks include a plastic protective guard.
NogaGrip Handle designed for maximum comfort in your hand.





Model	Length	Code No.	Price $
SP2500	400mm	165-488	**32.50**
SP2550	600mm	165-490	**36.80**

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



Model	Dimensions	Magnetic Force	Weight (kg)	Code No.	Price $
VCP-15	Ø112mmx178mm	75kg	1.9	230-650	**389.10**

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



Model	Dimensions	Magnetic Force	Weight (kg)	Code No.	Price $
VCC-16	Ø110mmx190mm	4.9kg	0.7	230-655	**79.10**

MILACRON

All products on this page F.O.B. Sowa Tool Kitchener.

Oakflow DSO 650 Coolant

- Soluble oil metalworking fluid is a One-Fluid-All-Operations product. Its duty range is for "heavy-duty" machining and grinding operations for ferrous and non-ferrous metals.
- Contains an extreme pressure additive and has excellent rancidity control.



Description	Code No.	Price $
Oakflow DSO 650 19L Pail	659-670	332.03

Oakflow DSS 790 Coolant

- DSS 790 is a premium semi-synthetic metalworking fluid recommended for moderate to heavy-duty machining and grinding of ferrous and non-ferrous metals.
- Contains an extreme pressure additive and has excellent rancidity control. An excellent choice when one fluid is needed for all metals and all operations.



Description	Code No.	Price $
Oakflow DSS 790 19L Pail	659-660	158.90
Oakflow DSS 790 200L Drum	659-675	1,454.20

Oakflow DSS 791CF Coolant

- DSS 791CF Is the latest ***Chlorine-free*** semi-synthetic metal working fluid recommended for moderate duty machining and grinding of both ferrous and non-ferrous metals. It offers excellent rancidity control and is low foaming.
- DSS 791CF 1000L Tote - Also Available.



Description	Code No.	Price $
Oakflow DSS 791CF 19L Pail	659-685	183.16
Oakflow DSS 791CF 200L Drum	659-690	1,634.00

Oakflow DSS 700 Coolant

- General-purpose water-soluble semi-synthetic product having good rust and rancidity control.
- Recommended for light-duty to moderate-duty operations.
- It is recommended for use on ferrous and non-ferrous metals.



Description	Code No.	Price $
Oakflow DSS 700 19L Pail	659-645	139.65
Oakflow DSS 700 200L Drum	659-695	1,186.00

Oakflow DSS 700H Coolant

- ***Chlorine-free***, General-purpose water-soluble semi-synthetic product having good rust and rancidity control.
- Recommended for light-duty to moderate-duty operations. It is recommended for use on ferrous and non-ferrous metals.



Description	Code No.	Price $
Oakflow DSS 700H 19L Pail	659-700	133.00
Oakflow DSS 700H 200L Drum	659-705	1,186.00

Oakflow DSY4100

- ***Chlorine-free*** Clear, water-soluble synthetic product having excellent rust and rancidity control. It is low foaming and recommended for light to moderate-duty operations on cast iron, nodular iron, carbon steels.



Description	Code No.	Price $
Oakflow DSY4100	659-710	111.72

Oak Green-LPH

- Oak Green LPH Floor Cleaner is a water based floor cleaner developed for use in automatic floor scrubbers, mop buckets and spray bottles. It offers enhanced detergency to remove oils, greases, soot and shop dirt from floors, steps and walkways.



Description	Code No.	Price $
Oak Green-LPH 19L Pail	659-715	105.13

Cimclean 30

- Recommended for cleaning individual machine tanks and central system reservoirs, metalworking fluid lines, machines & parts.



Description	Code No.	Price $
Cimclean 30 1 gal. Pink	659-724	35.16
Cimclean 30 20L Pink	659-720	156.70
Cimclean 30 Case of 2-1 gallon jugs Pink	659-725	70.31

Cimtap II Tapping Fluid

- General purpose tapping fluid for both ferrous and non-ferrous metals.



Description	Code No.	Price $
16oz Bottle Cimtap II Pink	659-730	10.25
4L Jug Cimtap II Pink	659-735	41.79
20L Cimtap II Pink	659-620	172.60

Cimtap H.D. Tapping Fluid

- Cimtap H.D. The most heavy duty tapping oil recommended for both ferrous and non-ferrous metals.



Description	Code No.	Price $
Cimtap H.D. 16oz	659-750	22.68

Cimtap Paste Tapping Compound

- Cimtap Paste - general purpose tapping paste recommended for both ferrous and non-ferrous metals.



Description	Code No.	Price $
Cimtap Paste - 1 Pint	659-740	9.44
Cimtap Paste (Case of 24)	659-745	226.66

Filter Regulator & Lubricator

Space saving 2 pc Modular Filter-Regulator Combination & Lubricator is by far the most popular Air Preparation unit.

The Filter-Regular Combination & Lubricator are attached in series using spacers & piping adapters, which makes the 2 components easily removable / mountable without disturbing the pipe line. Come complete with a wall mounting bracket

Air Filter is used to separate dust, dirt, moisture & other contaminants from compressed air. Filter has a Die Cast Aluminum body, polycarbonate bowl with a steel bowl guard & a high performance Sintered Bronze Filtering element. Filter is designed with a Separator & shield for efficient moisture separation.

Regulator maintains a steady outlet pressure, unaffected by variations/ fluctuations in the inlet pressure. Regulators have a Non Raising "Press to Lock" adjusting knob for locking at any set pressure .Regulators work on a Diaphragm operated, relieving type mechanism with pressure compensated by balanced poppet

Air Lubricators are used to feed lubricants to pneumatic equipments. These maintain a constant oil-to-air density over a wide range of flow. Lubricators are Fog/MicroMist type, upto 50' pipe runs. Designed for best performance with 32 grade oil. These have a Die Cast Aluminum Head, polycarbonate bowl with a steel bowl guard. The head is fitted with Oil drop indicator, Oil drop controller & Oil filling plug

WETTED COMPONENTS:
Aluminum, Bronze, Brass, Steel, Acetal, Polycarbonate, Stainless Steel & Nitrile



231-488

FRCLM-15
STANDARD
Max flow rate:
99 CFM / 2800 LPM
Min flow rate:
1.59 CFM / 45 LPM
Bayonet type steel bowl guard,
Regulator with in-built Venturi
for Flow Compensation
Bowl Size (Filter): 44 ml
(Lubricator): 152 ml



231-486

FRCLM-13
MINIATURE
Max flow rate:
18 CFM / 12 LPM
Min flow rate:
0.42 CFM / 12 LPM
Threaded type steel
bowl guard
Bowl Size (Filter): 9 ml
(Lubricator): 20 ml

Model	Description	Port Size	Ambient Temp	Max PSI	Pressure Gauge Port Size	Code No.	Price $
FRCLM139134-S	Miniature	1/4"	0-60ºC (32-140ºF)	145 (10BAR)	1/8"	231-486	**180.60**
FRCLM159334-S	Standard	1/2"	0-60ºC (32-140ºF)	145 (10BAR)	1/8"	231-488	**325.80**

Filter Regulator Combination

The Filter-Regulator Combination is one of the most popular air preparation units. The 2 are assembled together to form a single unit

Air Filter is used to separate dust, dirt, moisture & other contaminants from compressed air

Filter has a Die Cast Aluminum body, polycarbonate bowl with a steel bowl guard & a high performance Sintered Bronze Filtering element

Filter is designed with a Separator & shield for efficient moisture separation. It is combined with a Regulator which maintains a steady outlet pressure, unaffected by variations/fluctuations in the inlet pressure

Regulators have a Non Raising "Press to Lock" adjusting knob for locking at any set pressure .Regulators work on a Diaphragm operated, relieving type mechanism with pressure compensated by balanced poppet

WETTED COMPONENTS:
Aluminum, Bronze, Brass, Steel, Acetal, Polycarbonate, Stainless Steel & Nitrile



FRC-15
STANDARD
Max flow rate:
106 CFM / 3000 LPM
Bayonet type steel bowl guard,
Regulator with in-built Venturi for
Flow Compensation
Pressure Gauge Port Size: 1/8"
- **Max** 145 PSI (10BAR)
- **Ambient Temp**
  0-60ºC (32-140ºF)

Model	Description	Port Size	Bowl Size Oz.	Bowl Size ml	Code No.	Price $
FRC159334-S	Standard	1/2"	1.5	44	231-484	**182.20**

Adjustable Coolant Hose System





Length and angle can be freely adjusted, suitable for most fluids (liquids and gases), hose orifice can be changed as needed.
Can be used for air or for water/oil supply to metal processing machinery

- Made of Dupont 100P material; this highly rigid yet resilient acetal (POM) is strongly resistant to oils and chemicals.
- Adjustable Coolant Hose is highly pliable; it holds its shape well and will not spring back.
- Bending hose will not reduce inner diameter; hose will not pinch or fatigue.
- Adjustable Coolant Hose will not damage cutting blades if there is accidental contact.
- Adjustable Coolant Hose does not conduct electricity and is suitable for use on electrical discharge (EDM) machines.
- Four kinds of inner diameter are available: 1/4", 3/8", 1/2", 3/4"
- Adjustable Coolant Hose is designed for the transport of low-pressure fluids

Installation of Adjustable Coolant Hoses
It's simple and easy to install Adjustable Coolant Hoses using the special pliers. The pliers can also be used to take apart the hose.





Total Control Units

The Total Flow Control Unit can be installed on all types of mechanical equipment to control water flow.
It is easy to install and makes the machine more aesthetically attractive.
Ensure convenient flow control.

Standard Control Unit

Description	Code No.	Price $
#1 Control Unit • Total Flow Control Unit - 1 set • 1/4" Adjustable Coolant Hoses & Valves Unit - 1 set • 3/8" Adjustable Coolant Hoses & Valves Unit - 3 sets	665-002	**216.40**



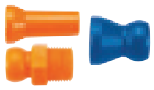
High Pressure Control Unit

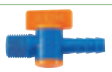
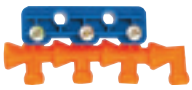
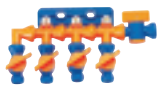
Description	Code No.	Price $
#2 Control Unit • Total Flow Control Unit - 1 set • 1/4" Adjustable Coolant Hoses & Valves Unit - 1 set • High Pressure Adjustable Nozzles - 3 sets	665-004	**355.80**



Adjustable Coolant Hose System

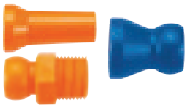
1/4" Coolant Hose System

	Description	Code No.	Price $
	**1/4" Hose Kit** Includes: 10pcs of 1/4" segments - 2 sets 1/16", 1/8", 1/4" Nozzles 1/4" & 1/8" Male NPT Connectors	665-008	**23.90**
	**1/4" Extended Element Kit** with Element Kit Includes: 4 each of: 1/4" Extended Elements, 1/4" Element Clamps	665-010	**32.00**
	**1/4" Segment Pack** 2 x 5-1/2"pcs **1/4" x 50 ft coil** **1/4" x 82 ft coil**	665-012 665-014 665-016	**12.90** **667.50** **1,116.40**
	**1/4 Circle Flow Nozzles** Nozzle Kit Assembled with 15 Side Flow Nozzles 1/4", 1pc End Cap-1/4"	665-018	**52.80**
	**1/4" Extended Element, Pack of 4** **1/4" Extended Element, Pack of 20**	665-020 665-022	**18.50** **91.70**
	**1/4" Element Clamp, Pack of 4** **1/4" Element Clamp, Pack of 20**	665-024 665-026	**13.70** **67.50**
	**1/4" - 90º Nozzle Kit** 1 ea. 1/16", 1/8", 1/4" & Spray Bar Nozzle	665-028	**14.90**
	**1/16" Round Nozzle, Pack of 4** **1/16" Round Nozzle, Pack of 50**	665-030 665-032	**7.90** **96.40**
	**1/8" Round Nozzle, Pack of 4** **1/8" Round Nozzle, Pack of 50**	665-034 665-036	**7.90** **96.40**
	**1/4" Round Nozzle, Pack of 4** **1/4" Round Nozzle, Pack of 50**	665-038 665-040	**7.90** **96.40**
	**1/16" - 90º Round Nozzle, Pack of 4** **1/16" - 90º Round Nozzle, Pack of 20**	665-042 665-044	**11.70** **56.90**
	**1/8" - 90º Round Nozzle, Pack of 4** **1/8" - 90º Round Nozzle, Pack of 20**	665-046 665-048	**11.70** **56.90**
	**1/4" - 90º Round Nozzle, Pack of 4** **1/4" - 90º Round Nozzle, Pack of 20**	665-050 665-052	**11.70** **56.90**
	**1/4" - 90º Spray Bar Nozzle, Pack of 2** **1/4" - 90º Spray Bar Nozzle, Pack of 20**	665-054 665-056	**12.60** **122.80**
	**3/8" Flat Nozzle, Pack of 2** **3/8" Flat Nozzle, Pack of 20**	665-058 665-060	**10.10** **98.80**
	**1" Flare Nozzle, Pack of 2** **1" Flare Nozzle, Pack of 20**	665-062 665-064	**6.00** **58.00**
	**1/8" NPT Connector, Pack of 4** **1/8" NPT Connector, Pack of 50**	665-070 665-072	**7.90** **96.40**
	**1/4" NPT Connector, Pack of 4** **1/4" NPT Connector, Pack of 50**	665-078 665-080	**7.90** **96.40**
	**1/4" Y Fitting Pack, of 2** **1/4" Y Fitting Pack, of 20**	665-086 665-088	**12.60** **122.80**
	**1/4" Double Socket, Pack of 4** **1/4" Double Socket, Pack of 20**	665-090 665-092	**9.10** **44.40**

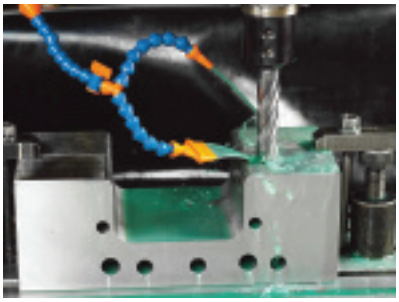
	Description	Code No.	Price $
	**1/4" Socket to 1/8" NPTF, Pack of 4** **1/4" Socket to 1/8" NPTF, Pack of 20**	665-094 665-096	**12.80** **46.30**
	**1/4" Female NPTF Connector, Pack of 4** **1/4" Female NPTF Connector, Pack of 50**	665-102 665-104	**15.60** **192.50**
	**5/8" Female UNF Connector, Pack of 4** **5/8" Female UNF Connector, Pack of 50**	665-106 665-108	**15.60** **77.20**
	**7/16" Female UNF Connector, Pack of 4** **7/16" Female UNF Connector, Pack of 50**	665-110 665-112	**15.60** **77.20**
	**1/4" Elbow Fitting, Pack of 2** **1/4" Elbow Fitting, Pack of 20**	665-114 665-116	**11.80** **115.60**
	**1/4" T Fitting, Pack 2** **1/4" T Fitting, Pack 20**	665-118 665-120	**13.70** **62.80**
	**1/4" Side Flow Nozzle, Pack of 4** **1/4" Side Flow Nozzle, Pack of 20**	665-122 665-124	**13.70** **67.50**
	**1/4" End Cap, Pack of 4** **1/4" End Cap, Pack of 20**	665-126 665-128	**8.40** **41.30**
	**1/4" Swivel Nozzle 40, Pack of 2** **1/4" Swivel Nozzle 40, Pack of 20**	665-130 665-132	**18.00** **178.00**
	**1/4" Swivel Nozzle 60, Pack of 2** **1/4" Swivel Nozzle 60, Pack of 20**	665-134 665-136	**18.00** **178.00**
	**1/4" NPT Male Hose Nipple Valve, Pk. of 2** **1/4" NPT Male Hose Nipple Valve, Pk. of 10**	665-138 665-140	**19.60** **96.40**
	**1/4" Connection Valve, Pack of 2** **1/4" Connection Valve, Pack of 10**	665-142 665-144	**19.60** **96.40**
	**1/4" Male NPT Valve, Pack of 2** **1/4" Male NPT Valve, Pack of 10**	665-150 665-152	**19.60** **96.40**
	**1/4" Female NPT Valve, Pack of 2** **1/4" Female NPT Valve, Pack of 10**	665-158 665-160	**19.60** **96.40**
	**1/4" Connection Check Valve, Pack of 2** **1/4" Connection Check Valve, Pack of 10**	665-162 665-164	**19.60** **96.40**
	**1/4" Modular Manifold System** Includes: 1/4" Elbow Fitting-1pc. 1/4" Manifold Bracket-1pc. 1/4" T Fitting-3pcs. 1/4" Mounting Screws-3pcs.	665-166	**31.00**
	**1/4" Main Flow Control Manifold System** Includes: 1/4" Modular Manifold-1set 1/4" Connection Valve-5pcs.	665-168	**82.30**
	**1/4" Manifold Bracket, Pack of 2**	665-170	**9.30**
	**1/4" Hose Assembly Pliers**	665-172	**61.10**

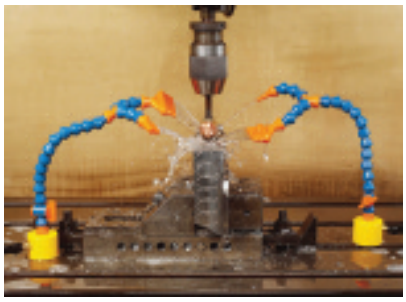
Adjustable Coolant Hose System

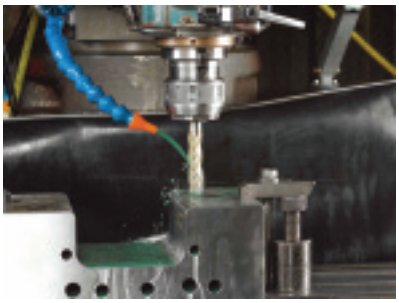
3/8" Coolant Hose System

	Description	Code No.	Price $
	**3/8" Hose Kit** Includes: 8pcs of 3/8" segments - 2 sets 3/8" Nozzle 3/8" Male NPT Connector	665-176	**19.10**
	**3/8" Hose Kit** Includes: 8pcs of 3/8" segments - 2 sets 1/4", 3/8", 1/2" Nozzles 3/8" & 1/2" Male NPT Connectors	665-180	**27.10**
	**3/8" Segment Pack** 2 x 5-1/2"pcs **3/8" x 25 ft coil** **3/8" x 50 ft coil**	665-182 665-184 665-186	**14.10** **388.40** **762.80**
	**1/4" Round Nozzle, Pack of 4** **1/4" Round Nozzle, Pack of 50**	665-188 665-190	**9.90** **120.40**
	**3/8" Round Nozzle, Pack of 4** **3/8" Round Nozzle, Pack of 50**	665-192 665-194	**9.90** **120.40**
	**1/2" Round Nozzle, Pack of 4** **1/2" Round Nozzle, Pack of 50**	665-196 665-198	**9.90** **120.40**

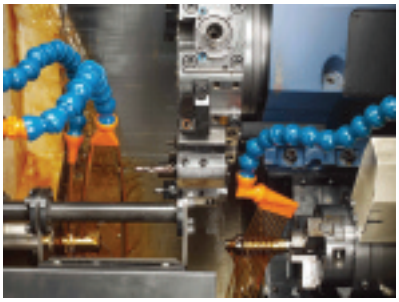
	Description	Code No.	Price $
	**3/8" NPT Connector, Pack of 4** **3/8" NPT Connector, Pack of 50**	665-208 665-210	**9.90** **120.40**
	**1/2" NPT Connector, Pack of 4** **1/2" NPT Connector, Pack of 50**	665-216 665-218	**9.90** **120.40**
	**1-1/4" Flare Nozzle, Pack of 2** **1-1/4" Flare Nozzle, Pack of 20**	665-220 665-222	**7.20** **69.90**
	**3/8" Male NPT Valve, Pack of 2** **3/8" Male NPT Valve, Pack of 10**	665-228 665-230	**24.30** **120.40**
	**3/8" Female NPT Valve, Pack of 2** **3/8" Female NPT Valve, Pack of 10**	665-236 665-238	**24.30** **120.40**
	**3/8" Hose Assembly Pliers**	665-240	**61.10**

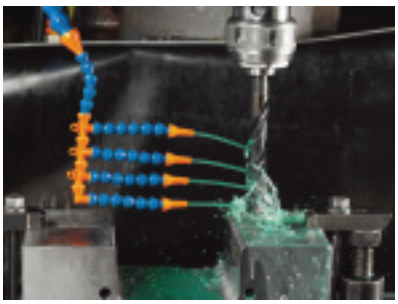






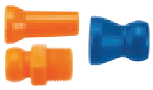
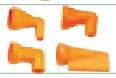






Adjustable Coolant Hose System

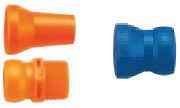
1/2" Coolant Hose System

	Description	Code No.	Price $
	**1/2" Hose Kit** Includes: 6pcs of 1/2" segments - 2 sets 1/4", 3/8", 1/2" Nozzles 3/8" & 1/2" Male NPT Connectors	665-244	**30.80**
	**1/2" Extended Element Kit** with Element Kit Includes: 4 each of: 1/2" Extended Elements, 1/2" Element Clamps	665-246	**40.10**
	**1/2" Segment Pack** 2 x 5-1/2"pcs	665-248	**15.50**
	1/2" x 50 ft coil	665-250	**889.50**
	1/2" x 82 ft coil	665-252	**934.70**
	**1/2 Circle Flow Nozzles** Nozzle Kit Assembled with 15 Side Flow Nozzles 1/2", 1pc End Cap-1/2"	665-254	**67.50**
	**1/2" Extended Element, Pack of 4**	665-256	**22.80**
	1/2" Extended Element, Pack of 20	665-258	**113.20**
	**1/2" Element Clamp, Pack of 4**	665-260	**17.50**
	1/2" Element Clamp, Pack of 20	665-262	**86.70**
	**1/4" - 90º Nozzle Kit** 1 ea. 1/4", 3/8", 1/2" & Spray Bar Nozzle	665-264	**17.40**
	**1/4" Round Nozzle, Pack of 4**	665-266	**11.80**
	1/4" Round Nozzle, Pack of 50	665-268	**144.50**
	**3/8" Round Nozzle, Pack of 4**	665-270	**11.80**
	3/8" Round Nozzle, Pack of 50	665-272	**144.50**
	**1/2" Round Nozzle, Pack of 4**	665-274	**11.80**
	1/2" Round Nozzle, Pack of 50	665-276	**144.50**
	**1/4" - 90º Round Nozzle, Pack of 4**	665-278	**12.80**
	1/4" - 90º Round Nozzle, Pack of 20	665-280	**62.80**
	**3/8" - 90º Round Nozzle, Pack of 4**	665-282	**12.80**
	3/8" - 90º Round Nozzle, Pack of 20	665-284	**62.80**
	**1/2" - 90º Round Nozzle, Pack of 4**	665-286	**12.80**
	1/2" - 90º Round Nozzle, Pack of 20	665-288	**62.80**
	**1/2" - 90º Spray Bar Nozzle, Pack of 2**	665-290	**14.00**
	1/2" - 90º Spray Bar Nozzle, Pack of 20	665-292	**137.20**
	**1-1/4" Flare Nozzle, Pack of 2**	665-294	**8.40**
	1-1/4" Flare Nozzle, Pack of 20	665-296	**82.10**
	**1-3/4" Flare Nozzle, Pack of 2**	665-298	**8.90**
	1-3/4" Flare Nozzle, Pack of 20	665-300	**86.70**
	**2-1/2" Flare Nozzle, Pack of 2**	665-302	**9.90**
	2-1/2" Flare Nozzle, Pack of 20	665-304	**96.40**
	**3/8" NPT Connector, Pack of 4**	665-310	**11.80**
	3/8" NPT Connector, Pack of 50	665-312	**144.50**
	**1/2" NPT Connector, Pack of 4**	665-318	**11.80**
	1/2" NPT Connector, Pack of 50	665-320	**144.50**
	**1/2" Y Fitting Pack, of 2**	665-322	**14.00**
	1/2" Y Fitting Pack, of 20	665-324	**137.20**

	Description	Code No.	Price $
	**1/2" to 1/4" Y Reducer, Pack of 2**	665-326	**14.00**
	1/2" to 1/4" Y Reducer, Pack of 20	665-328	**137.20**
	**1/2" to 1/4" Adapter, Pack of 2**	665-330	**10.40**
	1/2" to 1/4" Adapter, Pack of 20	665-332	**101.30**
	**1/2" Double Socket, Pack of 4**	665-334	**10.40**
	1/2" Double Socket,, Pack of 20	665-336	**50.80**
	**1/2" Elbow Fitting, Pack of 2**	665-338	**13.20**
	1/2" Elbow Fitting, Pack of 20	665-340	**130.00**
	**1/2" T Fitting, Pack 2**	665-342	**15.40**
	1/2" T Fitting, Pack 20	665-344	**151.70**
	**1/2" Side Flow Nozzle, Pack of 4**	665-346	**17.50**
	1/2" Side Flow Nozzle, Pack of 20	665-348	**86.70**
	**1/2" End Cap, Pack of 4**	665-350	**9.30**
	1/2" End Cap, Pack of 20	665-352	**45.90**
	**1/2" Connection Valve, Pack of 2**	665-354	**31.60**
	1/2" Connection Valve, Pack of 10	665-356	**156.40**
	**1/2" Male NPT Valve, Pack of 2**	665-362	**31.60**
	1/2" Male NPT Valve, Pack of 10	665-364	**156.40**
	**1/2" Female NPT Valve, Pack of 2**	665-370	**31.60**
	1/2" Female NPT Valve, Pack of 10	665-372	**156.40**
	**1/2" Connection Check Valve, Pack of 2**	665-374	**26.10**
	1/2" Connection Check Valve, Pack of 10	665-376	**128.80**
	**3/8" SAE Flare Nut Adapter, Pack of 4**	665-378	**13.20**
	3/8" SAE Flare Nut Adapter, Pack of 20	665-380	**65.10**
	**1/2" Modular Manifold System** Includes: 1/2" Elbow Fitting-1pc. 1/2" Manifold Bracket-1pc. 1/2" T Fitting-3pcs. 1/2" Mounting Screws-3pcs.	665-382	**34.70**
	**1/2" Main Flow Control Manifold System** Includes: 1/2" Modular Manifold-1set 1/2" Connection Valve-5pcs.	665-384	**112.70**
	**1/2" Manifold Bracket, Pack of 2**	665-386	**10.60**
	**1/2" Hose Assembly Pliers**	665-388	**61.10**

Adjustable Coolant Hose System

3/4" Coolant Hose System

	Description	Code No.	Price $
	**3/4" Hose Kit** Includes: 6pcs of 3/4" segments - 2 sets 5/8"& 3/4" Nozzles 3/4" Male NPT Connectors	665-392	**40.70**
	**3/4" Segment Pack** 2 x 5-1/2"pcs	665-394	**27.60**
	3/4" x 50 ft coil	665-396	**1,495.70**
	3/4" x 82 ft coil	665-398	**2,370.10**
	**5/8" Round Nozzle, Pack of 4**	665-400	**16.60**
	5/8" Round Nozzle, Pack of 50	665-402	**204.50**
	**3/4" Round Nozzle, Pack of 4**	665-404	**16.60**
	3/4" Round Nozzle, Pack of 50	665-406	**204.50**
	**3/4" NPT Connector, Pack of 4**	665-412	**16.60**
	3/4" NPT Connector, Pack of 50	665-414	**204.50**

	Description	Code No.	Price $
	**3" Flare Nozzle, Pack of 2**	665-416	**11.80**
	3" Flare Nozzle, Pack of 20	665-418	**115.60**
	**3/4" Y Fitting, Pack of 2**	665-420	**30.60**
	3/4" Y Fitting, Pack of 20	665-422	**302.90**
	**3/4" to 1/2" Adapter, Pack of 2**	665-424	**11.80**
	3/4" to 1/2" Adapter, Pack of 20	665-426	**115.60**
	**3/4" to 1/2" Y Reducer, Pack of 2**	665-428	**41.40**
	3/4" to 1/2" Y Reducer, Pack of 20	665-430	**411.00**
	**3/4" Double Socket, Pack of 4**	665-432	**12.80**
	3/4" Double Socket, Pack of 20	665-434	**62.80**
	**3/4" Hose Assembly Pliers**	665-436	**61.10**

Magnetic Base & Shield Systems

3 Valve Magnetic Set (With On-Off)

Description	Code No.	Price $
• Magnetic Base (W 2" x L 2-1/2" x H 2") • 20 pcs of 1/4" Segment - 3 pcs • 1" Flare Nozzle - 3 pcs • 1/4" NPT Connector - 3 pcs • 1/4" Copper Valve - 3pcs	665-438	**297.10**



2 Valve Magnetic Set (With On-Off)

Description	Code No.	Price $
• Magnetic Base (W 2" x L 2-1/2" x H 2") • 20 pcs of 1/4" Segment - 2 pcs • 1" Flare Nozzle - 2 pcs • 1/4" NPT Connector - 2 pcs • 1/4" Copper Valve - 2 pcs	665-440	**279.20**



Single Hose Magnetic Set

Description	Code No.	Price $
• Magnetic Base - 1 pc • 10 pcs of 1/4" Segment - 1 pc • 1" Flare Nozzle - 1 pc • 1/4" NPT Connector - 1 pc	665-442	**38.20**



Single Hose Magnetic Set (Shut Off Valve)

Description	Code No.	Price $
• Magnetic Base - 1 pc • 10 pcs of 1/4" Segment - 1 pc • 1" Flare Nozzle - 1 pc • 1/4" Male NPT Valve - 1 pc	665-446	**51.00**



Long Single Hose Magnetic Set

Description	Code No.	Price $
• Magnetic Base - 1 pc • 20 pcs of 1/4" Segment - 1 pc • 1" Flare Nozzle - 1 pc • 1/4" NPT Connector - 1 pc	665-444	**43.50**



Long Single Hose Magnetic Set (Shut Off Valve)

Description	Code No.	Price $
• Magnetic Base - 1 pc • 20 pcs of 1/4" Segment - 1 pc • 1" Flare Nozzle - 1 pc • 1/4" Male NPT Valve - 1 pc	665-448	**57.20**



Magnetic Shield Kits

Description	Dimensions	Code No.	Price $
• Magnetic Base - 1 pc	6" x 8"	665-450	**81.50**
• 12 pcs of 3/4" Segment - 1 pc	7-1/2" x 10"	665-452	**85.30**
• 3/4" Shield Mounting Elbow - 1 pc	8-1/2" x 12"	665-454	**91.80**
• Nut - 2 pcs			
• Acrylic Board - 1 pc			



Adjustable Coolant Hose System

Adjustable Coolant Hoses & Valves



1/4" Male 13" Length Hose Kit

Description	Code No.	Price $
• 1/4" Male NPT Valve - 1 pc • 20 pcs of 1/4" Segment - 1 pc • 1/4" Round Nozzle - 1 pc	665-456	**25.10**



3/8" Male 14" Length Hose Kit

Description	Code No.	Price $
• 3/8" Male NPT Valve - 1 pc • 16 pcs of 3/8" Segment - 1 pc • 3/8" Round Nozzle - 1 pc	665-460	**30.60**



1/2" Male 13" Length Hose Kit

Description	Code No.	Price $
• 1/2" Male NPT Valve - 1 pc • 12 pcs of 1/2" Segment - 1 pc • 1/2" Round Nozzle - 1 pc	665-464	**37.60**



1/4" Female 13" Length Hose Kit

Description	Code No.	Price $
• 1/4" Female NPT Valve - 1 pc • 20 pcs of 1/4" Segment - 1 pc • 1/4" Round Nozzle - 1 pc	665-458	**25.10**



3/8" Female 14" Length Hose Kit

Description	Code No.	Price $
• 3/8" Female NPT Valve - 1 pc • 16 pcs of 3/8" Segment - 1 pc • 3/8" Round Nozzle - 1 pc	665-462	**30.60**



1/2" Female 13" Length Hose Kit

Description	Code No.	Price $
• 1/2" Female NPT Valve - 1 pc • 12 pcs of 1/2" Segment - 1 pc • 1/2" Round Nozzle - 1 pc	665-466	**37.60**

cooling system NOGA

NOGA MINICOOL is using the VENTURI principle to spray an air + liquid mixture. It consists of the following basic elements:
A control valve, spray unit, air line, syphon line and a powerful on/off Popeye magnet, which has a "V" form base, making it possible to mount on non-flat surfaces.
The MINICOOL enables the user to easily control both the air flow rate and liquid rate. Stainless steel armoured syphon hose and air hose are made in standard lengths: 1m, 2m, 3m (special lengths available upon request).
The spray unit comes in three standard lengths: 264, 334, 479 mm (special lengths available upon request).



NogaCool - MC1601

NOGACOOL consists of a manifold & Loc-Line® flexible hose with a nozzle on top and a valve at the bottom, Assembled on the powerful ON/OFF POPEYE magnet. The plug attached can be replaced by a second Loc-Line® hose. NOGACOOL is supplied with a set of three nozzles: 1/16", 1/8",1/4".
Working conditions are as follows: Pressure: 2-3.4 Bar (30-50 Psi), Flow rate: 940 l/hour (250 gal/hour) Max. Working Temp. 170°C.



Model	Code No.	Price $
MC1601	165-462	**79.90**

Noga Minicool - MC1700

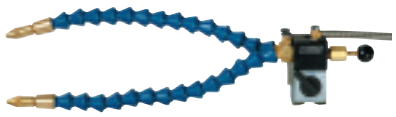
NOGA Minicool is using the VENTURI principle to spray an air + liquid mixture.
The Minicool enables the user to easily control both the air flow rate and liquid rate.
- Strong magnetic base.
- Separate on/off air and fluid control.
- Stainless steel armoured syphon hose and air hose.
- Simple, inexpensive, rugged.
- Nozzle connected via Loc-Line® flexible hose.
- Single spray unit.



Model	Code No.	Price $
MC1700	165-461	**209.60**

Noga Minicool - MC3000

NOGA Minicool is using the VENTURI principle to spray an air + liquid mixture. The Minicool enables the user to easily control both the air flow rate and liquid rate.
- Strong magnetic base.
- Separate on/off air and fluid control.
- Stainless steel armoured syphon hose and air hose.
- Simple, inexpensive, rugged.
- Nozzle connected via Loc-Line® flexible hose.
- Two spray units.



Model	Code No.	Price $
MC3000	165-463	**272.70**

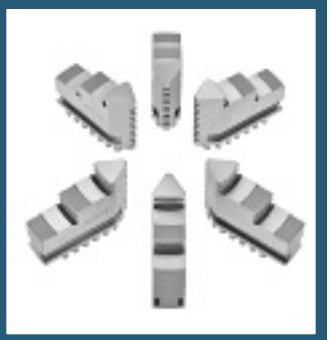












LATHE CHUCKS

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Machine Spindle Nose Specifications J8

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3 & 6 Jaw Fine Adjustment Scroll Chucks J9-15
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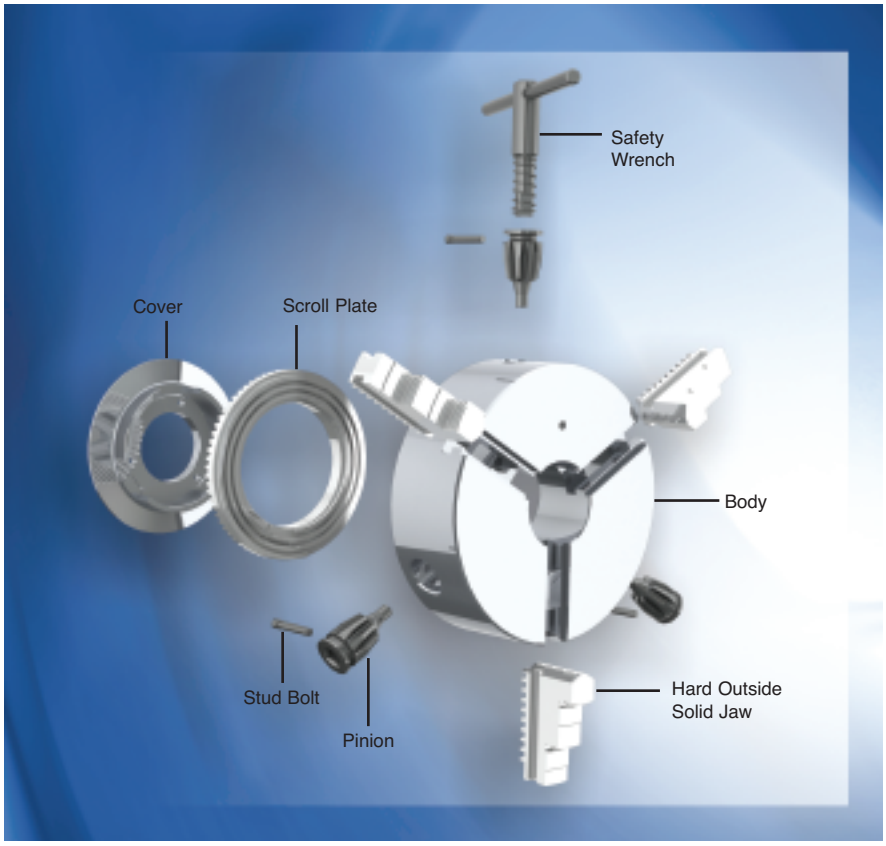
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Soft Top Jaws J95-99
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Hard Top Jaws J101
T-Nuts J102

Bison Lathe Chucks

Bison chucks are made from forged steel or cast iron; all of the working surfaces are hardened and ground ensuring that the finished product is a rugged chuck that meets high sliding, stability, and durability parameters.

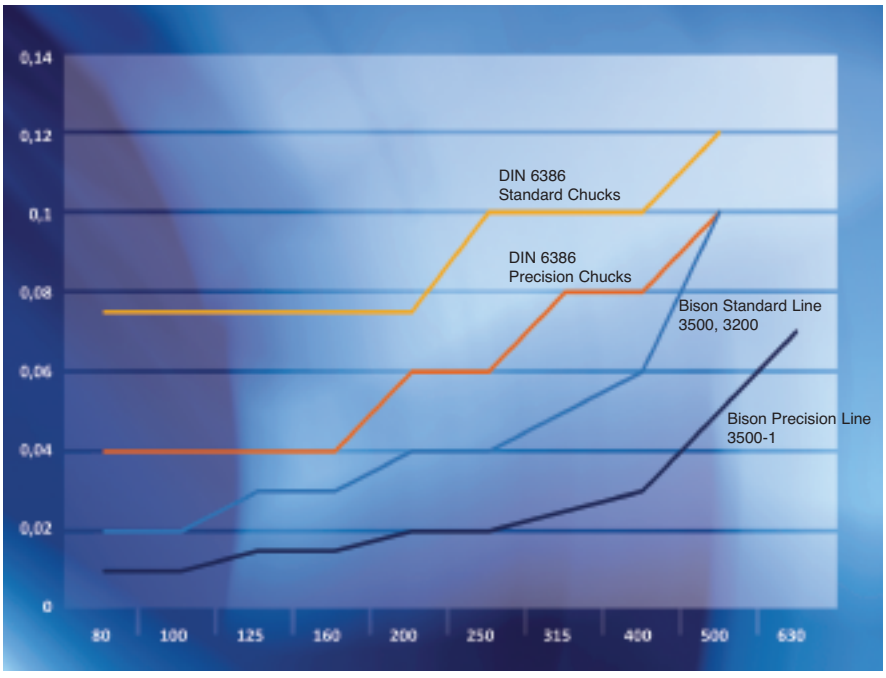
Each chuck is thoroughly inspected before the product leaves the factory. We check gripping force and run-out to ensure accuracy in order to meet Bison's quality standards that are even more stringent than DIN standards. Only then the chuck is given the Bison label of quality. This is our commitment to you that you have purchased the best workholding products on the market today.



We want to give you more. So when greater precision will be necessary you can choose Bison lathe chucks from our precision line.

Centering accuracy of Bison standard and precision lines are shown in the chart below in comparison to the requirements of DIN standards. Both our standard and precision line fall below the required DIN standards throughout the various sizes.

For high precision operations we recommend the precision line of Bison chucks. High quality products for demanding companies.



Precision Three-jaw Self-centering Scroll Chucks Forged Steel Body

Precision lathe chucks have a top accuracy at work and the guarantee to maintain this accuracy for an extended period of time. These chucks have modern and compact design. They are able to fulfill the highest demands of our customers.
They can be used wherever precision and high precision machining is demanded.
BODY - drop-forged of highest grade steel and put through precise machining operations. All bearings surfaces are carefully hardened and precision ground.
SCROLL PLATE - drop-forged of fine alloy steel, carefully hardened. Thread flanks ground on both sides.
JAWS - teeth and guides are hardened and fully ground on both sides.
PINIONS - hardened and ground.
BUSHINGS - hardened and ground, pressed into the pinion seats.
Jaws, pinions and bushings are made of fine alloy steel.
Precision grinding of scroll and jaws teeth will permit to:
• eliminate possible deformation being a result of heat treatment
• reach uniform radial gripping force on all teeth of jaws
• increase guarantee period for high centering accuracy
• increase gripping force
Each chuck is provided with lubricator enabling current maintenance and extending chuck components life. Each scroll and assembled chuck are statically balanced within fine limits.
Interstage and final inspection assure high quality of our chucks.





Precision Three and Six-Jaw Self-Centering F/A Scroll Chucks Forged Steel Body

A unique micro-adjustment feature enables concentricity to be adjusted to 0.0002 in. of full indicator movement. F/A chucks can be used at many machining operations for which ordinary scroll chucks are unsuitable and at all the operations for which ordinary chucks are normally used. Require original Bison F/A backplates.

Four-Jaw Independent Lathe Chucks

These chucks feature jaws that are individually adjustable, allow firm gripping of odd shaped work, and the four jaws allow a square component to be perfectly centered to the chuck while achieving maximum gripping force. The chuck bodies are made of semi-steel. The jaws are made of high quality carbon steel and hardened. Thrust bearings and operating screws are made of case hardened steel.





Universal Two, Three and Four-Jaw Self-Centering Scroll Chucks

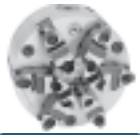
These chucks have modern, precision and standardized construction. They may be used on all types of lathes and on different kinds of milling and drilling attachments.
BODY - is made of high quality cast iron. All bearing surfaces are precision machined.
SCROLL PLATE - drop-forged of fine alloy steel, carefully hardened. Thread flanks ground on both sides.
JAWS - the teeth and guides are hardened and fully ground on both sides.
PINIONS - hardened and ground.
These chucks are equipped with lubricator, enabling their current maintenance. Versatile inspections assure high quality of our chucks.

F/A Fine Adjustment Precision Self-Centering Scroll Chucks

3 Jaw



6 Jaw



	Body	Jaw Type	Type	Page
3 Jaw Plain Back	Steel Body	2 pc Hard Reversible Jaws	3565	J10
	Steel Body	Hard Solid Jaws	3564	J11
	Cast Iron Body	2 pc Hard Reversible Jaws	3265	J12
	Cast Iron Body	Hard Solid Jaws	3264	J13
6 Jaw Plain Back	Steel Body	2 pc Hard Reversible Jaws	3865	J14
	Steel Body	Hard Solid Jaws	3864	J15

Standard 3 Jaw Self-Centering Scroll Chucks

3 Jaw

















	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 pc Hard Reversible Jaws	3505	J22
	Steel Body	Hard Solid Jaws	3504	J23
	Cast Iron Body	2 pc Hard Reversible Jaws	3205	J24
	Cast Iron Body	Hard Solid Jaws	3204	J26
A Taper Mount	Steel Body	2 pc Hard Reversible Jaws	3515	J22
	Steel Body	Hard Solid Jaws	3514	J23
	Cast Iron Body	2 pc Hard Reversible Jaws	3215	J24
	Cast Iron Body	Hard Solid Jaws	3214	J26
Camlock Mount	Steel Body	2 pc Hard Reversible Jaws	3545	J22
	Steel Body	Hard Solid Jaws	3544	J23
	Cast Iron Body	2 pc Hard Reversible Jaws	3245	J24
	Cast Iron Body	Hard Solid Jaws	3244	J26
DIN Mount	Steel Body	2 pc Hard Reversible Jaws	3535	J22
	Steel Body	Hard Solid Jaws	3534	J23
	Cast Iron Body	2 pc Hard Reversible Jaws	3235	J24
	Cast Iron Body	Hard Solid Jaws	3234	J26
Front Mounting	Steel Body	2 pc Hard Reversible Jaws	3575	J22
	Steel Body	Hard Solid Jaws	3574	J23
	Cast Iron Body	2 pc Hard Reversible Jaws	3275	J25
	Cast Iron Body	Hard Solid Jaws	3274	J26
L Mounting	Cast Iron Body	2 pc Hard Reversible Jaws	3255	J25
Threaded Mount	Cast Iron Body	2 pc Hard Reversible Jaws	3285	J25

Standard 4 Jaw Self-Centering Scroll Chucks

4 Jaw













	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 pc Hard Reversible Jaws	3705	J27
	Steel Body	Hard Solid Jaws	3704	J28
	Cast Iron Body	2 pc Hard Reversible Jaws	3605	J29
	Cast Iron Body	Hard Solid Jaws	3604	J30
A Taper Mount	Steel Body	2 pc Hard Reversible Jaws	3715	J27
	Steel Body	Hard Solid Jaws	3714	J28
	Cast Iron Body	2 pc Hard Reversible Jaws	3615	J29
	Cast Iron Body	Hard Solid Jaws	3614	J30
Camlock Mount	Steel Body	2 pc Hard Reversible Jaws	3745	J27
	Steel Body	Hard Solid Jaws	3744	J28
	Cast Iron Body	2 pc Hard Reversible Jaws	3645	J29
	Cast Iron Body	Hard Solid Jaws	3644	J30
DIN Mount	Steel Body	2 pc Hard Reversible Jaws	3735	J27
	Steel Body	Hard Solid Jaws	3734	J28
	Cast Iron Body	2 pc Hard Reversible Jaws	3635	J29
	Cast Iron Body	Hard Solid Jaws	3634	J30
Front Mounting	Steel Body	2 pc Hard Reversible Jaws	3775	J27
	Steel Body	Hard Solid Jaws	3774	J28
	Cast Iron Body	2 pc Hard Reversible Jaws	3675	J29
	Cast Iron Body	Hard Solid Jaws	3674	J30

Standard Self-Centering Scroll Chucks

2 Jaw



6 Jaw



	Body	Jaw Type	Type	Page
2 Jaw Plain Back	Cast Iron Body	2 pc Jaws	3105	J31
6 Jaw Plain Back	Steel Body	2 pc Hard Reversible Jaws	3807	J32
	Steel Body	Hard Solid Jaws	3806	J32
	Cast Iron Body	2 pc Hard Reversible Jaws	3805	J33
	Cast Iron Body	Hard Solid Jaws	3804	J33

Lathe Chucks For Sharpening Drills

3 Jaw



6 Jaw



5C Collet Chucks



Mini Workshop Chuck



	Body	Jaw Type	Type	Page
3 Jaw Plain Back	Cast Iron Body	Hard Solid Jaws	3266	J34
6 Jaw Plain Back	Cast Iron Body (Lever Controlled)	Hard Solid Jaws	3866	J34
	Cast Iron Body	Hard Solid Jaws	3867	J35
Plain Back	Steel Body	-	3911	J35
Plain Back w/fine adjustment	Steel Body	-	3960	J35
Threaded Mount	Steel Body	Hard Solid Jaws	3286	J31

Morse Taper 3 Jaw Self-Centering Scroll Chucks

3 Jaw



	Body	Jaw Type	Chuck Type	Spindle Type	Page
3 Jaw MT2-MT5 Shank	Steel Body	2 pc Hard Jaws	3275	9157	J36
	Steel Body	Hard Solid Jaws	3274	9157	J36

High Precision Steel Body 3 Jaw Scroll Chucks

3 Jaw



	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 pc Hard Reversible Jaws	3505-I	J37
	Steel Body	Hard Solid Jaws	3504-I	J38
A Taper Mount	Steel Body	2 pc Hard Reversible Jaws	3515-I	J37
	Steel Body	Hard Solid Jaws	3514-I	J38
Camlock Mount	Steel Body	2 pc Hard Reversible Jaws	3545-I	J37
	Steel Body	Hard Solid Jaws	3544-I	J38
DIN Mount	Steel Body	2 pc Hard Reversible Jaws	3535-I	J37
	Steel Body	Hard Solid Jaws	3534-I	J38
Front Mounting	Steel Body	2 pc Hard Reversible Jaws	3575-I	J37
	Steel Body	Hard Solid Jaws	3574-I	J38

Combination Chucks

3 Jaw



4 Jaw



	Body	Jaw Type	Type	Page
3 Jaw	Steel Body	Hard Solid Jaws	4705	J39
Plain Back	Cast Iron Body	Hard Solid Jaws	4505	J39
4 Jaw	Steel Body	Hard Solid Jaws	4805	J39
Plain Back	Cast Iron Body	Hard Solid Jaws	4605	J39

3 Jaw Oil Country Self-Centering Scroll Chucks

3 Jaw



	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 Piece Jaws	3597	J40
	Cast Iron Body	2 Piece Jaws	3295	J41
Heavy Duty A 2 Taper Mount	Steel Body	2 Piece Jaws	3515 HD	J42

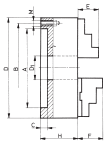
Adapter Plates, Jaws, Parts & Data For Self-Centering Scroll Chucks





	Page
Adapter Plates	J43-44
Jaws	J45

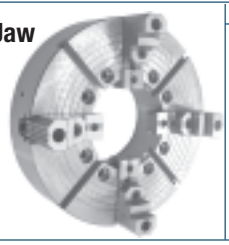




	Page
Replacement Parts	J46
Engineering Data	J47-51

4 Jaw Oil Country Independent Chucks

4 Jaw



	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 Piece Jaws	4307	J53
A 2 Taper Mount	Steel Body	2 Piece Jaws	4317	J53
Camlock Mount	Steel Body	2 Piece Jaws	4347	J53

4 Jaw Independent Lathe Chucks

4 Jaw



	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 pc Hard Reversible Jaws	4307	J55
	Steel Body	Hard Solid Jaws	4306	J56
	Cast Iron Body	2 pc Hard Reversible Jaws	4305	J57
	Cast Iron Body	Hard Solid Jaws	4304	J58
A Taper Mount	Steel Body	2 pc Hard Reversible Jaws	4317	J55
	Steel Body	Hard Solid Jaws	4312	J56
	Cast Iron Body	2 pc Hard Reversible Jaws	4315	J57
	Cast Iron Body	Hard Solid Jaws	4314	J58
Camlock Mount	Steel Body	2 pc Hard Reversible Jaws	4347	J55
	Steel Body	Hard Solid Jaws	4342	J56
	Cast Iron Body	2 pc Hard Reversible Jaws	4345	J57
	Cast Iron Body	Hard Solid Jaws	4344	J58
DIN Mount	Steel Body	2 pc Hard Reversible Jaws	4337	J55
	Steel Body	Hard Solid Jaws	4332	J56
	Cast Iron Body	2 pc Hard Reversible Jaws	4335	J57
	Cast Iron Body	Hard Solid Jaws	4334	J58
L Mount	Cast Iron Body	Hard Solid Jaws	4354	J58

Adapter Plates, Jaws, Parts & Data For 4 Jaw Independent Lathe Chucks



	Page
Adapter Plates	J43-44
Jaws	J59



	Page
Replacement Parts	J59
Engineering Data	J60-64

4 Jaw Manual Gripping Independent Steel Body Chucks

4 Jaw



	Body	Jaw Type	Type	Page
A 2 Taper Mount	Steel Body	2 Piece Jaws	4317MSP	J65

Bison 2405-K Power Chucks With 1.5mm x 60º Serrations

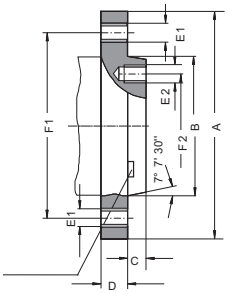
3 Jaw



	Body	Jaw Type	Type	Page
Plain Back	Steel Body	2 Piece Jaws	2405-K	J73

Machine Spindle Noses

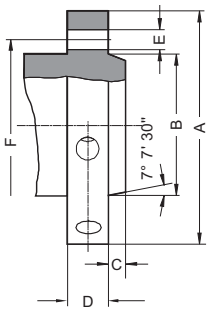




A Taper Mount

Spindle Nose Size	A	B max.	C -.001	D	E1 (A-2 Outer)	F1	E2 (A-1 Inner)	F2
5	5.2520	3.2510	0.5625	0.8740	11 holes x 7/16-14 UNC	4.1260	8 holes x 7/16-14 UNC	2.4370
6	6.5000	4.1886	0.6250	1.0000	11 holes x 1/2-13 UNC	5.2520	8 holes x 1/2-13 UNC	3.2520
8	8.2480	5.5014	0.6875	1.1260	11 holes x 5/8-11 UNC	6.7480	8 holes x 5/8-11 UNC	4.3740
11	11.000	7.7502	0.7500	1.3740	11 holes x 3/4-10 UNC	9.2520	8 holes x 3/4-10 UNC	6.5000
15	15.000	11.2520	0.8125	1.6260	12 holes x 7/8-9 UNC	13.0000	11 holes x 7/8-9 UNC	9.7480
20	20.4724	16.2520	0.8750	1.8740	12 holes x 1-8 UNC	18.2520	11 holes x 1-8 UNC	14.5000

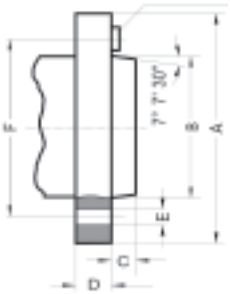




Camlock Mount

Spindle Nose Size	A	B max.	C	D	E	F
3	3.6220	2.1253	0.4331	1.2598	3 holes x 0.5945	2.7795
4	4.6063	2.5008	0.4331	1.3386	3 holes x 0.6575	3.2520
5	5.7480	3.2509	0.5118	1.4961	6 holes x 0.7795	4.1260
6	7.1260	4.1884	0.5512	1.7717	6 holes x 0.9055	5.2520
8	8.8583	5.5012	0.6299	1.9685	6 holes x 1.0315	6.7480
11	11.7323	7.7513	0.7087	2.3622	6 holes x 1.2205	9.2520
15	15.8661	11.2516	0.7480	2.7559	6 holes x 1.4055	13.0000
20	21.4961	16.2518	0.8268	3.2283	6 holes x 1.6575	18.2520

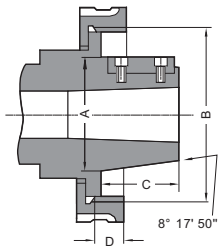




DIN Mount

Spindle Nose Size	A	B max.	C	D	E	F
3	4.0157	2.1253	0.4331	0.6299	3 holes x 0.8268	2.9528
4	4.4094	2.5008	0.4331	0.7874	3 holes x 0.8268	3.3465
5	5.3150	3.2509	0.5118	0.8661	4 holes x 0.8268	4.1260
6	6.6929	4.1884	0.5512	0.9843	4 holes x 0.9055	5.2520
8	8.6614	5.5012	0.6299	1.1024	4 holes x 1.1417	6.7480
11	11.4173	7.7513	0.7087	1.3780	6 holes x 1.4173	9.2520
15	15.7480	11.2516	0.7480	1.6535	6 holes x 1.6929	13.0000
20	21.2598	16.2518	0.8268	1.8898	6 holes x 1.6929	18.2520





L Mount

Spindle Nose Size	A + 0.0020	B	C	D	Driving Block
L00	2.7500	3 3/4-6 UNS	2.0000	0.5625	∅0.3750 x 1.5000
L0	3.2500	4 1/2-6 UNS	2.3750	0.6250	∅0.3750 x 1.7500
L1	4.1250	6-6 UNS	2.8750	0.7500	∅0.6250 x 2.3748
L2	5.2500	7 3/4-5 UNS	3.3750	1.0000	∅0.7500 x 2.8748
L3	6.5004	10 3/8-4 UNS	3.7175	1.1250	∅1.000 x 3.2500

F/A
FINE ADJUSTMENT
Self Centering
Scroll Chucks

Precision Three and Six-Jaw Self-Centering F/A Scroll Chucks
Forged Steel Body

A unique micro-adjustment feature enables concentricity to be adjusted to 0.0002 in. of full indicator movement.

F/A chucks can be used at many machining operations for which ordinary scroll chucks are unsuitable and at all the operations for which ordinary chucks are normally used.
Require original F/A backplates.





3 Jaw F/A Precision Steel Body Scroll Chucks - 2pc Hard Rev. Jaws

With Fine Adjustment



Features:

- 3 jaw, self-centering scroll chuck
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 4 (8 for sizes 16”, 20” & 25”) radially arranged adjusting screws

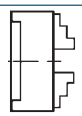
Application:

- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting
3565
Plain Back



Chuck Size	4"	5"	6"	8"	10"	12"	16"	20"	25"
Hole Size	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	7.26	11	20	35	57	103	198	376	664
Code No.	435-623	435-624	435-625	435-630	435-635	435-640	435-641	435-642	435-643
Price $	**1,360.20**	**1,529.60**	**1,612.40**	**1,983.20**	**2,324.10**	**3,414.70**	**6,497.80**	**13,893.80**	**16,541.40**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J19-20

3 Jaw F/A Precision Steel Body Scroll Chucks - Hard Solid Jaws

With Fine Adjustment



Features:

- 3 jaw, self-centering scroll chuck
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 4 (8 for sizes 16”, 20” & 25”) radially arranged adjusting screws

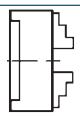
Application:

- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting
3564
Plain Back



Chuck Size	4"	5"	6"	8"	10"	12"	16"	20"	25"
Hole Size	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	7.26	11	20	35	57	103	198	376	664
Code No.	435-423	435-424	435-425	435-430	435-435	435-440	435-441	435-442	435-443
Price $	**1,360.20**	**1,445.80**	**1,593.30**	**2,068.00**	**2,199.30**	**3,375.60**	**7,419.90**	**14,849.10**	**17,290.80**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J19-20

3 Jaw F/A Cast Iron Body Scroll Chucks - 2pc Hard Rev. Jaws

With Fine Adjustment

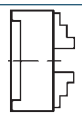


Features:
- 3 jaw, self-centering scroll chuck
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 3 tangentially arranged adjusting spindles

Application:
- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting	Chuck Size	5"	6"	8"	10"	12"
3265 Plain Back 	**Hole Size**	1.2598	1.6535	2.1653	2.9921	4.0551
	Weight lbs.	11	20	35	57	103
	Code No.	443-084	443-086	443-088	443-090	443-092
	Price $	**1,839.80**	**2,207.50**	**2,575.40**	**3,679.00**	**5,150.70**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see pages: J19-20

3 Jaw F/A Cast Iron Body Scroll Chucks - Hard Solid Jaws

With Fine Adjustment



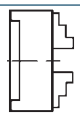
Features:
- 3 jaw, self-centering scroll chuck
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 3 tangentially arranged adjusting spindles

Application:
- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting
3264
Plain Back



Chuck Size	3"	4"	5"	6"	8"	10"	12"
Hole Size	.630	.787	1.2598	1.6535	2.1653	2.9921	4.0551
Weight lbs.	6.16	7.26	11	20	35	57	103
Code No.	441-080	441-082	441-084	441-086	441-088	441-090	441-092
Price $	**1,287.60**	**1,471.80**	**1,563.70**	**1,839.80**	**2,207.50**	**3,035.40**	**4,322.80**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J19-20

6 Jaw F/A Precision Steel Body Scroll Chucks - 2pc Hard Rev. Jaws

With Fine Adjustment



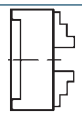
Features:
- 6 jaw, self-centering scroll chuck
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 4 (8 for sizes 16”, 20” & 25”) radially arranged adjusting screws

Application:
- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting
3865
Plain Back



Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"
Hole Size	1.378	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	14	23	39	72	123	218	396	718
Code No.	435-599	435-600	435-605	435-610	435-615	435-616	435-617	435-618
Price $	**1,941.20**	**2,333.60**	**2,863.70**	**3,356.50**	**4,761.40**	**8,626.70**	**15,262.50**	**23,474.60**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J19-20

6 Jaw F/A Precision Steel Body Scroll Chucks - Hard Solid Jaws

With Fine Adjustment



Features:

- 6 jaw, self-centering scroll chuck
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- Repeatability: 0.0006”
- Superior accuracy: small screws on the outside enable the chuck to be adjusted to position with nearly zero runout (adjusting accuracy within 0.0002”)
- The clamped workpiece is adjusted to the required concentricity by means of 4 (8 for sizes 16”, 20” & 25”) radially arranged adjusting screws

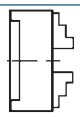
Application:

- This precision chuck, with increased gripping accuracy, is made for universal use, but particularly advantageous for grinding machines, indexing heads and lathes
- Especially suitable for machining parts with top concentricity
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation



F/A Chuck ADAPTER PLATES
Pages: J16-19

Mounting
3864
Plain Back



Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"
Hole Size	1.378	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	14	23	39	72	123	218	396	718
Code No.	435-550	435-555	435-560	435-565	435-570	435-576	435-580	435-585
Price $	**1,839.00**	**1,642.70**	**2,838.10**	**3,259.60**	**4,863.40**	**9,278.80**	**18,663.40**	**27,592.10**

Engineering Data See Page: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J19-20

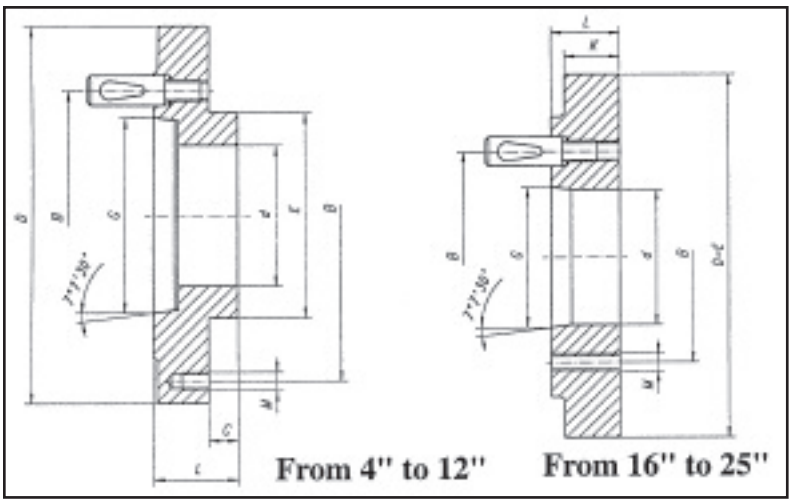
Camlock Mount Adapters For F/A Chucks

D - Type



FULLY MACHINED TYPE D STEEL ADAPTERS FOR F/A CHUCKS

- Type D1 American Standard Camlock Spindles
- Type 8245



Chuck Dia.	Taper Size	Studs Qty	Studs Dia.	D	B	G	d	E	F	M	C	L	K	Weight lbs.	Code No.	Price $
4"	D1-3	3	9/16	3.94	2.78	2.1250	.787	1.771	3.268	M8 X 1.25	.47	1.50		3.31	435-690	**484.60**
	D1-4		5/8	4.25	3.25	2.5005						1.57		3.97	435-691	**484.60**
5"	D1-3	3	9/16	4.92	2.78	2.1250	1.378	2.164	4.252	M8 X 1.25	.55	1.57		5.95	435-692	**510.00**
	D1-4	3	5/8	4.92	3.25	2.5005						1.54		5.73	435-693	**548.20**
	D1-5	6	3/4	5.31	4.13	3.2503						1.73		6.92	435-694	**590.70**
	D1-6	6	7/8	7.12	5.25	4.1878						1.89		13.06	435-695	**545.20**
6-1/4"	D1-3	3	9/16	6.30	2.78	2.1250	1.654	3.385	5.512	M10 X 1.5	.63	1.81		10.80	435-700	**628.60**
	D1-4	3	5/8	6.30	3.25	2.5005						1.81		9.92	435-705	**628.60**
	D1-5	6	3/4	6.30	4.13	3.2503						1.81		9.89	435-710	**628.60**
	D1-6	6	7/8	6.69	5.25	4.1878						1.97		13.00	435-712	**659.40**
8"	D1-3	3	9/16	7.87	2.78	2.1250	2.024	4.330	6.929	M10 X 1.5	.67	1.30		10.36	435-715	**663.00**
	D1-4	3	5/8		3.25	2.5005	2.165					1.30		10.36	435-720	**678.50**
	D1-5	6	3/4		4.13	3.2503	2.165					1.85		15.87	435-725	**720.80**
	D1-6	6	7/8		5.25	4.1878	2.165					2.01		17.64	435-730	**774.20**
10"	D1-4	3	5/8	9.84	3.25	2.6005	2.382	5.708	8.819	M12 X 1.75	.75	1.50		18.84	435-732	**934.30**
	D1-5	6	3/4		4.13	3.2510	3.130					1.50		17.64	435-735	**1,002.50**
	D1-6	6	7/8		5.25	4.1878	2.992					2.09		28.44	435-740	**1,040.80**
	D1-8	6	1		6.75	5.50055	2.992					2.36		32.41	435-745	**1,051.20**
12-1/2"	D1-6	6	7/8	12.40	5.25	4.1878	4.055	7.086	11.260	M16 X 2	.75	1.50		28.44	435-750	**1,391.10**
	D1-8		1		6.75	5.50055						2.24		47.84	435-755	**1,391.10**
	D1-11		1-3/16		9.25	7.75055						2.52		52.91	435-760	**1,391.10**
15-3/4"	D1-6	6	7/8	11.75	5.25	4.1878	4.055	11.75	6.718	5/8-11		1.38	.87	29.0	435-762	**1,849.80**
	D1-8		1		6.75	5.50055	5.358					1.50		27.2	435-764	**1,849.80**
	D1-11		1-3/16		9.25	7.75055	5.358					1.89		26.8	435-766	**1,849.80**
20"	D1-8	6	1	16.02	6.75	5.50055	5.358	16.02	9.252	3/4-10		1.50	1.50	74	435-768	**2,599.90**
	D1-11		1-3/16		9.25	7.75055	7.590					1.73	1.73	78	435-770	**2,599.90**
	D1-15		1-3/8		13.00	11.2505	7.480					2.05	2.05	83	435-772	**2,599.90**
25"	D1-8	6	1	16.02	6.75	5.50055	5.358	16.02	13.071	3/4-10		1.50	1.50	74	435-774	**2,663.50**
	D1-11		1-3/16		9.25	7.75055	7.590					1.73	1.73	78	435-776	**2,663.50**
	D1-15		1-3/8		13.00	11.2505	9.920					2.05	2.05	83	435-778	**2,663.50**

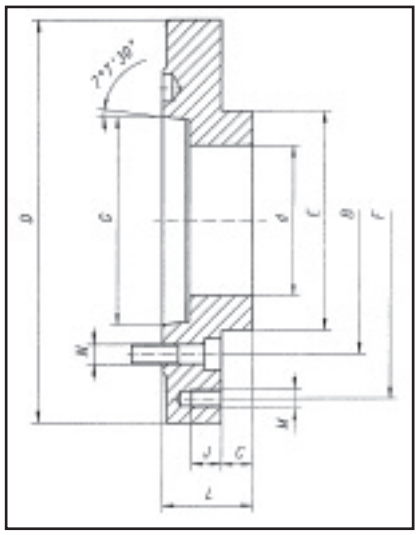
A Taper Mount Adapters For F/A Chucks Type 8215

A - Type

STEEL ADAPTERS FOR F/A CHUCKS

- Type 8215

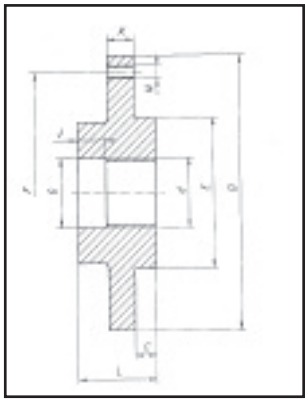




Chuck Dia.	Taper Size	D	G	d	B	E	F	M	J	C	L	N	# of Bolts	Weight lbs.	Code No.	Price $
5”	A4	4.92	2.5005	1.378	3.252	2.164	4.252	M8x1.25	.87	.55	1.42	7/16-14	4	4.8	435-790	**364.50**
	A5	4.92	3.2505		4.126				.87		1.42	7/16-14		4.2	435-792	**364.50**
	A6	6.30	4.1880		5.252				.53		1.89	1/2-13		9.1	435-794	**364.50**
6-1/4”	A5	6.30	3.2505	1.654	4.126	3.385	5.512	M10x1.5	.82	.62	1.45	7/16-14	4	6.77	435-800	**401.50**
8”	A5	7.87	3.2505	2.165	4.126	4.330	6.929	M10x1.5	.62	.66	1.29	3/8-16	4	9.3	435-805	**437.90**
	A6		4.1880		5.252				1.10		1.77	1/2-13		13.5	435-810	**423.10**
10”	A5	9.84	3.2505	2.992	4.126	5.708	8.819	M12x1.75	.74	.74	1.49	7/16-14	4	17.3	435-815	**508.80**
	A6		4.1880		5.252				.74		1.49	1/2-13		17.3	435-820	**508.80**
	A8		5.5007		6.748				1.06		1.81	5/8-11		20.2	435-825	**508.80**
12-1/2”	A6	12.40	4.1880	4.055	5.252	7.086	11.260	M16x2	.74	.74	1.49	1/2-13	4	27.3	435-830	**850.00**
	A8		5.5007		6.748				1.06		1.81	5/8-11		35.7	435-835	**850.00**
	A11		7.7507		9.252				1.42		2.19	3/4-10		41.20	435-836	**850.00**
15-3/4”	A6	11.75	4.1880	4.055	5.252	11.75	6.748	5/8-11	1.38		1.38	1/2-13	6	31.4	435-837	**1,271.60**
	A8		5.5007	5.346	6.748				1.14		1.46	5/8-11		28.8	435-838	**1,271.60**
	A11		7.7507	5.354	9.252				1.06		1.89	3/4-10		35.8	435-839	**1,271.60**
20”	A8	16.02	5.5007	5.346	6.748	16.02	9.252	3/4-10	1.42		1.42	5/8-11	6	69	435-844	**1,924.90**
	A11		7.7507	7.590	9.252				1.18		1.42	3/4-10		61	435-846	**1,924.90**
	A15		11.2505	7.480	13.000				1.18		2.05	7/8-9		76	435-848	**1,924.90**
25”	A8	16.02	5.5007	5.346	6.748	16.02	13.000	3/4-10	1.42		1.42	5/8-11	6	69	435-850	**2,581.40**
	A11	16.02	7.7507	7.590	9.252			3/4-10	1.42		1.42	3/4-10		61	435-852	**2,580.80**
	A15	13.02	11.2505	9.921	13.000			3/4-10	2.05		2.05	7/8-9		76	435-854	**2,581.40**
	A20	21.00	16.2518	9.921	18.252			1”-8	2.76		2.76	1-8		90	435-856	**3,360.70**

Threaded Adapters For F/A Chucks

Threaded Type 8285

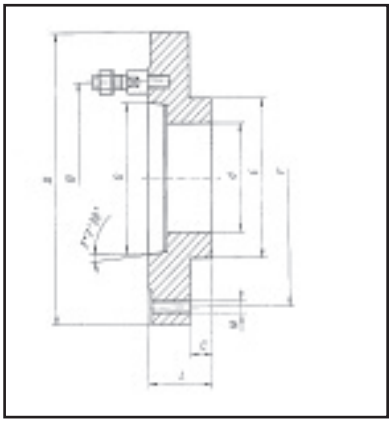




Chuck Dia.	D	Thread d	G	E	F	L	C	K	M	# of Bolts	Weight lbs.	Code No.	Price $
4"	3.94	1-10 UNS-2B	1.0150	1.771	3.268	1.54	0.47	0.51	M8 X 1.25	3	4.85	435-860	**254.30**
		1-1/2 - 8 UN-2B	1.5150								5.29	435-861	**239.50**
5"	4.92	1-1/2 - 8 UN-2B	1.5150	2.164	4.252	1.54	0.55	0.51	M8 X 1.25	3	6.61	435-863	**283.60**
		2-3/16- 10 Hardinge	2.1889			2.44					7.05	435-864	**283.60**
		2-1/4 - 8 UN-2B	2.260			1.54					6.8	435-865	**283.60**
6-1/4"	6.30	1-1/2 - 8 UN-2B	1.5150	3.385	5.512	1.50	0.63	0.59	M10 X 1.5	3	7.05	435-866	**333.70**
		2-3/16 - 10 Hardinge	2.1889			1.61					7.50	435-867	**333.70**
		2-1/4-8 UN-2B	2.2600			1.75					7.94	435-868	**333.70**
8"	7.87	1-1/2 - 8 UN 2B	1.5150	4.330	6.929	1.50	0.67	0.59	M10 X 1.5	3	9.92	435-869	**452.10**
		2-1/4 - 8 UN-2B	2.2600			1.75					11.46	435-870	**452.10**
		2-3/8 - 6 UN-2B	2.3850			2.00					13.89	435-871	**452.10**

DIN Mount Adapters For F/A Chucks

C - Type/DIN 55027 Type 8235

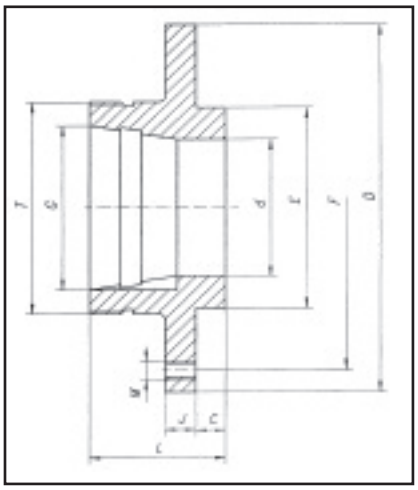




Chuck Dia.	Taper Size	D	G	d	E	F	B	C	L	M	# of Studs	Weight lbs.	Code No.	Price $
5"	C-5	4.92	3.251	1.38	2.164	4.252	4.126	0.55	1.46	M8 X 1.25	4	3.4	435-874	**422.40**
6-1/4"	C-6	6.30	4.189	1.65	3.385	5.512	3.346	0.63	1.26	M10 X 1.5	4	6.0	435-875	**401.30**
8"	C-6	7.87	4.188	2.17	4.330	6.929	5.252	0.67	1.57	M10 X 1.5	4	12.0	435-876	**532.70**
10"	C-6	9.84	4.188	2.99	5.708	8.819	5.252	0.75	1.50	M12 X 1.75	4	28.0	435-877	**670.40**
12-1/2"	C-8	12.4	5.501	4.06	7.086	11.26	6.748	0.75	1.69	M16 X 2	4	48.0	435-878	**1,091.20**
15-3/4"	C-8	11.75	5.501	5.35	11.75	6.75	6.75	-	1.46	5/8-11	6	27	435-879	**1,396.20**
	C-11		7.751	4.72			9.25	-				25	435-880	**1,396.20**
20"	C-8	16.02	5.501	5.35	16.02	9.25	6.75	-	1.42	3/4-10	6	70	435-881	**2,034.80**
	C-11		7.751	7.57			9.25	-	1.42			66	435-882	**2,345.80**
	C15		11.251	7.48			13.0	-	2.05			86	435-883	**2,323.80**
25"	C-8	16.02	5.501	5.35	16.02	13.0	6.75	-	1.42	3/4-10	6	70	435-884	**3,755.00**
	C-11		7.751	7.57			9.25	-	1.42			66	435-885	**3,755.00**
	C-15		11.251	9.92			13.0	-	2.05			75	435-886	**3,867.80**

L Mount Adapters For F/A Chucks

L-Type 8255





Chuck Dia.	D	Taper Size	Thread T-UNS3	G	d	E	F	M	J	C	L	Weight lbs.	Code No.	Price $
6-1/4"	6.30	L00	3-3/4 - 6	2.750	2.20	3.385	5.51	M10 X 1.5	0.79	0.63	2.56	9.0	435-887	**411.00**
		L0	4-1/2 - 6	3.250	2.60							9.5	435-888	**433.90**
8"	7.87	L00	3-3/4 - 6	2.750	2.20	4.330	6.93	M10 X 1.5	0.79	0.67	2.56	15.0	435-889	**388.00**
		L0	4-1/2 - 6	3.250	2.60						2.56	15.4	435-890	**402.50**
		L1	6 - 6	4.125	3.35						2.99	16.5	435-891	**431.40**
10"	9.84	L00	3-3/4 - 6	2.750	2.20	5.708	8.82	M12 X 1.75	0.91	0.75	2.76	25.0	435-892	**554.60**
		L0	4-1/2 - 6	3.250	2.60						2.76	26.1	435-893	**553.60**
		L1	6 - 6	4.125	3.35						2.99	37.0	435-894	**553.60**
12-1/2"	12.40	L0	4-1/2 - 6	3.250	2.60	7.086	11.26	M16 X 2	0.91	0.75	2.76	37.0	435-895	**893.80**
		L1	6 - 6	4.125	3.35						2.99	37.0	435-896	**893.80**
		L2	7-3/4 - 5	5.250	4.29						3.50	38.8	435-897	**966.70**
15-3/4"	11.75	L1	6 - 6	4.125	3.35	11.75	6.75	5/8"-11	0.87	-	2.95	34.2	435-898	**1,859.40**
		L2	7-3/4 - 5	5.250	4.29						3.46	45.4	435-899	**1,926.50**
		L3	10-3/8 - 4	6.500	5.43						3.94	67.2	435-901	**1,926.50**
20"	19.68	L2	7-3/4 - 5	5.250	4.29	16.02	9.25	3/4"-10	1.18	-	3.66	60.2	435-902	**2,401.40**
		L3	10-3/8 - 4	6.500	5.43						4.14	81.33	435-903	**2,401.40**

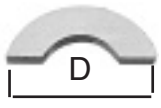
Spare Parts For 3 & 6 Jaw F/A Chucks











Chuck	Scroll 3 & 6 Jaw				Weight	Pinion 3 & 6 Jaw				Weight	Wrench 3 & 6 Jaw		Square	Pinion Sleeve 3 & 6 Jaw			Half Ring 3 & 6 Jaw		
Dia.	Code No.	Price $	D	H	lbs.	Code No.	Price $	D	L	lbs.	Code No.	Price $	Size	Code No.	Price $	ID	Code No.	Price $	D
4	467-105	**254.30**	2.74	.49	.34	467-305	**72.50**	.98	1.40	.12	460-405	**76.00**	.35				460-458	**8.00**	
5	467-829	**325.30**	3.70	.63	.84	467-799	**71.30**	.98	1.44	.13	460-405	**76.00**	.35	460-450	**28.10**	.98	460-459	**8.00**	1.52
6	467-830	**389.40**	4.88	.83	2.03	467-800	**75.40**	1.1	1.57	.18	460-415	**80.30**	.43	460-451	**27.30**	1.1	460-460	**8.00**	1.72
8	467-835	**475.70**	6.24	.94	3.62	467-805	**90.30**	1.2	1.99	.37	460-415	**80.30**	.43	460-452	**27.30**	1.2	460-461	**9.30**	1.85
10	467-840	**647.70**	7.82	1.1	4.54	467-810	**108.90**	1.4	2.36	.44	460-425	**100.40**	.55	460-453	**45.40**	1.4	460-462	**9.30**	1.94
12	467-845	**853.50**	10.1	1.2	10.2	467-815	**135.40**	1.5	2.85	.71	460-425	**100.40**	.55	460-454	**42.10**	1.5	460-463	**10.90**	2.17
16	467-850	**2,098.10**	12.9	1.3	22.7	467-820	**183.40**	1.7	3.66	1.3	460-435	**144.60**	.67	460-455	**79.70**	1.7	460-464	**10.60**	2.42
20						467-821	**536.70**	2.0	4.45	2.1	460-440	**221.40**	.75	460-456	**75.40**	2.0	460-465	**17.30**	2.76
25						467-822	**643.90**	2.0	5.24	2.5	460-440	**221.40**	.75	460-457	**97.20**	2.0	460-466	**18.00**	2.95

Hard Top Jaws

Sold in sets

3 pc. set



6 pc. set



Chuck Dia.	3-Jaw Code No.	3-Jaw Price $	6-Jaw Code No.	6-Jaw Price $
5	460-705	**314.30**	460-908	**687.20**
6	460-710	**385.60**	460-910	**756.70**
8	460-715	**388.80**	460-915	**917.10**
10	460-720	**455.10**	460-920	**1,077.60**
12	460-725	**559.10**	460-925	**1,324.60**
16	460-730	**763.10**	460-926	**1,907.40**
20	460-735	**1,220.30**	460-927	**3,601.40**
25	460-740	**1,516.30**	460-928	**3,879.10**

Hard Master Jaws

Sold in sets

3 pc. set



6 pc. set



Chuck Dia.	3-Jaw Code No.	3-Jaw Price $	6-Jaw Code No.	6-Jaw Price $
5	467-355	**254.30**	467-505	**700.10**
6	467-360	**240.30**	467-510	**543.50**
8	467-365	**281.40**	467-515	**662.30**
10	467-370	**335.30**	467-520	**793.20**
12	467-375	**505.90**	467-525	**1,141.00**
16	467-380	**603.90**	460-527	**1,538.60**
20	467-385	**1,192.10**	460-529	**2,955.00**
25	467-390	**1,544.80**	460-530	**3,849.60**

Soft Top Jaws

Sold Individually



Sold Individually



Chuck Dia.	3-Jaw Code No.	3-Jaw Price $	6-Jaw Code No.	6-Jaw Price $
5	465-105	**46.90**		
6	465-110	**57.10**	467-532	**52.60**
8	465-115	**62.00**	467-534	**76.10**
10	465-120	**75.00**	467-536	**105.50**
12	465-125	**96.60**	467-538	**126.60**
16	465-130	**131.10**	467-540	**185.90**
20	465-135	**223.70**		
25	465-140	**319.90**		

O.D. Hard Solid Jaws

Sold in sets



Chuck Dia.	3-Jaw Code No.	3-Jaw Price $	6-Jaw Code No.	6-Jaw Price $
4	467-708	**205.30**		
5	467-710	**215.20**	467-915	**559.50**
6	467-715	**246.60**	467-916	**583.60**
8	467-720	**262.40**	467-918	**670.40**
10	467-725	**325.30**	467-920	**758.50**
12	467-730	**534.50**	467-922	**1,205.10**
16	467-735	**657.70**	467-923	**1,546.00**
20	467-740	**1,608.90**		
25	467-745	**1,931.30**		

I.D. Hard Solid Jaws

Sold in sets



Chuck Dia.	3-Jaw Code No.	3-Jaw Price $	6-Jaw Code No.	6-Jaw Price $
4	467-605	**205.30**		
5	467-610	**215.20**	467-939	**614.80**
6	467-615	**246.60**	467-940	**583.60**
8	467-620	**262.40**	467-942	**677.90**
10	467-625	**325.30**	467-944	**737.50**
12	467-630	**534.50**	467-946	**1,205.10**
16	467-635	**657.70**	467-947	**1,589.80**
20	467-640	**1,608.90**		
25	467-645	**1,931.30**		

Soft Solid Jaws

Sold in sets



Chuck Dia.	Code No.	Price $
4	467-750	**155.90**
5	467-755	**149.50**
6	467-760	**167.70**
8	467-765	**206.90**
10	467-770	**243.50**
12	467-775	**388.80**
16	467-780	**458.90**
20	467-785	**899.70**
25	467-790	**1,183.50**

Camlock Studs

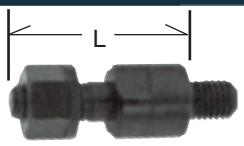
Sold Individually



Taper Size	Camlock Studs Dia.	Thread	No. of Studs	Code No.	Price $
D1-3	9/16"	M10 X 1	3	467-230	**48.80**
D1-4	5/8"	M10 X 1	3	467-232	**48.80**
D1-5	3/4"	M12 X 1	6	467-234	**52.70**
D1-6	7/8"	M16 X 1.5	6	467-236	**60.30**
D1-8	1"	M20 X 1.5	6	467-238	**71.30**
D1-11	1-3/16"	M22 X 1.5	6	467-240	**108.90**
D1-15	1-3/8"	M24 X 1.5	6	467-241	**174.10**

DIN Studs

Sold Individually



Taper Size	Thread mm	L (mm)	No. of Studs	Code No.	Price $
C - 4	M10x1.5	39	3	467-277	**26.50**
C - 5	M10x1.5	43	4	467-279	**31.30**
C - 6	M12x1.75	50	4	467-280	**33.00**
C - 8	M16x2	60	4	467-282	**37.30**
C - 11	M20x2.5	75	6	467-284	**51.10**

Standard Self Centering Scroll Chucks

Cast Iron Body Self-Centering Scroll Chucks

These chucks have modern, precision and standardized construction. They may be used on all types of lathes and on different kinds of milling and drilling attachments.
BODY - is made of high quality cast iron. All bearing surfaces are precision machined.
SCROLL PLATE - drop-forged of fine alloy steel, carefully case hardened. Thread flanks ground on both sides.

JAWS - the teeth and guides are hardened and fully ground on both sides.

PINIONS - hardened and ground.

These chucks are equipped with lubricator, enabling their current maintenance. Versatile inspections assure high quality of our chucks.

Precision Steel Body Self-centering Scroll Chucks



Precision lathe chucks have a top accuracy at work and the guarantee to maintain this accuracy for an extended period of time. These chucks have modern and compact design. They are able to fulfill the highest demands of our customers.
They can be used wherever precision and high precision machining is demanded.

BODY - drop-forged of highest grade steel and put through precise machining operations. All bearings surfaces are carefully hardened and precision ground.

SCROLL PLATE - drop-forged of fine alloy steel, carefully case hardened. Thread flanks ground on both sides.

JAWS - teeth and guides are hardened and fully ground on both sides.

PINIONS - hardened and ground.

BUSHINGS - hardened and ground, pressed into the pinion seats.

Jaws, pinions and bushings are made of fine alloy steel.
Precision grinding of scroll and jaws teeth will permit to:
- eliminate possible deformation being a result of heat treatment
- reach uniform radial gripping force on all teeth of jaws
- increase guarantee period for high centering accuracy
- increase gripping force

Each chuck is provided with lubricator enabling current maintenance and extending chuck components life. Each scroll and assembled chuck are statically balanced within fine limits.
Interstage and final inspection assure high quality of our chucks.

3 Jaw Precision Steel Body Scroll Chucks - 2PC Hard Rev. Jaws

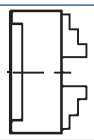
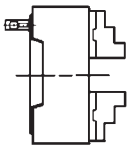
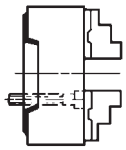
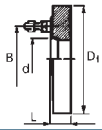
Features:

- 3 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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

Mounting	Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"
3505 Plain Back 	**Hole Size**	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	11	22	39	64	110	187	320	551
	Code No.	440-750	440-755	440-760	440-765	440-770	440-775	440-776	440-783
	Price $	**1,254.80**	**1,440.80**	**1,780.60**	**2,182.40**	**3,217.30**	**5,351.30**	**13,686.70**	**17,709.60**
3545 Camlock 	**D1-3**	440-955	440-963						
	Price $	**1,747.60**	**1,824.90**						
	D1-4	440-960	440-965						
	Price $	**1,747.60**	**1,824.90**						
	D1-5		440-970	440-975					
	Price $		**1,824.90**	**2,157.00**					
	D1-6			440-980	440-985	440-992			
	Price $			**2,157.00**	**2,986.30**	**4,147.60**			
	D1-8				440-990	440-994	440-996	440-777	440-785
	Price $				**2,986.30**	**4,147.60**	**7,009.20**	**14,848.10**	**20,942.30**
	D1-11					440-995	440-998	440-778	440-787
	Price $					**4,147.60**	**7,009.20**	**14,848.10**	**18,871.10**
3515 Short Taper 	**A1-4**			440-881					
	Price $			**2,290.10**					
	A1-5		440-780	440-782	440-885				
	Price $		**1,793.40**	**2,182.90**	**3,092.40**				
	A1-6			440-784	440-786		440-795		
	Price $			**2,182.90**	**3,092.40**		**8,059.60**		
	A2-6					440-790			
	Price $					**4,303.80**			
	A1-8				440-888	440-892			
	Price $				**3,092.40**	**4,303.80**			
	A2-8						440-794	440-779	
	Price $						**7,225.60**	**15,967.60**	
	A2-11							440-781	440-789
	Price $							**15,967.60**	**17,875.30**
	A2-15								440-791
	Price $								**17,875.30**
	A1-11						440-896		
	Price $						**7,225.60**		
3535 DIN Taper 	**Din 6**			440-850	440-855	440-865			
	Price $			**1,747.60**	**2,529.70**	**3,495.20**			
	Din 8				440-860	440-870	440-875		
	Price $				**2,529.70**	**3,495.20**	**6,622.20**		
	Din 11						440-880		
	Price $						**6,622.20**		
3575 Front Mount Plain Back 	**Code No.**	440-160	440-165	440-170	440-175	440-180	440-185		
	Price $	**1,379.70**	**1,538.80**	**2,023.70**	**2,559.80**	**3,396.50**	**5,714.10**		

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see pages: J45-46

3 Jaw Precision Steel Body Scroll Chucks - Hard Solid Jaws

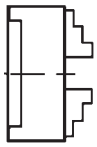
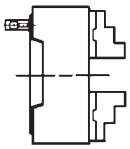
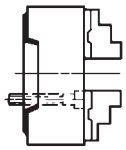
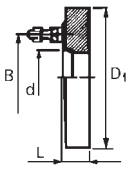
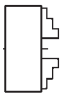
Features:

- 3 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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

Mounting	Chuck Size	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"
3504 Plain Back 	**Hole Size**	.630	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	3.30	6.16	11	22	39	64	110	187	320	551
	Code No.		440-751	440-752	440-756	440-761	440-766	440-771			
	Price $		**1,027.40**	**1,148.90**	**1,327.00**	**1,643.20**	**2,074.30**	**3,154.20**			
3544 Camlock 	**D1-3**			440-956	440-964						
	Price $			**1,426.10**	**1,655.60**						
	D1-4			440-961	440-966	440-973					
	Price $			**1,426.10**	**1,655.60**	**2,023.70**					
	D1-5				440-971	440-976					
	Price $				**1,655.60**	**2,023.70**					
	D1-6					440-981	440-986	440-988			
	Price $					**2,023.70**	**2,759.40**	**3,955.10**			
	D1-8						440-987	440-989	440-997		
	Price $						**2,759.40**	**3,955.10**	**7,082.30**		
	D1-11							440-991	440-999		
	Price $							**3,955.10**	**7,082.30**		
3514 Short Taper 	**A1-4**					440-657					
	Price $					**2,290.10**					
	A1-5				440-656	440-658	440-660				
	Price $				**1,603.10**	**2,290.10**	**3,042.00**				
	A1-6					440-659	440-661	440-664	440-668		
	Price $					**2,290.10**	**3,042.00**	**3,955.10**	**7,327.00**		
	A1-8						440-662	440-666	440-670		
	Price $						**3,042.00**	**3,955.10**	**6,898.10**		
	A1-11								440-672		
	Price $								**6,898.10**		
3534 DIN Taper 	**Din 3**			440-851							
	Price $			**1,195.60**							
	Din 4			440-852	440-853						
	Price $			**1,494.60**	**1,724.50**						
	Din 5				440-854	440-856					
	Price $				**1,724.50**	**1,954.50**					
	Din 6					440-857	440-858	440-861			
	Price $					**1,954.50**	**2,644.30**	**3,035.40**			
	Din 8						440-859	440-862	440-864		
	Price $						**2,644.30**	**3,035.40**	**7,357.70**		
	Din 11							440-863	440-866		
	Price $							**3,386.20**	**7,358.80**		
3574 Front Mount Plain Back 	**Code No.**	440-050	440-055	440-060	440-065	440-070	440-075	440-080	440-085		
	Price $	**1,012.20**	**1,104.00**	**1,104.00**	**1,287.60**	**1,563.70**	**2,299.50**	**3,127.40**	**5,426.60**		

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

3 Jaw 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

Application:

- This chuck is designed for all types of workshop machining operations on conventional lathes and milling fixtures



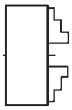
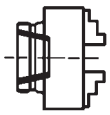
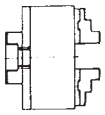
Mounting	Size of Chuck	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
Plain Back	Hole Size	0.630	0.787	1.2598	1.6535	2.1654	2.9921	4.0551	5.3543	7.4803	9.92"	12.60	16.06	16.06
3205	Weight lbs	3.3	6.17	11	22	39	55	110	187	320	550	884	1,232	1,584
	Code No.			440-705	440-710	440-715	440-720	440-725	435-135	435-140	435-145	435-480	435-155	435-160
												(front mount)	(front mount)	(front mount)
	Price $			**935.60**	**980.00**	**1,164.20**	**1,471.70**	**2,115.40**	**3,497.40**	**9,456.20**	**14,640.50**	**24,349.40**	**36,597.90**	**44,492.00**
3215	**A1-5**				440-805	440-810								
A Taper	**Price $**				**1,574.10**	**1,799.00**								
Mount	**A2-5**						440-820							
	Price $						**2,074.30**							
	A1-6					440-815	440-825							
	Price $					**1,799.00**	**2,074.30**							
	A2-6							440-835	435-245					
	Price $							**3,069.20**	**5,308.90**					
	A1-8						440-830	440-840						
	Price $						**2,074.30**	**3,069.20**						
	A2-8								435-252					
	Price $								**5,308.90**					
	A1-11								435-255					
	Price $								**5,308.90**					
	A2-11									435-256	435-257			
	Price $									**12,774.20**	**16,755.70**			
	A1-15													
	Price $													
	A2-20											435-259		
	Price $											**26,731.60**		
3245	**D1-3**			440-900	440-905	440-915								
Camlock	**Price $**			**1,287.60**	**1,376.90**	**1,576.20**								
Mount	**D1-4**			440-903	440-910	440-920								
	Price $			**1,268.10**	**1,327.70**	**1,576.20**								
	D1-5				440-912	440-925	440-935							
	Price $				**1,471.80**	**1,576.20**	**2,156.80**							
	D1-6					440-930	440-940	440-945	435-360					
	Price $					**1,576.20**	**2,157.00**	**3,318.20**	**5,972.20**					
	D1-8						440-941	440-950	435-365	435-368				
	Price $						**2,156.80**	**3,318.20**	**5,972.20**	**12,691.00**				
	D1-11							440-951	435-367	435-370	435-372			
	Price $							**3,318.20**	**5,972.20**	**12,691.00**	**17,253.40**			
	D1-15										435-373			
	Price $										**14,604.90**			
3235	**Din 3**			440-102	440-106	440-114								
DIN	**Price $**			**1,241.80**	**1,379.70**	**1,962.80**								
Mount	**Din 4**			440-104	440-108	440-116								
	Price $			**1,241.80**	**1,379.70**	**1,655.60**								
	Din 5				440-110	440-118								
	Price $				**1,379.70**	**1,655.60**								
	Din 6				440-112	440-120	440-122	440-126	440-132					
	Price $				**1,635.50**	**1,655.60**	**2,299.50**	**2,989.50**	**5,150.70**					
	Din 8						440-124	440-128	440-134	440-138				
	Price $						**2,299.50**	**2,989.50**	**5,150.70**	**13,520.00**				
	Din 11							440-130	440-136	440-140	440-142			
	Price $							**3,081.40**	**5,288.60**	**13,520.00**	**18,394.60**			
	Din 15										440-144			
	Price $										**18,946.40**			

3 Jaw Cast Iron Body Scroll Chucks - 2PC Hard Rev. Jaws, cont'd

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



	Size of Chuck	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
	Hole Size	0.630	0.787	1.2598	1.6535	2.1654	2.9921	4.0551	5.3543	7.4803	9.92"	12.60	16.06	16.06
	Weight lbs	3.3	6.17	11	22	39	55	110	187	320	550	884	1,232	1,584
3275 Front Mount 	**Code No.**			440-806	440-808	440-813	440-811	440-812	440-809	440-833	440-834			
	Price $			**972.20**	**1,064.20**	**1,162.20**	**1,565.70**	**2,447.10**	**3,857.10**	**11,542.90**	**17,871.30**			
3255 L Mount 	**L00**				445-105	445-115								
	Price $				**1,408.50**	**1,560.90**								
	L0				445-110	445-120	445-130	445-145						
	Price $				**1,408.50**	**1,560.90**	**2,152.40**	**3,043.90**						
	L1					445-125	445-135	445-150	435-460					
	Price $					**1,560.90**	**2,152.40**	**3,043.90**	**4,878.00**					
	L2						445-140	445-155	435-465					
	Price $						**2,152.40**	**3,043.90**	**4,878.00**					
3285 Threaded Mount 	**Thread 1"-10**		440-605*	440-615										
	Price $		**1,093.20**	**1,260.20**										
	Thread 1-1/2"-8		440-610	440-620	440-625	440-635								
	Price $		**1,093.20**	**1,260.20**	**1,340.60**	**1,582.00**								
	Thread 2-1/4"-8				440-630	440-640	440-645							
	Price $				**1,340.60**	**1,582.00**	**1,936.50**							
	Thread 2-3/8"-6					440-642		440-650						
	Price $					**1,582.00**		**2,877.00**						
	Thread 2-3/4"-8							440-655						
	Price $							**2,877.00**						

* 2 sets of solid jaws

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see pages: J45-46

3 Jaw Cast Iron Scroll Chucks - Hard Solid Jaws

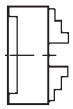
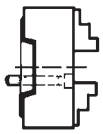
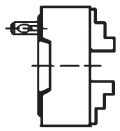
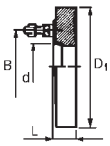
Features:

- 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

Mounting	Size of Chuck	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
Plain Back 3204 	Hole Size	0.630	0.787	1.2598	1.6535	2.1654	2.9921	4.0551	5.3543	7.4803	9.92"	12.60	16.06	16.06
	Weight lbs	3.3	6.17	11	22	39	55	110	187	320	550	884	1,232	1,584
	Code No.	440-504	440-505	440-510	440-515	440-520	440-525	440-530	440-535	440-540	440-545	440-550 (front mount)	440-555 (front mount)	440-560 (front mount)
	Price $	**657.00**	**766.70**	**787.50**	**875.30**	**1,046.40**	**1,330.30**	**1,986.30**	**3,558.20**	**8,626.90**	**13,313.60**	**RFQ**	**RFQ**	**RFQ**
3214 A Taper Mount 	A1-5				440-200	440-205	440-215							
	Price $				**1,363.30**	**1,635.50**	**2,290.10**							
	A1-6					440-210	440-220	440-230	440-240					
	Price $					**1,379.70**	**1,931.70**	**2,851.70**	**5,226.70**					
	A1-8						440-225	440-235	440-245	440-255				
	Price $						**2,290.10**	**3,380.40**	**4,920.70**	**13,676.40**				
	A1-11								440-250	440-260	440-265	440-275		
	Price $								**5,226.70**	**12,876.30**	**17,705.00**	**RFQ**		
	A1-15										440-270	440-280		
	Price $										**18,757.10**	**RFQ**		
	A1-20											440-285		440-290
	Price $											**RFQ**		**RFQ**
3244 Camlock Mount 	D1-3		440-902	440-904	440-907	440-916								
	Price $		**1,189.90**	**1,104.00**	**1,195.60**	**1,744.90**								
	D1-4			440-906	440-911	440-921								
	Price $			**1,104.00**	**1,195.60**	**1,438.00**								
	D1-5				440-913	440-926	440-936							
	Price $				**1,195.60**	**1,471.80**	**2,399.10**							
	D1-6					440-931	440-942	440-943	440-631					
	Price $					**1,438.00**	**2,023.70**	**2,938.90**	**5,861.90**					
	D1-8						440-944	440-953	435-636	435-369				
	Price $						**2,023.70**	**2,851.70**	**5,518.80**	**14,604.90**				
	D1-11							440-962	435-366	440-371	440-374			
	Price $							**2,851.70**	**5,518.80**	**14,604.90**	**18,808.60**			
	D1-15										440-575			
	Price $										**19,373.10**			
3234 DIN Mount 	Din 3		440-000	440-002	440-006	440-014								
	Price $		**1,059.10**	**1,012.20**	**1,150.00**	**1,635.50**								
	Din 4			440-004	440-008	440-016								
	Price $			**1,012.20**	**1,150.00**	**1,379.70**								
	Din 5				440-010	440-018								
	Price $				**1,150.00**	**1,379.70**								
	Din 6				440-012	440-020	440-022	440-026	440-032					
	Price $				**1,363.30**	**1,379.70**	**1,931.70**	**2,851.70**	**4,920.70**					
	Din 8						440-024	440-028	440-034	440-038				
	Price $						**1,931.70**	**2,851.70**	**4,920.70**	**12,876.30**				
	Din 11							440-030	440-036	440-040	440-042			
	Price $							**2,851.70**	**4,920.70**	**12,876.30**	**17,705.00**			
	Din 15										440-044			
	Price $										**18,236.30**			
3274 Front Mount 	Code No.	440-797	440-800	440-743	440-745	440-802	440-804	440-747	440-793	440-822	440-807			
	Price $	**703.60**	**790.60**	**830.90**	**928.40**	**1,066.10**	**1,458.70**	**2,119.30**	**3,863.00**	**10,485.00**	**16,233.20**			

LATHE CHUCKS

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

4 Jaw Precision Steel Body Scroll Chucks - 2PC Hard Rev. Jaws

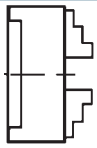
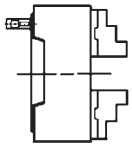
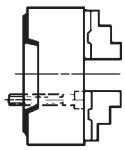
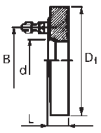
Features:

- 4 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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 grinders
- Suitable for machining square and round workpieces, granting greater flexibility to machining operations



Mounting	Chuck Size	4"	5"	6"	8"	10"	12"	16"	20"	25"
3705 Plain Back 	**Hole Size**	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	6.16	11	22	39	64	110	187	320	551
	Code No.		440-222	440-224	440-226	440-228	440-231	440-232	440-234	440-236
	Price $		**1,361.60**	**1,891.80**	**2,194.20**	**2,542.50**	**3,738.20**	**6,114.50**	**13,094.00**	**15,774.90**
3745 Camlock 	**D1-3**		440-700	440-704						
	Price $		**2,294.00**	**2,747.90**						
	D1-4		440-702	440-706	440-712					
	Price $		**1,931.70**	**2,375.20**	**2,922.90**					
	D1-5			440-708	440-714					
	Price $			**2,375.20**	**2,922.90**					
	D1-6				440-716	440-718	440-724			
	Price $				**2,922.90**	**3,863.00**	**6,018.70**			
	D1-8					440-722	440-726	440-728	440-734	
	Price $					**3,863.00**	**5,076.10**	**9,335.20**	**18,072.70**	
	D1-11							440-732	440-736	
	Price $							**9,335.50**	**17,015.30**	
	D1-15									440-741
	Price $									**26,193.80**
3715 Short Taper 	**A1-5**			440-264	440-266	440-271				
	Price $			**2,670.90**	**2,670.90**	**4,361.50**				
	A1-6					440-272	440-276	440-281		
	Price $					**4,361.50**	**6,282.60**	**9,729.80**		
	A1-8					440-274	440-278	440-282		
	Price $					**4,361.50**	**6,282.60**	**9,729.80**		
	A1-11							440-284		440-286
	Price $							**9,729.80**		**22,014.50**
3735 Din Taper 	**Din 3**		440-400							
	Price $		**1,821.70**							
	Din 4		440-402	440-404	440-408					
	Price $		**1,821.70**	**2,092.70**	**2,592.90**					
	Din 5			440-406						
	Price $			**2,092.70**						
	Din 6				440-410	440-412	440-416			
	Price $				**2,592.90**	**3,587.10**	**4,967.50**			
	Din 8					440-414	440-418	440-420	440-424	
	Price $					**3,587.10**	**4,967.50**	**8,339.70**	**17,291.00**	
	Din 11							440-422	440-426	440-428
	Price $							**8,339.70**	**16,279.20**	**23,315.30**
	Din 15									440-430
	Price $									**24,014.90**
3775 Front Mount Plain Back 			441-120	441-122	441-124	441-126	441-128	441-130		
	Price $		**1,770.70**	**1,979.80**	**2,404.60**	**3,265.40**	**4,598.90**	**8,185.70**		

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J45-46

4 Jaw Precision Steel Body Scroll Chucks - Hard Solid Jaws

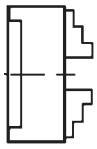
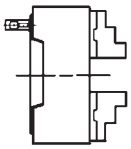
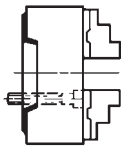
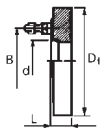
Features:

- 4 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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 grinders
- Suitable for machining square and round workpieces, granting greater flexibility to machining operations



Mounting	Chuck Size	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"
3704 Plain Back 	**Hole Size**	.630	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	3.30	6.16	11	22	39	64	110	187	320	551
	Code No.		440-201	440-202	440-204	440-206	440-208	440-209	440-212	440-214	440-216
	Price $		**1,033.00**	**1,150.00**	**1,320.20**	**1,663.30**	**2,115.50**	**3,173.40**	**5,472.70**	**14,808.10**	**20,648.30**
3744 Camlock 	**D1-3**			440-600	440-604						
	Price $			**1,909.70**	**2,290.10**						
	D1-4			440-602	440-606	440-612					
	Price $			**1,609.90**	**1,979.80**	**2,451.30**					
	D1-5				440-608	440-614					
	Price $				**1,979.80**	**2,451.30**					
	D1-6					440-616	440-618	440-624			
	Price $					**2,451.30**	**3,035.40**	**5,016.00**			
	D1-8						440-622	440-626	440-628	440-634	
	Price $						**3,035.40**	**4,230.80**	**8,461.40**	**16,411.90**	
	D1-11								440-632	440-636	440-638
	Price $								**8,461.40**	**15,451.60**	**24,235.10**
	D1-15										440-641
	Price $										**24,962.10**
3714 Short Taper 	**A1-5**				440-241	440-242	440-246				
	Price $				**2,225.90**	**2,671.90**	**3,653.20**				
	A1-6						440-248	440-252	440-256		
	Price $						**3,653.20**	**5,235.40**	**8,108.30**		
	A1-8						440-251	440-254	440-258		
	Price $						**3,653.20**	**5,235.40**	**8,108.30**		
	A1-11								440-261		440-262
	Price $								**8,108.10**		**20,012.90**
3734 Din Taper 	**Din 3**			440-300							
	Price $			**1,518.20**							
	Din 4			440-302	440-304	440-308					
	Price $			**1,518.20**	**1,744.50**	**2,168.70**					
	Din 5				440-306						
	Price $				**1,744.50**						
	Din 6					440-310	440-312	440-316			
	Price $					**2,168.60**	**2,989.50**	**4,139.00**			
	Din 8						440-314	440-318	440-320	440-324	
	Price $						**2,989.50**	**4,139.00**	**7,588.20**	**15,728.20**	
	Din 11								440-322	440-326	440-328
	Price $								**7,588.20**	**14,808.10**	**22,211.80**
	Din 15										440-330
	Price $										**22,878.10**
3774 Front Mount Plain Back 	**Code No.**			441-020	441-022	441-024	441-026	441-028	441-030		
	Price $			**1,469.20**	**1,650.50**	**2,027.50**	**2,759.40**	**3,909.60**	**7,358.00**		

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of outside hard solid jaws


1 set of inside hard solid jaws


1 wrench

Optional accessories


1 set of soft solid jaws

Spare Parts - see pages: J45-46

4 Jaw Cast Iron Body Scroll Chucks - 2PC Hard Rev. Jaws

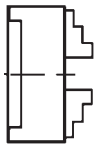
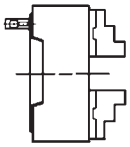
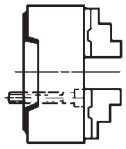
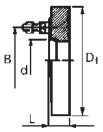
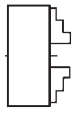
Features:

- 4 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 grinders
- Suitable for machining square and round workpieces, granting greater flexibility to machining operations



Mounting	Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"
3605 Plain Back 	**Hole Size**	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	11	22	39	64	110	187	320	551
	Code No.	445-882	445-884	445-886	445-888	445-890	445-892	445-894	445-893
	Price $	**1,155.80**	**1,303.80**	**1,478.70**	**1,754.70**	**2,411.30**	**4,198.50**	**10,410.00**	**15,345.70**
3645 Camlock 	**D1-3**	441-100	441-104	441-110					
	Price $	**1,710.40**	**1,853.80**	**2,290.10**					
	D1-4	441-102	441-106	441-112					
	Price $	**1,547.80**	**1,697.30**	**2,096.60**					
	D1-5		441-108	441-114					
	Price $		**1,697.30**	**2,290.10**					
	D1-6			441-116					
	Price $			**2,290.10**					
	D1-8								
	D1-11								
3615 Short Taper 	**A1-5**				440-152				
	Price $				**3,053.40**				
	A1-6			440-147	440-157	440-167	440-177		
	Price $			**1,996.60**	**3,053.40**	**4,307.30**	**6,398.90**		
	A1-8				440-162	440-172	440-182	440-192	
	Price $				**3,053.40**	**4,307.30**	**6,398.90**	**16,558.70**	
	A1-11						440-187	440-197	
	Price $						**6,398.90**	**16,558.70**	
3635 Din Taper 	**Din 3**	440-432	440-436	440-444					
	Price $	**1,547.00**	**1,744.90**	**2,180.80**					
	Din 4	440-434	440-438	440-446					
	Price $	**1,547.00**	**1,597.40**	**2,180.80**					
	Din 5		440-440	440-448					
	Price $		**1,597.40**	**2,180.80**					
	Din 6		440-442	440-450	440-452	440-456	440-460		
	Price $		**1,744.90**	**2,180.80**	**2,483.60**	**3,587.10**	**6,349.70**		
	Din 8				440-454	440-458	440-462	440-466	
	Price $				**2,483.60**	**3,587.10**	**6,349.70**	**16,558.70**	
	Din 11						440-464	440-468	
	Price $						**6,349.70**	**16,558.70**	
3675 Front Mount Plain Back 	**Code No.**	441-132	441-134	441-136	441-138	441-140	441-142		
	Price $	**1,090.40**	**1,317.60**	**1,541.20**	**1,939.40**	**2,837.10**	**4,960.40**		

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see pages: J45-46

4 Jaw Cast Iron Body Scroll Chucks - Hard Solid Jaws

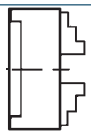
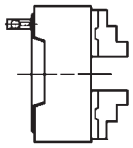
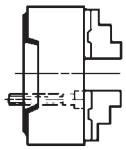
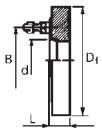
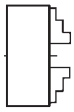
Features:

- 4 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 grinders
- Suitable for machining square and round workpieces, granting greater flexibility to machining operations



Mounting	Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"
3604 Plain Back 	**Hole Size**	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	11	22	39	64	110	187	320	551
	Code No.	445-850	445-855	445-860	445-865	445-870	445-875	445-880	
	Price $	**905.70**	**1,003.10**	**1,194.50**	**1,545.10**	**2,308.40**	**4,160.70**	**10,576.90**	
3644 Camlock 	**D1-3**	441-000	441-004	441-010					
	Price $	**1,450.60**	**1,635.80**	**1,853.80**					
	D1-4	441-002	441-006	441-012					
	Price $	**1,297.80**	**1,397.80**	**1,697.30**					
	D1-5		441-008	441-014					
	Price $		**1,526.70**	**1,853.80**					
	D1-6			441-016					
	Price $			**1,853.80**					
	D1-8								
	D1-11								
3614 Short Taper 	**A1-5**				440-052				
	Price $				**2,508.20**				
	A1-6			440-047	440-057	440-067	440-077		
	Price $			**1,851.10**	**2,508.20**	**3,598.80**	**5,812.90**		
	A1-8				440-062	440-072	440-082	440-092	
	Price $				**2,508.20**	**3,598.80**	**5,812.90**	**15,044.10**	
	A1-11						440-087	440-097	
	Price $						**5,812.90**	**15,044.10**	
3634 Din Taper 	**Din 3**	440-332	440-336	440-344					
	Price $	**1,391.20**	**1,472.20**	**1,744.90**					
	Din 4	440-334	440-338	440-346					
	Price $	**1,391.20**	**1,347.90**	**1,744.90**					
	Din 5		440-340	440-348					
	Price $		**1,347.90**	**1,743.70**					
	Din 6		440-342	440-350	440-352	440-356	440-360		
	Price $		**1,472.20**	**1,851.10**	**2,161.90**	**3,127.40**	**6,252.20**		
	Din 8				440-354	440-358	440-362	440-366	
	Price $				**2,161.90**	**3,127.40**	**6,252.20**	**15,630.50**	
	Din 11						440-364	440-368	
	Price $						**6,252.20**	**15,630.50**	
3674 Front Mount  Plain Back	**Code No.**	441-032	441-034	441-036	441-038	441-040	441-042		
	Price $	**1,159.40**	**1,250.30**	**1,397.80**	**1,701.90**	**2,621.50**	**4,667.70**		

LATHE CHUCKS

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

3 Jaw Steel Body Scroll Chucks With Threaded Mounting

Features:

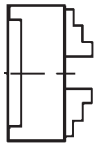
- Special compact design
- Very small turning diameter
- Hard reversible jaws
- Maximum RPM 4000

Application:

- Especially designed for household and non-professional use
- Suitable for lathes with a threaded spindle
- Can be used with both metal and wood





Mounting			
3286 Threaded			
Chuck Size		2”	2.362”
Threaded Mount		M12x1	M14x1
Weight lbs.		1.10	1.50
Code No.		468-980	468-985
Price $		**884.70**	**884.70**

2 Jaw Cast Iron Body Scroll Chucks - 3105

Features:

- 2 jaw, self-centering scroll chuck with manual gripping and a high quality cast iron body
- Chucks are equipped with soft, steel top jaws, which can be individually shaped by the user and clamp irregularly-shaped workpieces
- 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

Chuck Size	6"	8"	10"	12"	16"
Hole	1.6535	2.1654	2.9921	4.0551	5.3453
Weight Lbs.	20.3	34.5	56.7	93.9	172.8
Plain Back Code No.	435-500	435-505	435-510	435-515	435-520
Price $	**938.70**	**1,044.20**	**1,251.50**	**1,913.80**	**3,701.30**

LATHE CHUCKS

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of top top jaws



1 set of hard master jaws



1 wrench

Spare Parts - see pages: J45-46

6 Jaw Precision Steel Body Scroll Chucks - 2PC Hard Rev. Jaws

Features:

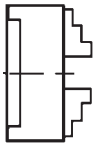
- 6 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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 grinders
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation

Mounting
3807
Plain Back



Chuck Size	8"	10"	12"	16"	20"	25"
Hole Size	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	39	64	110	187	320	551
Code No.	441-146	441-148	441-150	441-152	441-154	441-156
Price $	**3,102.50**	**3,767.10**	**5,052.30**	**8,641.80**	**18,394.60**	**30,863.00**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J45-46

6 Jaw Precision Steel Body Scroll Chucks - Hard Solid Jaws

Features:

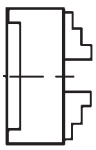
- 6 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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 grinders
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation

Mounting
3806
Plain Back



Chuck Size	8"	10"	12"	16"	20"	25"
Hole Size	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	39	64	110	187	320	551
Code No.	440-046	440-048	440-051	440-053	440-054	440-056
Price $	**2,697.80**	**3,275.80**	**4,393.20**	**7,514.70**	**15,995.10**	**26,837.40**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

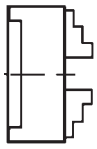
6 Jaw Cast Iron Body Scroll Chucks - 2PC Hard Rev. Jaws

Features:
- 6 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 grinders
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation



Mounting
3805
Plain Back



Chuck Size	8"	10"	12"	16"	20"	25"
Hole Size	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	39	64	110	187	320	551
Code No.	441-160	441-162	441-164	441-166	441-168	441-170
Price $	**2,216.10**	**2,690.90**	**3,608.90**	**6,647.70**	**14,149.60**	**23,740.70**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J45-46

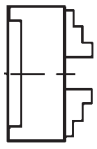
6 Jaw Cast Iron Body Scroll Chucks - Hard Solid Jaws

Features:
- 6 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 grinders
- Gripping force is equally distributed over 6 jaws, allowing the chuck to machine thin-walled workpieces and clamp without deformation



Mounting
3804
Plain Back



Chuck Size	8"	10"	12"	16"	20"	25"
Hole Size	2.1653	2.9921	4.0551	5.3543	7.48	9.92
Weight lbs.	39	64	110	187	320	551
Code No.	441-060	441-062	441-064	441-066	441-068	441-070
Price $	**1,927.00**	**2,339.80**	**3,138.20**	**5,780.60**	**12,304.10**	**20,644.20**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

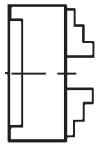
Spare Parts - see pages: J45-46

3 Jaw Scroll Chucks For Sharpening Drills

Application:

- Lever scroll chuck is specially designed for grinding twist drills and other cutting tools



Mounting	Chuck Size	3"	4"	5"	6"	8"
3266 Plain Back	**Hole Size**	.945	1.26	1.50	2.05	2.52
	**Weight lbs.**	2.50	7	9	16	30
	Code No.	441-200	441-202	441-204	441-206	441-208
	Price $	**1,194.70**	**1,327.70**	**1,824.90**	**3,127.40**	**3,770.90**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories					
	1 set of outside hard solid jaws		1 set of inside hard solid jaws		1 operating lever

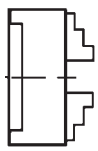
Spare Parts - see pages: J45-46

6 Jaw Scroll Chucks For Sharpening Drills

Application:

- Lever scroll chuck is specially designed for grinding twist drills and other cutting tools



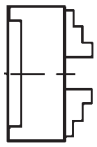
Mounting	Chuck Size	3"	4"	5"	6"
3866 Plain Back	**Hole Size**	.945	1.26	1.50	2.05
	**Weight lbs.**	4.40	6.16	8.80	16
	Code No.	441-210	441-212	441-214	441-216
	Price $	**1,866.60**	**2,074.30**	**2,364.30**	**2,737.60**

6 Jaw Scroll Chucks For Sharpening Drills - Front Mounted

Features:
- Plain Back (Front mounting)

Application:
- The wrench operated scroll chuck is specially designed for grinding twist drills and other cutting tools



Mounting		Chuck Size	3.35"	4.33"	6.30"
3867 Front Mount		**Hole Size**	1.000	1.280	2.00
		Weight lbs.	4.18	7.70	9.90
		Code No.	441-218	441-220	441-222
		Price $	**2,069.80**	**2,299.50**	**2,759.40**

5C Collet Chucks

Features:
- The simple wrench operated scroll provides uniform, distortion free clamping of workpieces and low collet exchange times

Application:
- The type 3911 collet chuck is designed for use with 5C collets and can be used for turning, facing, boring, grinding and milling operations
- The type 3960 collet chuck allows for fine adjustment to the required concentricity by means of 4 radially arranged adjusting screws

Options:
- Camlock and threaded mounts available on request



3911	**Chuck Size**	5"
	Capacity	1/16-1-1/8
	Weight lbs.	10
	Code No.	425-405
	Price $	**868.30**
3960 Fine Adjustment	**Chuck Size**	5"
	Capacity	1/16-1-1/8
	Weight lbs.	12
	Code No.	440-409
	Price $	**1,185.40**

Adapters For 5C Collet Chucks

Chuck Size (in.)	Spindle	Code No.	Price $
5	A6	425-410	**325.00**
5	A8	425-415	**327.20**

5C Collet Stop

- Fit any 5C ID threaded collets
- They are hardened and oxidized



Description	Code No.	Price $
5C adjustable collet stops	425-430	**32.40**

3 Jaw Live Morse Taper Scroll Chucks - 2PC Hard Rev. Jaws

Features:

- Able to work in horizontal and vertical positions
- Hardened and ground MT shank
- Sealed ball bearings, lubrication through oiler
- Rotating spindle can also be used with 4 Jaw Front Mount Chucks



Application:

- Designed for simultaneously supporting and gripping long objects (tubes, shafts etc.) during turning, milling and grinding operations
- Can replace typical center in machine tailstock

3275
Front Mount
Plain Back
2pc Jaws



9157
Rotating Spindle

Chuck Size	5”	6”
Morse Taper	4	5
Max RPM	3200	3000
Weight lbs.	18	32
Code No. (chuck only)	440-806	440-808
Price $	**972.20**	**1,064.20**
Code No. (spindle only)	436-016	436-018
Price $	**1,444.70**	**1,505.20**



Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see pages: J45-46

3 Jaw Live Morse Taper Scroll Chucks - Hard Solid Jaws

Features:

- Able to work in horizontal and vertical positions
- Hardened and ground MT shank
- Sealed ball bearings, lubrication through oiler
- Rotating spindle can also be used with 4 Jaw Front Mount Chucks (only 5” & 6”)



Application:

- Designed for simultaneously supporting and gripping long objects (tubes, shafts etc.) during turning, milling and grinding operations
- Can replace typical center in machine tailstock

3274
Front Mount
Plain Back
Solid Jaws



9157
Rotating Spindle

Chuck Size	3”	4”	5”	6”
Morse Taper	2	3	4	5
Max RPM	4000	3500	3200	3000
Weight lbs.	8	12	18	32
Code No. (chuck only)	440-797	440-800	440-743	440-745
Price $	**703.60**	**790.60**	**830.90**	**928.40**
Code No. (spindle only)	436-012	436-014	436-016	436-018
Price $	**799.70**	**1,228.70**	**1,444.70**	**1,505.20**



Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

High Precision 3 Jaw Steel Body Scroll Chucks - 2PC Hard Rev. Jaws

Twice the centering accuracy over Regular Steel Body Chucks - See Page: J49

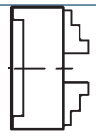
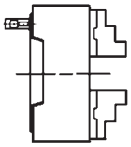
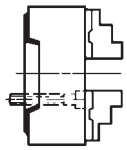
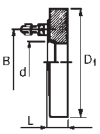


Features:

- 3 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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

Mounting	Chuck Size	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"
3505-I Plain Back 	**Hole Size**	.630	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	3.30	6.16	11	22	39	64	110	187	320	550
	Code No.			441-404	441-406	441-408	441-410	441-412	441-414	441-416	441-418
	Price $			**1,414.40**	**1,724.50**	**2,069.60**	**2,897.40**	**4,139.20**	**6,898.50**	**17,451.60**	**22,581.80**
3545-I Camlock 	**D1-3**			441-602	441-606						
	Price $			**2,184.40**	**2,998.90**						
	D1-4			441-604	441-608	441-612					
	Price $			**2,631.40**	**2,529.70**	**3,544.10**					
	D1-5				441-610	441-614					
	Price $				**2,529.70**	**2,989.50**					
	D1-6					441-616	441-618	441-622			
	Price $					**2,989.50**	**4,139.20**	**6,815.20**			
	D1-8						441-620	441-624	441-628	441-632	441-636
	Price $						**4,139.20**	**5,748.50**	**9,714.90**	**14,848.10**	**24,806.10**
	D1-11							441-626	441-630	441-634	441-638
	Price $							**5,748.50**	**9,714.90**	**14,848.10**	**18,871.10**
	D1-15										441-640
	Price $										**24,806.10**
3515-I Short Taper 	**A2-5**				441-420	441-422	441-426				
	Price $				**2,299.50**	**2,414.50**	**4,024.20**				
	A2-6					441-424	441-428	441-432			
	Price $					**2,414.50**	**4,024.20**	**5,576.60**			
	A2-8						441-430	441-434	441-436	441-440	
	Price $						**4,024.20**	**6,611.00**	**10,074.50**	**15,967.60**	
	A2-11								441-438	441-442	441-444
	Price $								**10,074.50**	**15,967.60**	**17,875.30**
	A2-15										441-446
	Price $										**17,875.30**
3535-I Din Taper 	**Din 3**			441-450							
	Price $			**2,218.20**							
	Din 4			441-452	441-454						
	Price $			**1,839.80**	**1,954.50**						
	Din 5				441-456	441-458					
	Price $				**1,954.50**	**2,184.40**					
	Din 6					441-460	441-462	441-466			
	Price $					**2,184.40**	**3,161.80**	**4,368.70**			
	Din 8						441-464	441-468	441-472	441-476	
	Price $						**3,161.80**	**4,368.70**	**8,277.60**	**19,435.30**	
	Din 11							441-470	441-474	441-478	441-480
	Price $							**4,368.70**	**8,277.60**	**19,435.30**	**24,009.40**
	Din 15										441-482
	Price $										**24,730.10**
3575-I Front Mount Plain Back 	**Code No.**			441-666	441-668	441-670	441-672	441-674	441-676	441-678	441-680
	Price $			**1,379.70**	**1,563.70**	**2,023.70**	**2,759.40**	**3,449.40**	**5,978.30**	**14,440.00**	**21,337.80**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see pages: J45-46

High Precision 3 Jaw Steel Body Scroll Chucks - Hard Solid Jaws

Twice the centering accuracy over Regular Steel Body Chucks - See Page: J49

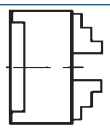
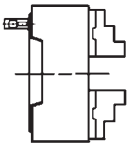
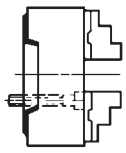
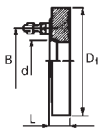


Features:

- 3 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- 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

Mounting	Chuck Size	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"
3504-I Plain Back 	**Hole Size**	.630	.787	1.2598	1.6535	2.1653	2.9921	4.0551	5.3543	7.48	9.92
	Weight lbs.	3.30	6.16	11	22	39	64	110	187	320	550
	Code No.	441-300	441-302	441-304	441-306	441-308	441-310	441-312	441-314	441-316	441-318
	Price $	**1,057.70**	**1,207.50**	**1,265.30**	**1,437.80**	**1,724.50**	**2,414.50**	**3,564.20**	**6,323.30**	**15,865.50**	**21,682.70**
3544-I Camlock 	**D1-3**			441-502	441-506						
	Price $			**1,782.30**	**2,453.60**						
	D1-4			441-504	441-508	441-512					
	Price $			**2,147.20**	**2,069.60**	**2,998.90**					
	D1-5				441-510	441-514					
	Price $				**2,069.60**	**2,529.70**					
	D1-6					441-516	441-518	441-522			
	Price $					**2,529.70**	**3,449.40**	**5,860.70**			
	D1-8						441-520	441-524	441-528	441-532	441-536
	Price $						**3,449.40**	**4,943.60**	**8,852.70**	**15,874.90**	**21,894.10**
	D1-11							441-526	441-530	441-534	441-538
	Price $							**4,943.60**	**8,852.70**	**14,945.80**	**21,894.10**
	D1-15										441-540
	Price $										**22,551.20**
3514-I Short Taper 	**A2-5**				441-320	441-322	441-326				
	Price $				**2,004.10**	**2,414.50**	**3,380.00**				
	A2-6					441-324	441-328	441-332			
	Price $					**2,414.50**	**3,380.00**	**4,943.60**			
	A2-8						441-330	441-334	441-336	441-340	
	Price $						**3,380.00**	**5,860.70**	**9,158.60**	**18,536.40**	
	A2-11								441-338	441-342	441-344
	Price $								**9,158.60**	**18,536.40**	**20,730.60**
	A2-15										441-346
	Price $										**22,006.40**
3534-I Din Taper 	**Din 3**			441-350							
	Price $			**1,788.20**							
	Din 4			441-352	441-354						
	Price $			**1,494.60**	**1,724.50**						
	Din 5				441-356	441-358					
	Price $				**1,954.50**	**1,954.50**					
	Din 6					441-360	441-362	441-366			
	Price $					**1,954.50**	**2,644.30**	**3,794.00**			
	Din 8						441-364	441-368	441-372	441-376	
	Price $						**2,644.30**	**3,794.00**	**7,357.70**	**14,485.90**	
	Din 11							441-370	441-374	441-378	441-380
	Price $							**3,794.00**	**7,358.80**	**14,485.90**	**19,038.50**
	Din 15										441-382
	Price $										**19,609.70**
3574-I Front Mount Plain Back 	**Code No.**	441-642	441-644	441-646	441-648	441-650	441-652	441-654	441-656	441-658	441-660
	Price $	**1,012.20**	**1,104.00**	**1,104.00**	**1,287.60**	**1,563.70**	**2,299.50**	**3,127.40**	**5,426.60**	**14,440.00**	**19,406.30**

Engineering Data See Pages: J47-51

Spare Parts

Standard accessories



1 set of outside hard solid jaws



1 set of inside hard solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see pages: J45-46

Combination 3 & 4 Jaw Lathe Chucks - Hard Solid Jaws



Features:

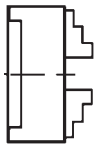
- Combines features of both self-centering scroll and independent chucks: user can adjust chuck once and the self-centering option assures repeatability throughout the rest of the batch
- 4 jaw chuck (type 4605 and type 4805) is able to machine both square and round workpieces, granting greater flexibility
- Steel body (type 4705 and type 4805) extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces

Application:

- Particularly suitable for lining up and gripping workpieces of irregular shape

3 Jaw Steel Body Combination Chucks - Hard Solid Jaws

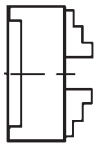
Mounting
4705
Plain Back



Chuck Size	8”	10”	12”	16”	20”	25”
Hole Size	2.165	2.992	4.055	5.354	7.480	9.921
Weight lbs.	40	68	120	194	330	540
Code No.	440-570	440-572	440-574	440-576	440-578	440-580
Price $	**3,351.80**	**4,363.20**	**5,442.50**	**8,313.50**	**15,566.10**	**23,046.80**

3 Jaw Cast Iron Body Combination Chucks - Hard Solid Jaws

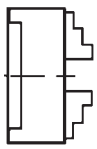
Mounting
4505
Plain Back



Chuck Size	8”	10”	12”	16”	20”	25”
Hole Size	2.165	2.992	4.055	5.354	7.480	9.921
Weight lbs.	40	68	120	194	330	540
Code No.	440-470	440-472	440-474	440-476	440-478	440-480
Price $	**2,436.30**	**3,331.60**	**3,955.10**	**6,290.10**	**11,891.70**	**20,045.60**

4 Jaw Steel Body Combination Chucks - Hard Solid Jaws

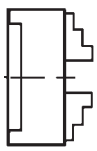
Mounting
4805
Plain Back



Chuck Size	8”	10”	12”	16”	20”	25”
Hole Size	2.165	2.992	4.055	5.354	7.480	9.921
Weight lbs.	40	68	120	194	330	540
Code No.	455-930	455-935	455-940	455-945	455-950	455-955
Price $	**3,699.00**	**4,667.70**	**5,529.50**	**8,690.20**	**15,574.20**	**23,646.60**

4 Jaw Cast Iron Body Combination Chucks - Hard Solid Jaws

Mounting
4605
Plain Back



Chuck Size	8”	10”	12”	16”	20”	25”
Hole Size	2.165	2.992	4.055	5.354	7.480	9.921
Weight lbs.	40	68	120	194	330	540
Code No.	455-900	455-905	455-910	455-915	455-920	455-925
Price $	**2,618.00**	**3,180.50**	**4,103.30**	**5,223.20**	**13,349.00**	**22,546.90**

Oil Country Chucks

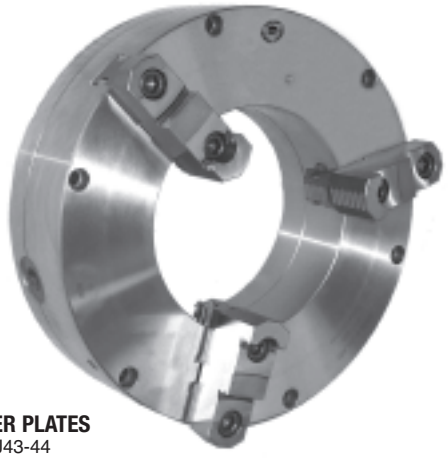
3 Jaw Steel Body Large Through Hole Scroll Chucks

Features:

- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- Chucks may work individually or in pairs, mounted on opposite sides of the lathe spindle, ensuring the same vertical position of the jaws in both chucks
- Large through-hole compared to the outside diameter of the chuck body
- High gripping force and high machining accuracy
- Able to machine very long workpieces
- Heavy-duty components

Application:

- This chuck is designed for gripping long pipes during medium-duty machining for conventional and specialized machine-tools

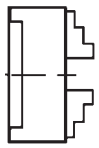




ADAPTER PLATES
Pages: J43-44

4 Jaw Independent large through hole chucks also available see page: J53

Mounting
3597
Plain Back



Chuck Size	12”	16”	20”	26”	32”
Hole Size	5.709	8.661	12.598	15.984	18.110
Weight lbs.	104	161	264	506	875
Code No.	441-248	441-250	441-252	441-253	441-254
Price $	**4,682.30**	**7,610.40**	**17,776.30**	**27,155.00**	**RFQ**

Standard accessories



1 set of hard master jaws

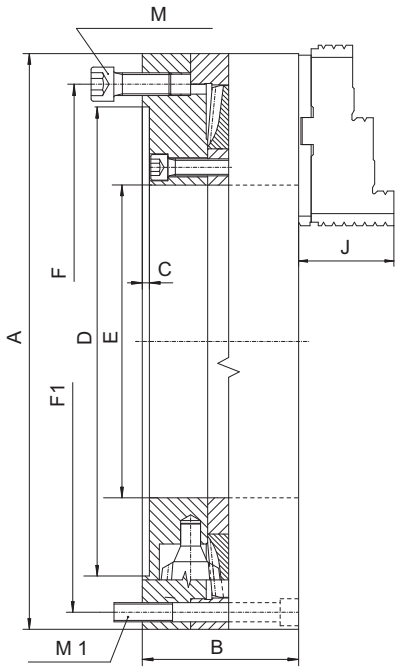


1 set of hard top jaws



1 wrench

Specifications



Chuck Size	12"	16"	20"	26"	32"
A	12.4016	15.9449	20.2756	25.9843	31.4961
B	3.8189	4.3307	4.7244	5.5118	5.9055
C	0.1969	0.1969	0.1969	0.2756	0.2756
D	10.2362	12.9921	16.5354	21.4567	27.9528
E	5.7087	8.6614	12.5984	15.9843	18.1102
F	11.2598	14.2520	18.0315	23.0709	29.9213
F1	11.2598	15.0000	18.9567	24.4094	29.9213
J	2.2402	2.6378	3.1102	3.4252	-
M	3xM16x30	6xM16x40	6xM16x40	6xM16x40	6xM20x50
M1	3xM16x100	6xM12x120	6xM16x130	6xM16x150	6xM20x160
Gripping Range	1.57-5.51	2.64-5.43	10.40-20.31	13.74-24.80	10.23-18.11
Max. Speed rpm	2500	1000	800	600	700
Approx. weight	103	160	264	506	875

Oil Country Chucks

3 Jaw Cast Iron Body Large Through Hole Scroll Chucks

Features:

- Cast Iron body
- Chucks may work individually or in pairs, mounted on opposite sides of the lathe spindle, ensuring the same vertical position of the jaws in both chucks
- Large through-hole compared to the outside diameter of the chuck body
- Able to machine very long workpieces

Application:

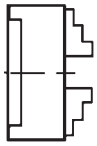
- Designed for gripping long pipes during machining for conventional and specialized machine-tools



4 Jaw Independent large through hole chucks also available see page: J53

ADAPTER PLATES
Pages: J43-44

Mounting
3295
Plain Back



Chuck Size	16”	20”	26”	32”
Hole Size	8.661	12.598	15.984	16.141
Weight lbs.	127	167	284	467
Code No.	435-530	435-535	435-540	435-545
Price $	**3,925.50**	**8,951.20**	**14,919.70**	**23,926.00**

Standard accessories



1 set of hard master jaws



1 wrench

Optional accessories

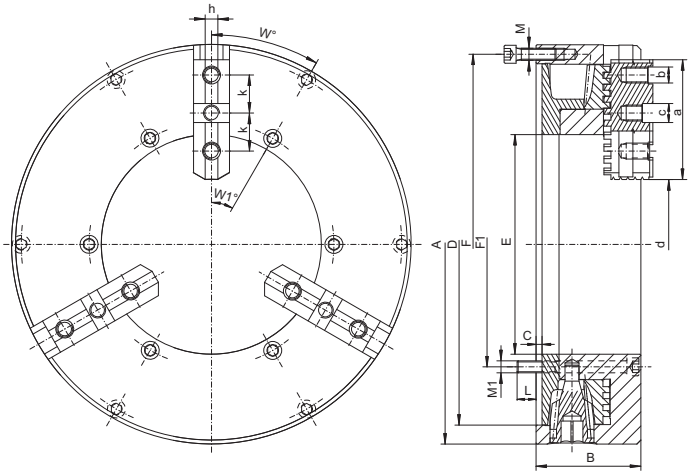


1 set of soft top jaws



1 set of hard top jaws

Specifications



Chuck Size	16"	20"	26"	32"
A	15.7480	20.000	25.9843	31.4961
B	4.1339	4.7244	5.3150	5.9449
C	0.2362	0.3150	0.5512	0.2756
D	14.2520	18.1890	22.8346	27.9528
E	8.6614	12.5984	15.9843	16.1417
F	15.0000	18.9567	24.4094	-
F1	-	-	-	18.1102
M	6xM12	6xM16	6xM16	-
M1	-	-	-	6xM24
W	30º	30º	30º	-
W1	-	-	-	30º
L	-	-	-	0.9843
a	4.7244	4.7244	5.000	8.8583
b	M16	M20	M20	M20
c	0.7496	0.7496	0.7496	0.7496
h	0.5000	0.5000	0.5000	0.5000
d min.	6.6142	9.8425	14.8031	10.2362
d max.	11.3386	14.9606	19.5669	22.2835
Max Speed rpm	500	350	250	200
Approx weight lbs	127	167	284	467

Oil Country Chucks

3 Jaw Steel Body Heavy Duty Large Through Hole Scroll Chucks

Features:

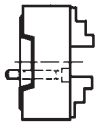
- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- Chucks may work individually or in pairs, mounted on opposite sides of the lathe spindle, ensuring the same vertical position of the jaws in both chucks
- Large through-hole compared to the outside diameter of the chuck body
- High gripping force and high machining accuracy
- Able to machine very long workpieces

Application:

- This precision chuck, with increased gripping accuracy, is designed for gripping long pipes during heavy duty machining for conventional and specialized machine-tools

4 Jaw Independent large through hole chucks also available see page: J53



Mounting 3515 HD Short Taper	Chuck Size	15-1/4"	15-1/4"	15-3/4"	20"	25"	25"	31-1/2"	31-1/2"
	**Hole Size**	4.00"	5.30"	5.00"	7.50"	10.75"	12.50"	10.75"	12.5"
	Weight lbs.	225	217	212	344	612	552	1,104	1,076
	A2-6	441-230							
	Price $	**13,940.20**							
	A2-8		441-232						
	Price $		**30,304.30**						
	A2-11			441-234	441-236				
	Price $			**13,940.20**	**19,903.20**				
	A2-15					441-238		441-242	
	Price $					**29,815.40**		**43,405.40**	
	A2-20						441-240		441-244
	Price $						**30,245.10**		**43,405.40**

Standard accessories



1 set of hard master jaws

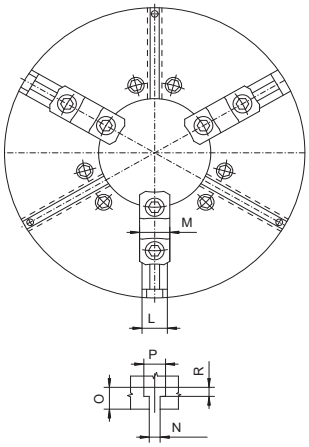


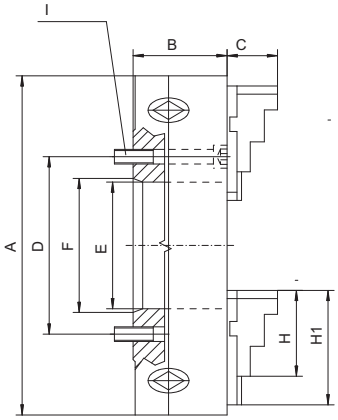
1 set of hard top jaws



1 wrench

Specifications





Chuck Size	15-1/4 A6	15-1/4 A8	15-3/4 A11	20" A11	25" A15	25" A20	31-1/2 A15	31-1/2 A20
A	15.7480	15.7480	15.7480	19.6850	24.8031	24.8031	31.4961	31.4961
B	4.3701	4.3701	4.3701	4.6850	5.6693	5.6693	5.9055	5.9055
C	3.4252	3.4252	3.4252	3.4252	3.6417	3.6417	3.6417	3.6417
D	4.4646	6.7480	6.5000	9.2520	13.0000	14.5000	13.0000	18.2480
E	4.0551	5.3543	5.1181	7.5591	10.8268	12.5984	10.8268	12.5984
F	4.1880	5.5007	7.7507	7.7507	11.2510	16.2510	11.2510	16.2510
H	5.3150	5.3150	5.3150	5.3150	5.3150	5.3150	5.3150	5.3150
H1	-	-	-	6.6535	8.2677	8.2677	8.8583	8.8583
I	6x1/2"-13x4-1/2"	6x5/8"-11x4-1/2"	6x3/4"-10x4"	6x3/4"-10x5"	6x7/8"-9x6"	6x1"-8x5"	6x7/8"-9x6"	6x1"-8x5"
L	1.9685	1.9685	1.9685	1.9685	2.7559	2.7559	2.7559	2.7559
M	2.1260	2.1260	2.1260	2.1260	2.9528	2.9528	2.9528	2.9528
N	0.5512x0.3937	0.5512x0.3937	0.5512x0.3937	0.5512x0.3937	0.661x0.3937	0.661x0.3937	0.661x0.3937	0.661x0.3937
O	0.8268	0.8268	0.8268	0.8268	1.2992	1.2992	1.2992	1.2992
P	0.9055	0.9055	0.9055	0.9055	1.4567	1.4567	1.4567	1.4567
R	0.3937	0.3937	0.3937	0.3937	0.6299	0.6299	0.6299	0.6299
Gripping Range	0.9843-15.7480	0.9843-15.7480	0.9843-15.7480	1.7717-19.6850	3.1496-24.8031	6.2992-24.8031	5.1181-31.4961	7.0866-31.4961
Gripping Force daN	6200	6200	6200	7700	8200	8200	9000	9000
Max. Speed	1400	1400	1400	1000	850	850	600	600
Approx Weight lbs	225	217	211	344	611	552	1,104	1,076

8210X Fully Machined A2 Mounts (Backplates)

8210X Fully Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on A spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
4”	A2-3	442-400	**278.90**
5”	A2-3	442-402	**303.00**
6”	A2-3	442-404	**386.30**
6”	A2-4	442-406	**386.30**
6”	A2-5	442-408	**386.30**
8”	A2-3	442-410	**409.00**
8”	A2-4	442-412	**409.00**
8”	A2-5	442-414	**360.70**
8”	A2-6	442-416	**409.00**
10”	A2-5	442-418	**508.60**
10”	A2-6	442-420	**508.60**
10”	A2-8	442-422	**508.60**
12”	A2-6	442-424	**753.20**
12”	A2-8	442-426	**753.20**
12”	A2-11	442-432	**753.20**
16”	A2-6	442-434	**1,522.60**
16”	A2-8	442-436	**1,522.60**
16”	A2-11	442-438	**1,522.60**
20”	A2-8	442-440	**2,185.50**
20”	A2-11	442-442	**2,185.50**
20”	A2-15	442-444	**2,655.30**
25”	A2-8	442-446	**3,212.50**
25”	A2-11	442-448	**3,212.50**
25”	A2-15	442-450	**2,990.50**

8240X Fully Machined Camlock Mounts (Backplates)

8240X Fully Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on Camlock spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
5”	D1-3	455-300	**365.50**
5”	D1-4	455-302	**365.50**
5”	D1-5	455-303	**365.50**
6”	D1-3	455-305	**432.90**
6”	D1-4	455-310	**432.90**
6”	D1-5	455-315	**432.90**
6”	D1-6	455-317	**432.90**
8”	D1-3	455-320	**492.20**
8”	D1-4	455-325	**492.20**
8”	D1-5	455-330	**492.20**
8”	D1-6	455-335	**492.20**
10”	D1-5	455-340	**619.30**
10”	D1-6	455-345	**638.80**
10”	D1-8	455-350	**638.80**
12”	D1-6	455-355	**817.50**
12”	D1-8	455-360	**951.50**
12”	D1-11	455-365	**881.70**
16”	D1-6	455-370	**1,170.70**
16”	D1-8	455-375	**1,365.60**
16”	D1-11	455-380	**1,504.50**
20”	D1-8	455-385	**1,947.10**
20”	D1-11	455-390	**2,212.90**
20”	D1-15	455-391	**2,212.90**
25”	D1-8	455-393	**2,914.50**
25”	D1-11	455-395	**3,084.10**
25”	D1-15	455-396	**2,972.70**

8230X Fully Machined DIN Mounts (Backplates)

8230X Fully Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on DIN spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
4”	Din-3	442-452	**237.30**
5”	Din-3	442-454	**260.70**
5”	Din-4	442-456	**260.70**
6”	Din-3	442-458	**327.00**
6”	Din-4	442-460	**327.00**
6”	Din-5	442-462	**327.00**
8”	Din-3	442-464	**381.30**
8”	Din-4	442-466	**381.30**
8”	Din-5	442-468	**381.30**
8”	Din-6	442-470	**381.30**
10”	Din-5	442-472	**491.10**
10”	Din-6	442-474	**491.10**
10”	Din-8	442-476	**491.10**
12”	Din-6	442-478	**615.40**
12”	Din-8	442-480	**749.40**
12”	Din-11	442-482	**615.40**
16”	Din-6	442-484	**1,146.70**
16”	Din-8	442-486	**1,146.70**
16”	Din-11	442-488	**1,146.70**
20”	Din-8	442-490	**2,068.40**
20”	Din-11	442-492	**2,068.40**
20”	Din-15	442-494	**2,068.40**
25”	Din-8	442-496	**2,861.10**
25”	Din-11	442-498	**2,861.10**
25”	Din-15	442-500	**2,861.10**

8250 Fully Machined L Mounts (Backplates)

8250 Fully Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on L-type spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
6”	L00	455-405	**325.90**
6”	L0	455-410	**325.90**
8”	L00	455-415	**349.60**
8”	L0	455-420	**350.90**
8”	L1	455-425	**382.10**
10”	L00	455-430	**444.80**
10”	L0	455-435	**444.80**
10”	L1	455-440	**476.90**
10”	L2	455-445	**490.10**
12”	L0	455-450	**671.80**
12”	L1	455-455	**671.80**
12”	L2	455-460	**798.60**
16”	L0	455-465	**1,022.20**
16”	L1	455-470	**1,026.40**
16”	L2	455-475	**1,084.00**
16”	L3	455-480	**1,151.20**
20”	L2	455-485	**1,965.80**
20”	L3	455-490	**2,017.00**

8212 Semi-Machined A Mounts (Backplates)

A-Mount Semi-Machined Adapters
For self-centering plain back chucks with spotted holes



Chuck Size	Spindle Nose	Code No.	Price $
5”	A-6	455-500	**251.70**
5”	A-8	455-502	**449.20**
6”	A-5	455-504	**271.90**
6”	A-6	455-505	**262.60**
8”	A-5	455-506	**321.10**
8”	A-6	455-508	**321.10**
10”	A-6	455-510	**419.10**
10”	A-8	455-512	**444.00**
12”	A-6	455-514	**558.80**
12”	A-8	455-516	**616.40**
16”	A-8	455-518	**940.10**
16”	A-11	455-520	**940.10**
20”	A-11	455-521	**1,445.30**
25”	A-11	455-522	**2,391.20**
25”	A-15	455-523	**2,717.70**
36”-49”	A-15	455-524	**3,543.30**
36”-49”	A-20	455-525	**3,648.50**

8232 Semi-Machined DIN Mounts (Backplates)

DIN-Mount Semi-Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on DIN spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
8”	DIN 6	455-600	**327.50**
10”	DIN 6	455-605	**491.80**
10”	DIN 8	455-610	**428.00**
12”	DIN 6	455-615	**554.00**
12”	DIN 8	455-620	**720.40**
12”	DIN 11	455-623	**674.70**
16”	DIN 8	455-625	**1,027.40**
16”	DIN 11	455-630	**1,087.50**
20”	DIN 11	455-635	**1,924.50**

8206 Semi-Machined Threaded Mounts (Backplates)

8206 Threaded Adapters
Semi-machined for self-centering plain back chucks



Chuck Size	Thread	Code No.	Price $
4”	1” - 10	455-205	**189.30**
4”	1-1/2” - 8	455-210	**189.30**
5”	1” - 10	455-215	**195.00**
5”	1-1/2” - 8	455-217	**195.00**
6”	1-1/2” - 8	455-225	**215.80**
6”	2-1/4” - 8	455-230	**215.80**
8”	1-1/2” - 8	455-235	**255.90**
8”	2-1/4” - 8	455-240	**255.90**
10”	2-1/4” - 8	455-245	**412.00**
10”	2-3/8” - 6	455-247	**412.00**
12”	2-3/8” - 6	455-250	**510.00**
12”	2-3/4” - 8	455-255	**338.80**

8242 Semi-Machined Camlock Mounts (Backplates)

Camlock Mount
Semi-Machined Adapters
For plain back, self-centering chucks–designed for direct mounting on Camlock spindle noses.



Chuck Size	Spindle Nose	Code No.	Price $
4”	D1-3	442-502	**320.00**
5”	D1-3	442-504	**314.30**
5”	D1-4	442-506	**314.30**
6”	D1-3	442-508	**371.80**
6”	D1-4	442-510	**371.80**
6”	D1-5	442-512	**371.80**
8”	D1-4	442-514	**446.10**
8”	D1-5	442-516	**493.80**
8”	D1-6	442-518	**446.10**
10”	D1-5	442-520	**588.50**
10”	D1-6	442-522	**543.00**
10”	D1-8	442-524	**543.00**
12”	D1-6	442-526	**794.20**
12”	D1-8	442-528	**794.20**
12”	D1-11	442-530	**794.20**
16”	D1-8	442-532	**1,173.90**
16”	D1-11	442-534	**1,173.90**
20”	D1-8	442-536	**1,678.20**
20”	D1-11	442-538	**1,896.30**
25”	D1-11	442-540	**2,708.90**
25”	D1-15	442-542	**2,953.20**
32”	D1-11	442-544	**RFQ**
32”	D1-15	442-546	**RFQ**

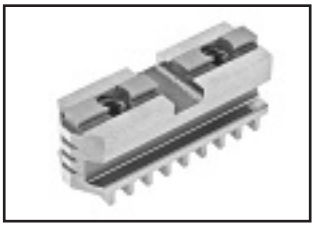
8205 Rough Casting Mounts (Backplates)

8205 Rough Casting Adapters
For self-centering/plain back chucks

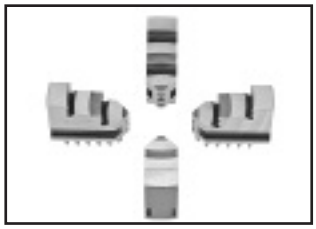


Chuck Size	Code No.	Price $
6”	455-105	**194.10**
8”	455-110	**225.70**
10”	455-115	**397.90**
12”	455-120	**545.90**
16”	455-125	**1,032.50**
20”	455-130	**2,244.70**
25”	455-135	**4,417.10**

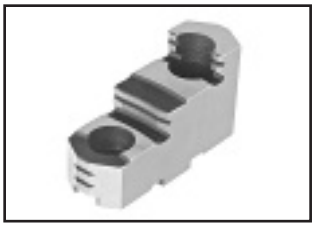
Replacement Jaws For Self-Centering Chucks



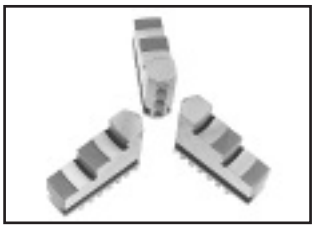
Hard Master Jaws



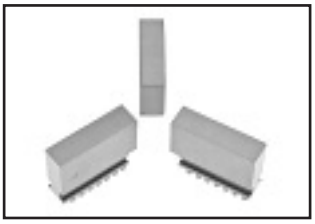
Hard Solid O.D.



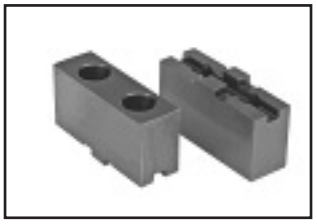
Hard Top Jaws



Hard Solid I.D.



Soft Solid Jaws



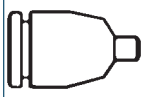
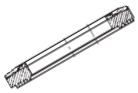
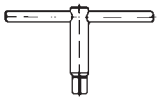
Soft Top Jaws

Parts	For Chuck Series	Qty. per set	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"
HARD SOLID O.D. JAWS													
	3200	3	467-700	467-705	467-710	467-715	467-720	467-725	467-730	467-735	467-740	467-745	
		Price $	**178.80**	**205.30**	**215.20**	**246.60**	**262.40**	**325.30**	**534.50**	**657.70**	**1,608.90**	**1,931.30**	
	3600	4			467-900	467-902	467-904	467-906	467-908	467-910	467-912	467-914	
	& 3700	**Price $**			**340.60**	**389.40**	**415.20**	**513.30**	**842.60**	**933.60**	**2,202.90**	**2,643.20**	
	3800	6			467-915	467-916	467-918	467-920	467-922	467-923			
Sold in Sets		**Price $**			**559.50**	**583.60**	**670.40**	**758.50**	**1,205.10**	**1,546.00**			
HARD SOLID I.D. JAWS													
	3200	3	467-600	467-605	467-610	467-615	467-620	467-625	467-630	467-635	467-640	467-645	467-647
		Price $	**178.80**	**205.30**	**215.20**	**246.60**	**262.40**	**325.30**	**534.50**	**657.70**	**1,608.90**	**1,931.30**	**1,982.80**
	3600	4			467-924	467-926	467-928	467-930	467-932	467-934	467-936	467-938	
	& 3700	**Price $**			**340.60**	**389.40**	**415.20**	**513.30**	**842.60**	**933.60**	**2,145.80**	**2,574.50**	
	3800	6			467-939	467-940	467-942	467-944	467-946	467-947			
Sold in Sets		**Price $**			**614.80**	**583.60**	**677.90**	**737.50**	**1,205.10**	**1,589.80**			
SOFT SOLID JAWS													
	3200	3	467-749	467-750	467-755	467-760	467-765	467-770	467-775	467-780	467-785	467-790	
	& 3500	**Price $**	**150.80**	**155.90**	**149.50**	**167.70**	**206.90**	**243.50**	**388.80**	**458.90**	**899.70**	**1,183.50**	
	3600	4			467-948	467-950	467-952	467-954	467-956	467-958	467-960		
	& 3700	**Price $**			**232.60**	**273.40**	**308.40**	**385.60**	**651.40**	**737.90**	**1,502.00**		
Sold in Sets													
HARD TOP JAW													
	3200	3			460-705	460-710	460-715	460-720	460-725	460-730	460-735	460-740	460-745
	& 3500	**Price $**			**314.30**	**385.60**	**388.80**	**455.10**	**559.10**	**763.10**	**1,220.30**	**1,516.30**	**1,516.30**
	3600	4			460-805	460-810	460-815	460-820	460-825	460-830	460-835	460-840	
	& 3700	**Price $**			**551.10**	**512.90**	**610.10**	**637.20**	**783.30**	**1,068.00**	**1,709.10**	**2,122.90**	
	3800	6			460-908	460-910	460-915	460-920	460-925	460-926	460-927	460-928	
Sold in Sets		**Price $**			**687.20**	**756.70**	**917.10**	**1,077.60**	**1,324.60**	**1,907.40**	**3,601.40**	**3,879.10**	
SOFT TOP JAWS													
	3100	1				460-930	460-935		460-945•	460-950•			
		Price $				**83.90**	**70.90**		**145.10**	**179.90**			
	3200	1			465-105	465-110	465-115	465-120	465-125	465-130	465-135	465-140	465-145
	& 3500	**Price $**			**46.90**	**57.10**	**62.00**	**75.00**	**96.60**	**131.10**	**223.70**	**319.90**	**1,106.30**
	3600	1						465-156		465-160			
Sold Per Piece	& 3700	**Price $**						**75.00**		**131.10**			
HARD MASTER JAWS													
	3100	2				465-170	465-175	465-180	465-185	465-190			
		Price $				**190.70**	**225.00**	**273.40**	**409.50**	**403.00**			
	3200	3			467-355	467-360	467-365	467-370	467-375	467-380	467-385	467-390	467-395
	& 3500	**Price $**			**254.30**	**240.30**	**281.40**	**335.30**	**505.90**	**603.90**	**1,192.10**	**1,544.80**	**2,084.80**
	3600	4			467-405	467-410	467-415	467-420	467-425	467-430	467-435	467-440	
	& 3700	**Price $**			**372.70**	**406.60**	**437.90**	**527.50**	**797.00**	**1,005.40**	**1,978.40**	**2,424.70**	
	3800	6			467-505	467-510	467-515	467-520	467-525	460-527	460-529	460-530	
Sold in Sets		**Price $**			**700.10**	**543.50**	**662.30**	**793.20**	**1,141.00**	**1,538.60**	**2,955.00**	**3,849.60**	

• Only available while quantities last

Spare Parts For Self-Centering Chucks




Parts	For Chuck Series	Qty. per set	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"
PINION													
	3200	1	467-300	467-305	467-310	467-315	467-320	467-325	467-330	467-335	467-340	467-345	467-346
	& 3600	**Price $**	**40.10**	**72.50**	**67.60**	**71.30**	**86.70**	**105.20**	**127.20**	**179.20**	**520.60**	**623.80**	**909.90**
	3500	1			467-799	467-800	467-805	467-810	467-815	467-820	467-821	467-822	
	& 3700	**Price $**			**71.30**	**75.40**	**90.30**	**108.90**	**135.40**	**183.40**	**536.70**	**643.90**	
SCROLL PLATE													
	3200	1	467-104	467-105	467-110	467-115	467-120	467-125	467-130	467-135	467-140	467-145	467-146
	& 3600	**Price $**	**215.80**	**254.30**	**299.80**	**355.90**	**434.20**	**587.50**	**778.40**	**1,907.40**	**4,112.10**	**5,876.50**	**6,162.60**
	3500	1			467-829	467-830	467-835	467-840	467-845	467-850			
	& 3865 & 3700	**Price $**			**325.30**	**389.40**	**475.70**	**647.70**	**853.50**	**2,098.10**			
WRENCH													
	3200	1	460-400	460-405	460-405	460-415	460-415	460-425	460-425	460-435	460-440	460-440	460-445
	& 3700	**Price $**	**60.00**	**76.00**	**76.00**	**80.30**	**80.30**	**100.40**	**100.40**	**144.60**	**221.40**	**221.40**	**280.20**
	Square Sizes		.2344"	.3543"	.3543"	.4331"	.4331"	.5512"	.5512"	.6693"	.7480"	.7480"	.7480"

Camlock Studs & Screws

Size	Diameter	Thread	No. of Studs	Code No.	Price $	Camlock Stud Locking Screw	Code No.	Price $
D1-3	9⁄16	M10 x 1	3	467-230	**48.80**	3	467-242	**29.20**
D1-4	5⁄8	M10 x 1	3	467-232	**48.80**	3	467-244	**29.20**
D1-5	3⁄4	M12 x 1	6	467-234	**52.70**	6	467-246	**29.20**
D1-6	7⁄8	M16 x 1.5	6	467-236	**60.30**	6	467-248	**29.20**
D1-8	1	M20 x 1.5	6	467-238	**71.30**	6	467-250	**29.20**
D1-11	1-3⁄16	M22 x 1.5	6	467-240	**108.90**	6	467-252	**29.20**



Jaw Mounting Screws

Chuck Size	Screw 1	Code No.	Price $	Screw 2	Code No.	Price $
5	5⁄16 - 18 x 3⁄4	467-254	**26.20**	5⁄16 - 18 x 1	467-266	**26.30**
6 & 8	3⁄8 - 16 x 3⁄4	467-256	**26.40**	3⁄8 - 16 x 1-1⁄4	467-268	**27.50**
10 & 12	1⁄2 - 13 x 1	467-260	**29.50**	1⁄2 - 13 x 1-1⁄2	467-272	**29.60**
16	5⁄8 - 11 x 1-1⁄4	467-262	**79.50**	5⁄8 - 11 x 1-3⁄4	467-274	**37.50**
20	3⁄4 - 10 x 1-1⁄2	467-264	**90.00**	3⁄4 - 10 x 3	467-276	**109.80**
25	3⁄4 -10 x 1-1⁄2	467-264	**90.00**	3⁄4 - 10 x 3-1⁄4	467-271	**115.30**
32	3⁄4 - 10 x 1-3⁄4	467-273	**96.80**	3⁄4 - 10 x 3	467-278	**109.80**



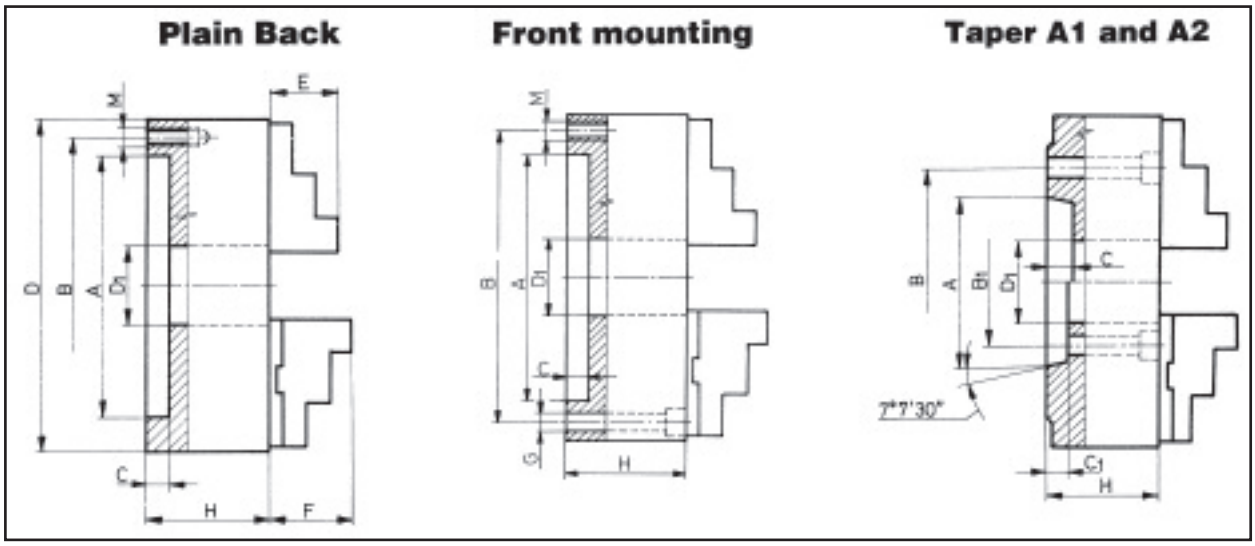
DIN Studs

Size	Code No.	Price $
Din 6	467-280	**33.00**
Din 8	467-282	**37.30**
Din 11	467-284	**51.10**



Specifications For Scroll Chucks

UNIVERSAL AND PRECISION CHUCKS – SERIES 3200, 3500 & 3600



MAIN DIMENSIONS

Plain back (two-piece or solid jaws)

Size of Chuck	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"
D	3-1⁄4	4	5	6-1⁄4	8	10	12-1⁄2	15-3⁄4	20	25
A	2.2047	2.7559	3.7402	4.9213	6.2992	7.8740	10.2362	12.9921	16.5354	21.4567
B	2.6378	3.2677	4.2520	5.5118	6.9291	8.8189	11.2598	14.2519	18.0314	23.0709
C	0.1181	0.1181	9.1575	0.1575	0.1575	0.1969	0.1969	0.1969	0.1969	0.2756
D1	0.6299	0.7874	1.2598	1.6535	2.1654	2.9921	4.0551	5.3543	7.4803	9.9212
E	.5118	.6693	.7874	1.2598	1.1417	1.3386	1.6929	2.1654	2.3622	2.7559
F	—	—	1.5748	1.6929	1.7716	2.0866	2.2441	2.6378	3.1496	3.4252
H 3500	1.7322	1.9685	2.4221	2.7559	3.1496	3.5433	3.9370	4.3307	—	—
H 3200	1.7323	1.9685	2.2047	2.5591	2.9528	3.3465	3.7008	4.1339	4.7244	5.3150
H 3600	1.7323	1.9685	2.2047	2.5591	2.9528	3.3465	3.7008	4.1339	4.7244	5.3150
M	3xM6	3xM8	3xM8	6xM10	6xM10	6xM12	6xM16	6xM16	6xM16	6xM16

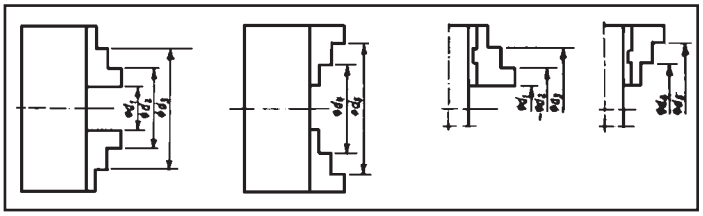
A-Type Mounting, ASA Standard B5.9

Chuck Size	6"	8"		10"			12"		16"			20"		25"	
D	6-1⁄2	8		10			12-1⁄2		15-3⁄4			20		25	
Taper Acc. to ASA	5	5	6	5	6	8	6	8	6	8	11	8	11	11	15
A	3.2505	3.2505	4.1880	3.2505	4.1880	5.5007	4.1880	5.5007	4.1880	5.5007	7.7507	5.5007	7.7507	7.7507	11.2509
B	—	—	—	4.1260	—	—	5.2520	—	5.2520	6.7480	—	6.7480	9.2520	—	—
B1	2-7⁄16	2-7⁄16	3 1⁄4	—	3-1⁄4	4-3⁄8	—	4-3⁄8	—	—	6-1⁄2	—	—	6-1⁄2	9-3⁄4
C	—	—	—	.5629	—	—	.6299	—	.6299	.7087	—	.7087	.7874	—	—
C1	9⁄16	9⁄16	5⁄8	—	5⁄8	11⁄16	—	11⁄16	—	—	3⁄4	—	—	3⁄4	13⁄16
D1	1.6535	1.6535	2.16535	2.9921	2.16535	2.9921	4.0551	3.1496	4.0551	5.3543	5.1181	5.3543	7.5905	5.1181	7.5905
H 3500	2.6881	3.0709		3.5309			3.7874		4.2520			—		—	
H 3200	3.2087	3.5827		4.0748			4.6338		5.0591			5.7480		6.4960	
H 3600	3.2087	3.5827		4.0748			4.6338		5.0591			5.7480		6.4960	

Technical Data For Self-Centering Scroll Chucks

SELF-CENTERING SCROLL CHUCKS

Clamping Ranges (Inches)



Chuck Size		Jaws									
		D1		D2		D3 Max.		D4 Max.		D5 Max	
mm	Inch	Solid	Reversible	Solid	Reversible	Solid	Reversible	Solid	Reversible	Solid	Reversible
80	3	.08-1.06	—	.87-1.81	—	1.77-2.72	—	.98-1.97	—	1.89-2.80	—
100	4	.12-1.30	—	.98-2.20	—	2.20-3.43	—	1.26-2.44	—	2.44-3.66	—
125	5	.12-1.97	.12-1.97	1.34-2.91	1.34-2.99	2.83-4.53	2.95-4.65	1.50-3.27	2.05-3.78	3.15-4.92	3.74-4.92
160	6	.12-2.52	.12-2.52	1.65-3.94	1.65-3.82	3.70-6.06	3.46-5.75	1.97-4.21	2.44-4.76	3.86-6.30	4.53-6.30
200	8	.16-3.54	.16-3.54	2.05-5.31	1.97-5.12	4.72-7.95	4.13-7.48	2.36-5.71	2.83-6.14	5.12-7.87	5.24-7.87
250	10	.20-4.65	.20-4.65	2.44-6.85	2.28-6.30	5.70-10.43	4.92-9.25	3.03-7.40	3.38-7.75	6.30-9.84	6.30-9.84
315	12	.20-5.16	.20-5.16	3.07-7.87	2.56-7.16	6.77-11.77	5.70-10.43	3.54-8.46	4.06-8.90	7.48-12.40	7.48-12.40
400	16	.39-7.09	.39-7.09	3.38-9.92	2.83-8.98	8.27-14.96	5.50-12.95	4.05-10.71	5.00-11.57	9.05-15.75	9.05-15.75
500	20	.79-9.25	0.79-9.25	4.72-13.19	4.72-16.14	18.74	7.87-19.10	14.76	4.33-15.75	19.69	7.48-19.69
630	25	1.18-13.19	1.18-13.19	6.30-18.31	5.51-23.23	24.80	8.27-26.20	19.17	4.72-22.44	24.80	7.88-24.80
800	32	3.54-12.00	3.46-15.59	11.50-26.77	7.87-25.75	18.03-31.50	10.79-28.74	10.79-21.02	7.09-25.12	17.32-27.56	10"-31"

Gripping Power of the Self-Centering Chucks (lbs)

Size of Chuck (in.)	3	4	5	6	8	10	12	16	20	25	32
Universal Chucks (Semi-steel body)	2200	3750	5300	6800	8200	10000	12000	14300	16000	17600	19800
Precision Chucks (Steel body)	2200	3750	5300	6800	8200	10000	12000	14300			

Recommended Max. Speeds for Self-Centering Chucks (RPM)

Size of Chuck (in.)	3	4	5	6	8	10	12	16	20	25	32
Universal Chucks (Semi-steel body)	4000	3500	3200	3000	2500	2000	1500	1000	700	500	350
Precision Chucks (Steel body)	6000	5200	4800	4500	4000	3500	2800	2000			

Value of Balancing–for Precision Self-Centering Chucks Only

Size of Chuck (in.)	3	4	5	6	8	10	12	16			
Balancing (ounce-inch)	.15	.22	.32	.44	.62	.87	1.25	1.94			

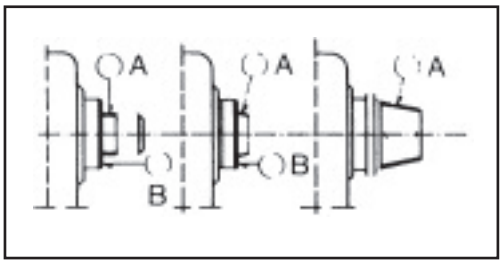
SELF-CENTERING SCROLL CHUCKS

Spindle Runout

To obtain the specified centering accuracy of a chuck mounted on a machine tool it is necessary:

- to reduce play in the spindle bearings to the allowable minimum;
- to ensure the machine spindle nose runout not to exceed the values specified
- to meet the basic requirements for correct mounting of chuck on the spindle nose, according to the chuck installation instruction

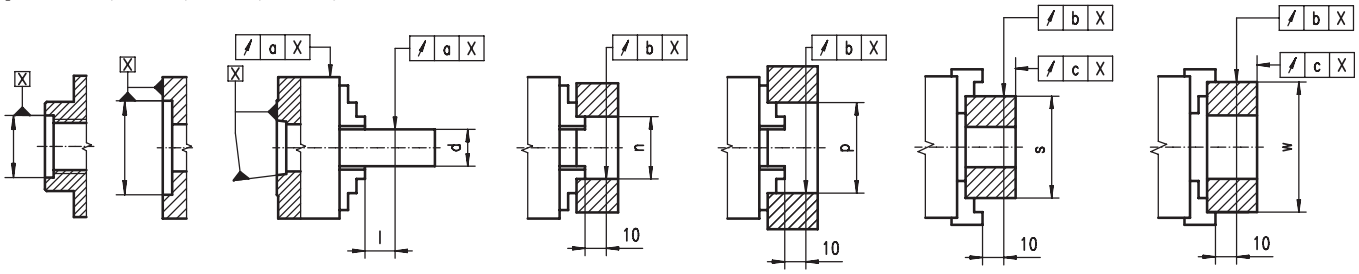
Runouts on Universal and Precision Chucks			
Size of Chuck	Radial Runout A	Radial Runout B	Axial Runout C
3	.0008	.0010	.0006
4	.0008	.0010	.0006
5	.0012	.0014	.0008
6	.0012	.0014	.0008
8	.0016	.0018	.0010
10	.0016	.0018	.0010
12	.0020	.0022	.0012
16	.0024	.0025	.0012
20	.0040	.0040	.0020
25	.0040	.0040	.0020
32	.0059	.0059	.0024



Radial Runout A	Radial Runout B
.0002	.00012

Centering Accuracy For Self-Centering Scroll Chucks

Type: 3200, 3500, 3600, 3700, 3800

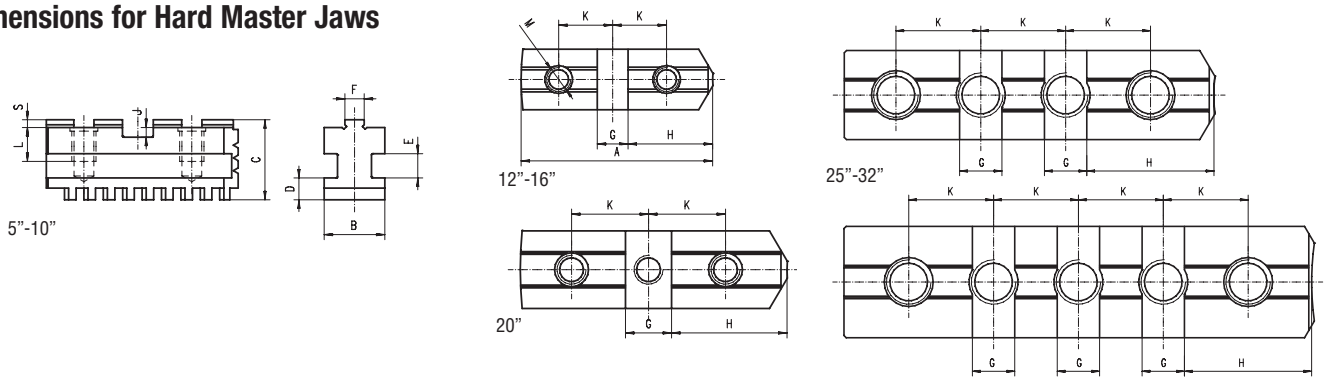


Chuck Size	3-1/2"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
d (in)	0.3937	0.3937	0.7087	0.7087	1.1811	1.1811	2.0866	2.0866	2.9528	2.9528	6.2992	9.8425	9.8425
d (in)	-	0.5512	0.9843	1.1811	1.5748	2.0866	2.9528	3.9370	3.9370	4.9213	7.8740	12.4016	12.4016
d (in)	0.5512	0.7087	1.1811	1.5748	2.0866	2.9528	3.9370	4.9213	4.9213	6.2992	9.8425	15.7480	15.7480
l (in)	1.5748	1.5748	2.3622	2.3622	3.1496	3.1496	4.7244	4.7244	6.2992	6.2992	6.2992	6.2992	6.2992
n (in)	1.5748	1.5748	1.9685	1.9685	3.1496	3.1496	4.9213	4.9213	7.8740	7.8740	12.7953	19.6850	19.6850
p (in)	2.3622	2.9528	3.9370	5.3150	6.3780	7.8740	9.9213	11.1024	11.1024	12.7953	19.6850	24.8031	24.8031
s (in)	1.3780	1.9685	2.4409	3.4646	3.7795	5.9055	8.2677	9.8425	11.8110	15.7480	15.7480	19.6850	19.6850
w - Hard Solid Jaws (in)	2.4803	3.1496	3.9370	3.9370	6.2992	6.2992	9.8425	9.8425	15.7480	15.7480	19.6850	-	-
w - Hard 2 pc Jaws (in)	-	-	4.7244	5.9055	7.2835	8.8583	11.8110	13.7795	15.7480	15.7480	19.6850	24.8031	24.8031

Chuck Type		Centering Accuracy (in)										
High Precision Series												
3500-I	a	0.0004	0.0006	0.0008	0.0010	0.0012	0.0020	0.0028				
3500-I	b	0.0005	0.0007	0.0009	0.0011	0.0013	0.0022	0.0030				
3500-I	c	0.0003	0.0004	0.0005	0.0006	0.0006	0.0012	0.0020				
Fine Adjustment & Steel Body Chucks												
3500	a	0.0008	0.0012	0.0016	0.0020	0.0024	0.0039	0.0039				
3700	b	0.0010	0.0014	0.0018	0.0022	0.0026	0.0039	0.0039				
3800	c	0.0006	0.0008	0.0010	0.0012	0.0012	0.0020	0.0020				
Cast Iron Body Chucks												
3200	a	0.0008	0.0012	0.0016	0.0020	0.0024	0.0039	0.0039	0.0059	0.0059	0.0059	
3600	b	0.0010	0.0014	0.0018	0.0022	0.0026	0.0039	0.0039	0.0059	0.0059	0.0059	
	c	0.0006	0.0008	0.0010	0.0012	0.0012	0.0020	0.0020	0.0024	0.0024	0.0024	
3284	a	0.0020			0.0031							
3285	b	0.0030			0.0030							
	c	0.0016			0.0028							

Specifications For Scroll Chuck Jaws

Dimensions for Hard Master Jaws

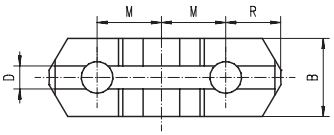


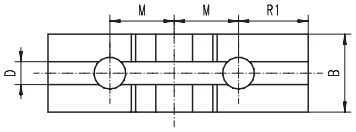
Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
A	2.1260	2.5591	3.1102	3.6220	4.3307	5.1181	6.5354	8.2677	8.8583	11.1417	12.9134
B	0.7874	0.7874	0.9843	1.1024	1.2598	1.4173	1.5748	1.9685	1.9685	2.7559	2.7559
C	1.1024	1.1417	1.2992	1.4173	1.5748	1.9291	2.1260	2.1457	2.1457	2.5197	2.5197
D	0.3150	0.3150	0.3543	0.4331	0.5000	0.5906	0.6299	0.6299	0.6299	0.8661	0.8661
E	0.3150	0.3150	0.3937	0.4724	0.4724	0.5512	0.5512	0.5512	0.5512	0.7874	0.7874
F - 0.03	0.3126	0.3126	0.3126	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
G + 0.01	0.4996	0.4996	0.4996	0.7496	0.7638	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496
H	0.8898	1.1260	1.3740	1.5630	1.8740	2.2480	2.2480	2.2480	2.2480	2.2480	2.2480
J	0.1575	0.1575	0.1575	0.1575	0.1575	0.2835	0.2835	0.2835	0.2835	0.2835	0.2835
K	0.6299	0.7500	0.8760	1.0630	1.2500	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
L	0.5315	0.5512	0.5512	0.6299	0.6299	0.8661	1.2795	1.2795	1.2795	1.4173	1.4173
M	M8 / M6*	M10 / M8*	M10 / M8*	M12	M12	M16	M20	M20	M20	M22	M22
S	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260	0.1260
Approx. weight (lbs)	.220	.396	.660	1.06	1.69	2.42	4.80	7.35	7.48	14.63	16.94

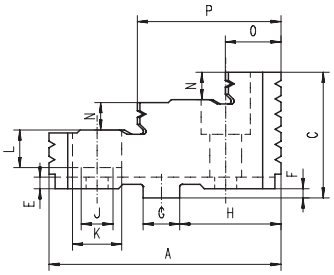
* for 3865

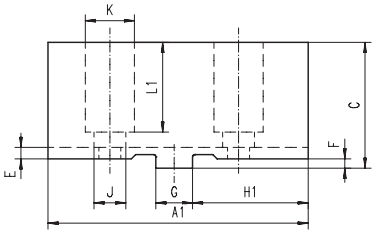
Specifications For Scroll Chuck Jaws

Dimensions for Hard Top Jaws and Soft Top Jaws





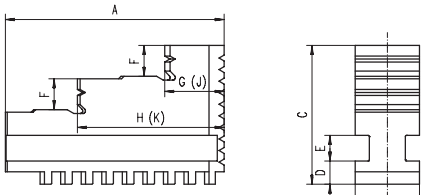


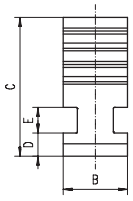


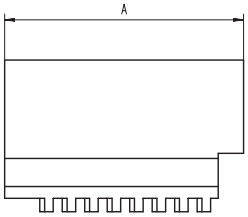
Chuck Size	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"
A	2.2047	2.6378	3.1496	3.7402	4.3307	5.000	5.000	5.000	5.000	6.8898	6.8898
A1	2.5197	3.0709	3.5433	4.1732	4.7244	5.5118	5.5118	6.2992	6.2992	7.4803	7.4803
B	0.8661	0.9843	1.0630	1.2795	1.4567	1.6535	1.6535	2.0472	2.0472	2.9528	2.9528
B 3100	-	1.5748	1.5748	1.8504	2.0472	2.0472	-	-	-	-	-
C	1.5157	1.6339	1.6339*/1.7126	2.0276	2.1654	2.5394	2.9331	3.2283	3.2283	3.8189	3.8189
D	0.3130	0.3130	0.3130	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004
E	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1772	0.1772
F	0.1260	0.1260	0.1260	0.1260	0.1260	0.2480	0.2480	0.2480	0.2480	0.2480	0.2480
G	0.4996	0.4996	0.4996	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496
H	0.8898	1.1260	1.3740	1.5630	1.8740	2.2480	2.2480	2.2480	2.2480	3.7480	3.7480
H1	0.9843	1.3386	1.5748	1.7717	2.0866	2.4803	2.4803	2.4803	2.4803	4.1339	4.1339
J	0.3543/0.2598**	0.4331/0.3543**	0.4331/0.3543**	0.5512	0.5512	0.7087	0.8661	0.8661	0.8661	0.9449	0.9449
K	0.5906/0.4331**	0.7087/0.5512**	0.7087/0.5512**	0.7874	0.7874	1.0236	1.2992	1.2992	1.2992	1.3780	1.3780
L	0.3937	0.4724	0.4724	0.5709	0.5709	0.7283	0.8268	0.8268	0.8268	0.9055	0.9055
L1	1.0236	1.1417	1.2205	1.4961	1.5748	1.7913	2.2047	2.5197	2.5197	3.0709	3.0709
M	0.6299	0.7500	0.8760	1.0630	1.2500	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
N	0.3150	0.3346	0.3740	0.4724	0.5118	0.5315	0.6693	0.8268	0.8268	1.1024	1.1024
O	0.5709	0.7087	0.8465	0.9646	1.0433	1.0630	1.9685	2.0079	2.0079	1.8898	1.8898
P	1.3780	1.6339	2.0079	2.3228	2.3772	3.0118	3.4646	3.5039	3.5039	4.8819	4.8819
R	0.5118	0.6299	0.7480	0.8661	1.3937	1.1220	1.1220	1.1220	1.1220	2.6378	2.6378
R1	0.5906	0.8268	0.9449	1.0827	1.2087	1.3543	1.3543	1.3543	1.3543	3.0118	3.0118
Approx Hard Jaws	.3740	.5720	.7920	1.364	1.98	2.97	3.41	4.93	4.93	12.10	12.10
weight lbs Soft Jaws	.6600	1.012	1.430	2.530	3.52	4.84	5.28	9.24	9.24	-	-

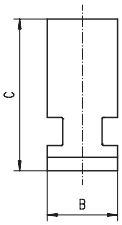
* for 3100 ** for 3865

Dimensions for Hard Solid and Soft Solid Jaws









Chuck Size	3"	4"	5"	6"	8"	10"	12"	16"	20"	25"	32"
A	1.2598	1.6535	2.0079	2.7559	3.3465	4.1339	4.9213	5.7087	7.0866	8.8583	8.8583
B	0.4331	0.5906	0.7874	0.7874	0.9843	1.1024	1.2598	1.4173	1.5748	1.9685	1.9685
C	1.1024	1.2598	1.5748	2.0866	2.1260	2.4803	2.8740	3.6220	3.9370	4.3307	4.3307
D	0.2362	0.2362	0.3150	0.3150	0.3543	0.4331	0.5000	0.5906	0.6299	0.6299	0.6299
E	0.2362	0.2362	0.3150	0.3150	0.3937	0.4724	0.4724	0.5512	0.5512	0.5512	0.5512
F	0.2362	0.2756	0.3150	0.3937	0.4724	0.5512	0.7087	0.8661	1.0236	1.1024	1.1024
G	0.3740	0.4331	0.5118	0.7480	0.9055	1.1024	1.3583	1.4173	1.9685	2.5984	2.5984
H	0.8268	1.0630	1.3189	1.7717	2.2441	2.7362	3.2677	3.8976	4.7047	5.8661	5.8661
J	0.3740	0.4724	0.5118	0.8661	0.9055	1.1024	1.3583	1.4173	1.9685	2.5984	2.5984
K	0.8268	1.0827	1.3189	1.8701	2.2441	2.7362	3.2677	3.8976	4.7047	5.8661	5.8661
Approx. weight (lbs)											
Hard Jaws	.066	.198	.396	.792	1.10	1.76	2.90	5.17	7.39	12.76	12.76
Soft Jaws	.154	.286	.572	1.10	1.76	2.99	4.18	5.41	11.00	18.39	18.39

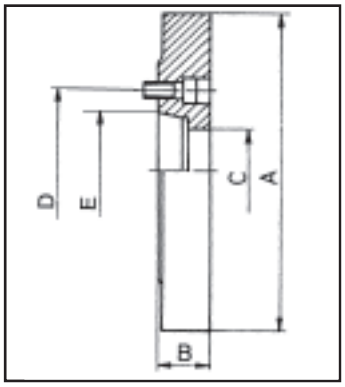
Specifications For Chuck Adapters

CAST-IRON ADAPTERS (BACK PLATES)

For Plain Back Lathe Chucks

8212 A Mount

Chuck Size (in.)	Taper Size	A	B	C	D	E	Weight lbs.
5	A-6	5.00	1.02	2.13	5.25	4.19	6.5
5	A-8	5.00	1.81	3.15	6.75	5.50	3.3
6	A-5	6.40	1.00	3.13	4.125	3.25	6.5
8	A-5	7.99	1.50	2.17	4.125	3.25	19.0
8	A-6	7.99	1.30	2.17	5.25	4.19	15.5
10	A-6	9.96	1.97	3.17	5.25	4.19	38.0
10	A-8	9.96	1.81	3.17	6.75	5.50	33.0
12	A-6	12.52	1.30	4.06	5.25	4.19	45.0
12	A-8	12.52	2.17	4.06	6.75	5.50	61.7
16	A-8	15.94	1.70	5.36	6.75	5.50	85.0
16	A-11	15.94	2.95	5.36	9.25	7.75	140.9
20	A-11	19.88	1.77	7.59	9.25	7.75	133.0
25	A-11	25.00	1.77	7.59	9.25	7.75	223.0



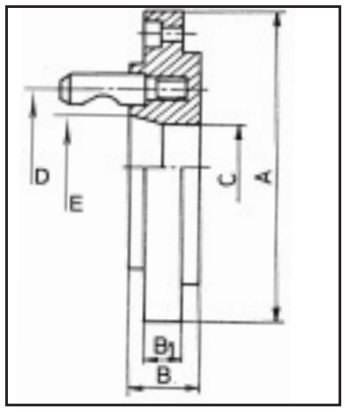
Semi-machined Adapters
For plain back chucks, with spotted holes for A1 and A2 spindle noses.

8207 A2 Mount

Chuck Size (in.)	Taper Size	A	B	C	Weight lbs.
36, 40, 49	A2-15	21.85	2.76	7.48	242.0
36, 40, 49	A2-20	21.85	3.15	7.48	249.0

8240

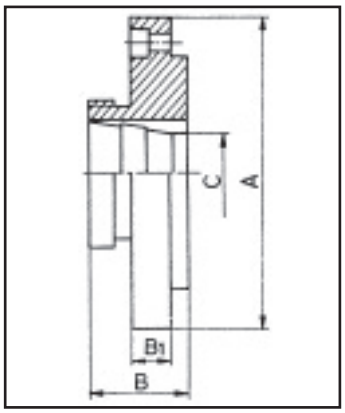
Chuck Size (in.)	Taper Size	A	B	B1	C	D	E	Weight lbs.
5	D-3	4.94	1.02	.57	2.02	2.78	2.13	5.3
5	D-4	4.94	1.02	.87	2.40	3.25	2.50	5.3
6	D-3	6.32	1.06	.71	2.02	2.78	2.13	9.5
6	D-4	6.32	1.06	.71	2.40	3.25	2.50	9.5
6	D-5	6.32	1.18	1.0	3.13	4.13	3.25	9.5
8	D-3	7.89	1.06	.71	2.02	2.78	2.13	15.4
8	D-4	7.98	1.06	.71	2.40	3.25	2.50	15.4
8	D-5	7.98	1.18	.71	3.13	4.13	3.25	15.4
8	D-6	7.89	1.44	1.26	4.06	5.25	4.19	15.4
10	D-5	9.86	1.18	.87	3.13	4.13	3.25	24.3
10	D-6	9.86	1.44	.87	4.06	5.25	4.19	24.3
10	D-8	9.86	1.54	1.36	5.35	6.75	5.50	39.7
12	D-6	12.42	1.56	.94	4.06	5.25	4.19	39.7
12	D-8	12.42	1.65	.94	5.35	6.75	5.50	39.7
12	D-11	12.42	1.85	1.63	7.59	9.25	7.75	39.7
16	D-6	15.77	1.44	1.10	4.06	5.25	4.19	79.0
16	D-8	15.77	1.54	1.10	5.35	6.75	5.50	79.0
16	D-11	15.77	1.85	1.10	7.59	9.25	7.75	79.0
20	D-8	19.70	1.54	1.14	5.35	6.75	5.50	132.0
20	D-11	19.70	1.85	1.14	7.59	9.25	7.75	132.0
25	D-8	24.82	1.54	1.14	5.35	9.25	7.75	232.0
25	D-11	24.82	1.85	1.14	7.59	13.0	11.25	232.0



Fully-machined Adapters
For plain back, self-centering chucks – designed for direct mounting on camlock spindle noses.

8250

Chuck Size (in.)	Taper Size	Thread	A	B	B1	C	Weight lbs.
6	L00	3-3/4"-6	6.32	2.13	2.20	0.71	13.0
6	L0	4-1/2"-6	6.32	2.52	2.60	.071	13.0
8	L00	3-3/4"-6	7.91	2.13	2.20	0.71	22.0
8	L0	4-1/2"-6	7.91	2.52	2.60	0.71	22.0
8	L1	6"-6	7.91	2.99	3.35	0.71	22.0
10	L00	3-3/4"-6	9.88	2.13	2.20	0.83	33.0
10	L0	4-1/2"-6	9.88	2.52	2.60	0.83	33.0
10	L1	6"-6	9.88	2.99	3.35	0.83	33.0
10	L2	7-3/4"-5	9.88	3.50	4.29	0.83	33.0
12	L0	4-1/2"-6	12.44	2.52	2.60	1.10	57.0
12	L1	6"-6	12.44	2.99	3.35	1.10	57.0
12	L2	7-3/4"-5	12.44	3.50	4.29	1.10	57.0
16	L0	4-1/2"-6	15.83	2.52	2.60	1.10	95.0
16	L1	6"-6	15.83	2.99	3.35	1.10	95.0
16	L2	7-3/4"-5	15.83	3.50	4.29	1.10	95.0
16	L3	10-3/8"-4	15.83	4.02	5.43	1.10	95.0
20	L2	7-3/4"-5	19.76	3.50	4.29	1.14	159.0
20	L3	10-3/8"-4	19.76	4.02	5.43	1.14	159.0

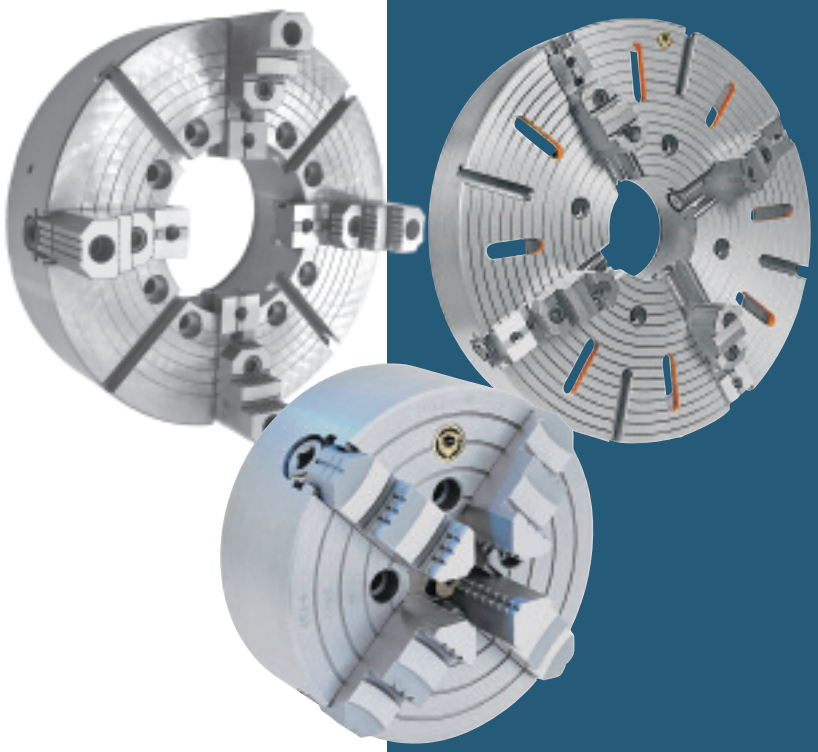


Fully-machined Adapters
For plain back, self-centering chucks-designed for direct mounting on L-type spindle noses.

Independent Lathe Chucks

BISON 4 JAW INDEPENDENT LATHE CHUCKS

Four-jaw standard duty independent Lathe chucks with solid reversible jaws, spheroidal graphite iron body. These chucks feature jaws that are individually adjustable, allow firm gripping of odd shaped work, and the four jaws allow a square component to be perfectly centered to the chuck while achieving maximum gripping force. The jaws are made of high quality carbon steel and hardened. Thrust bearings and operating screws are made of case hardened steel.



Large chucks (diameter 10" to 32") are supplied with T-slots

Oil Country Chucks

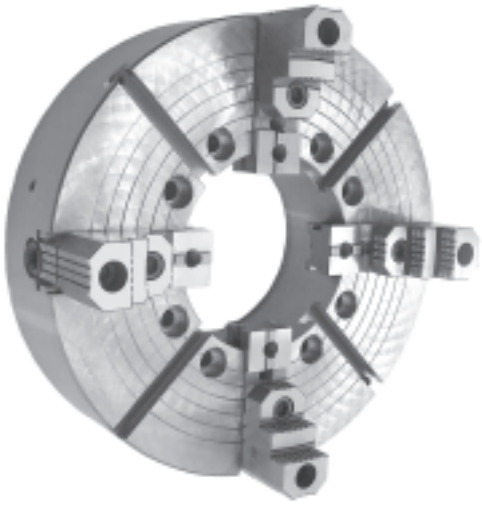
4 Jaw Independent Steel Body Oil Country Chucks

Features:

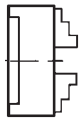
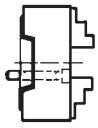
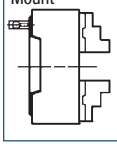
- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- Chucks may work individually or in pairs, mounted on opposite sides of the lathe spindle, ensuring the same vertical position of the jaws in both chucks
- Large through-hole compared to the outside diameter of the chuck body
- High gripping force
- Able to machine very long workpieces
- High machining accuracy

Application:

- This precision chuck, with increased gripping accuracy, is designed for gripping long pipes during heavy duty machining for conventional and specialized machine-tools



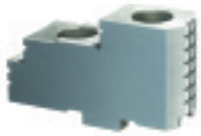
3 Jaw self centering scroll large thru hole chucks also available see page's: J40-42

Mounting	Chuck Size	16"	16"	20"	20"	25"	25"	25"	28"	28"	31-1/2"	31-1/2"	31-1/2"	40"	49"
4307 Plain Back 	**Hole**	5.3"	6.5"	6.5"	8"	10.5"	10.5"	12.5"	10.5"	12.5"	10.5"	12.5"	14.5"	20.5"	11"
	Wt. lbs.	320	302	449	414	682	649	660	913	870	1,287	1,243	1,199	1,683	3,533
	Code No.													450-495	
	Price $													**RFQ**	
4317 Short Taper 	**A2-8**	450-500													
	Price $	**10,153.90**													
	A2-11		450-505	450-510											
	Price $		**9,016.30**	**11,561.30**											
	A2-15				450-515	450-520			450-530		450-540				
	Price $				**11,561.30**	**17,633.90**			**25,687.50**		**29,483.30**				
	A2-20						450-522	450-525		450-535		450-545	450-547		
	Price $						**16,165.40**	**17,633.90**		**25,687.50**		**29,483.30**	**RFQ**		
	A2-28													450-549	
	Price $													**46,052.00**	
4347 Camlock Mount 	**D1-8**	450-550		450-560 (5.3" Hole Dia.)											
	Price $	**10,286.50**		**12,583.70**											
	D1-11		450-555	450-565					450-570 (7.5" Hole Dia.)						
	Price $		**9,498.20**	**11,919.50**					**25,679.50**						

Engineering Data See Page: J54

Hard Top Jaws For Oil Country Chucks

- Sold in sets



Chuck Size	Code No.	Price $
15-3/4", 20"	450-572	**1,891.60**
25", 28", 32"	450-574	**2,912.40**

Hard Master Jaws For Oil Country Chucks

- Sold in sets



Chuck Size	Code No.	Price $
15-3/4"	450-576	**1,933.40**
20"	450-578	**3,981.10**
25", 28", 32"	450-580	**3,384.00**

Parts for Oil Country Chucks

Operating Screws



Chuck Size	Hole Dia.	Code No.	Price $
15-3/4"	5.3"	450-594	**119.70**
15-3/4"	6.5"	450-596	**114.50**
20"	5.3"	450-598	**158.00**
20"	6.5"	450-600	**147.00**
20"	8.0"	450-602	**141.30**
25"	10.5"	450-604	**426.80**
25"	12.5"	450-606	**365.50**
28"	10.5"	450-608	**524.90**
28"	12.5"	450-610	**464.10**
32"	10.5"	450-612	**633.90**
32"	12.5"	450-614	**573.10**

Thrust Bearings



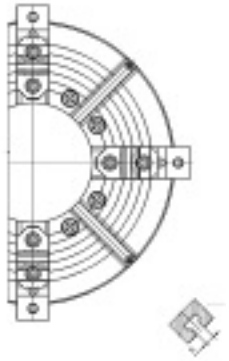
Chuck Size	Code No.	Price $
15-3/4"	450-582	**110.20**
20"	450-584	**109.70**
25", 28"	450-586	**146.70**
32"	450-588	**158.80**

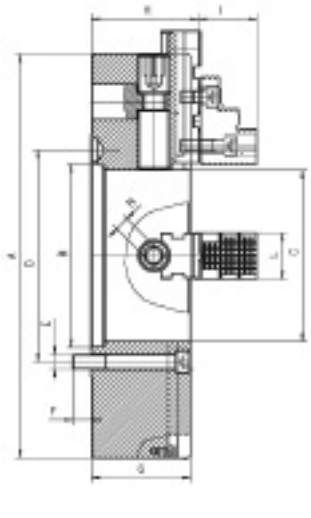
Wrenches

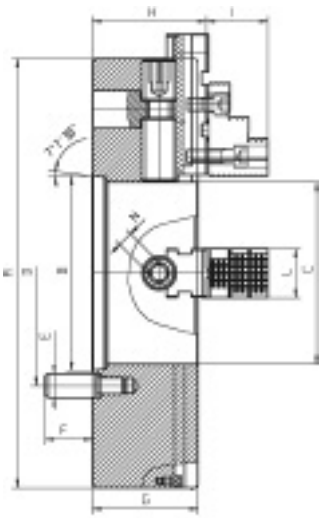


Chuck Size	Code No.	Price $
15-3/4", 20"	450-590	**165.50**
25", 28", 32"	450-592	**268.80**

Specifications For Oil Country Chucks







Chuck Dia. A	Type of Mounting	Hole Dia. C (In.)	B +.001"	D	G	H	I	K	L	N	E	F	Max. RPM	Weight lbs.
Plain Back Type 4307														
40"	Plain Back	22.05	28.5433	25.4961	6.89	7.366	3.571	1.10	2.953	.866	1-1/4-7	1.53	430	1690
A2 Direct Mount Type 4317														
15-3/4"	A2-8	5.3	5.50075	6.750	5.71	6.067	2.981	.709	2.362	.748	5/8-11	.961	1200	320
15-3/4"	A2-11	6.5	7.75075	9.250	5.71	6.067	2.981	.709	2.362	.748	3/4-10	1.118	1200	302
20"	A2-11	6.5	7.75075	9.250	5.71	6.067	2.981	.866	2.362	.748	3/4-10	1.118	1000	450
20"	A2-15	8.0	16.251	18.250	5.71	6.067	2.981	.866	2.362	.748	7/8-9	1.276	1000	414
25"	A2-15	10.5	11.251	13.00	6.10	6.579	3.571	.866	2.953	.866	7/8-9	1.343	850	684
25"	A2-20	12.55	16.251	18.252	6.10	6.579	3.571	.866	2.953	.866	1-8	1.50	850	662
28"	A2-15	10.5	11.251	13.00	6.10	6.579	3.571	.866	2.953	.866	7/8-9	1.34	750	915
28"	A2-20	12.55	16.251	18.252	6.10	6.579	3.571	.866	2.953	.866	1-8	1.50	750	873
32"	A2-15	10.5	11.251	13.00	6.10	6.972	3.571	.866	2.953	.866	7/8-9	1.34	600	1290
32"	A2-20	12.55	16.251	18.252	6.10	6.972	3.571	.866	2.953	.866	1-8	1.50	600	1246
D1 Direct Mount Type 4347														
15-3/4"	D1-8	5.3	5.50075	6.75	5.71	6.067	2.981	.709	2.362	.748	1	2	1200	300
15-3/4"	D1-11	6.5	7.75075	9.25	5.71	6.067	2.981	.709	2.362	.748	1.25	2.4	1200	282
20"	D1-8	5.3	5.50075	6.75	5.71	6.067	2.981	.866	2.362	.748	1	2	1000	468
20"	D1-11	6.5	7.75075	9.252	5.71	6.067	2.981	.866	2.362	.748	1.25	2.4	1000	452
28"	D1-11	7.5	7.75075	9.252	6.10	6.579	3.57	.866	2.953	.866	1.25	2.4	750	993

4 Jaw Steel Body Independent Chucks - 2PC Hard Rev. Jaws

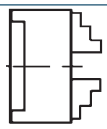
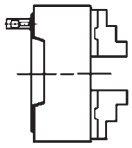
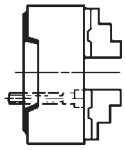
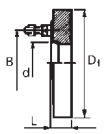
Features:

- 4 jaw, independent chuck with manual gripping, and a high quality steel body.
- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- 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

Mounting	Chuck Size	8"	10"	12"	16"	20"	25"	32"	36"	40"	49"
4307 Plain Back 	**Hole Size**	1.969	2.559	3.149	3.930	4.921	6.299	7.874	7.480	7.480	7.480
	Weight lbs.	30	55	86	135	231	359	702	770	902	2090
	Code No.	451-005	451-010	451-015	451-020	451-025	451-030	451-035	451-040	451-045	451-050
	Price $	**2,008.70**	**2,200.30**	**4,438.00**	**5,806.50**	**8,366.40**	**12,540.00**	**23,883.60**	**32,575.30**	**46,052.00**	**52,350.90**
4347 Camlock 	**D1-3**	451-202	451-204								
	Price $	**2,208.10**	**2,593.60**								
	D1-4	451-200	451-206								
	Price $	**2,208.10**	**2,635.90**								
	D1-5	451-205	451-208	451-212							
	Price $	**2,208.10**	**2,635.90**	**4,296.00**							
	D1-6	451-210	451-215	451-225							
	Price $	**2,208.10**	**2,635.90**	**4,296.00**							
	D1-8		451-220	451-230	451-240	451-250	451-265				
	Price $		**2,635.90**	**4,130.40**	**5,288.60**	**9,203.00**	**13,794.20**				
	D1-11				451-245	451-255	451-270	451-280		451-226	
	Price $				**5,288.60**	**9,203.00**	**13,794.20**	**23,391.80**		**41,082.10**	
	D1-15					451-260	451-275	451-285		451-228	451-326
	Price $					**2,033.30**	**13,794.20**	**23,391.80**		**41,082.10**	**52,350.90**
	D1-20							451-218		451-232	
	Price $							**23,391.80**		**41,082.10**	
4317 Short Taper 	**A1-4**		451-059								
	Price $		**2,418.90**								
	A1-5		451-061	451-063							
	Price $		**1,983.00**	**4,220.80**							
	A2-6	451-100	451-105	451-115	451-125						
	Price $	**2,208.10**	**2,855.40**	**5,091.10**	**5,720.60**						
	A2-8		451-110	451-120	451-130	451-140					
	Price $		**2,855.40**	**5,091.10**	**5,720.60**	**9,203.00**					
	A2-11				451-135	451-145	451-155	451-165			451-080
	Price $				**5,720.60**	**9,203.00**	**13,794.20**	**29,483.20**			**52,350.90**
	A2-15					451-150	451-160	451-170		451-175	451-082
	Price $					**9,203.00**	**13,794.20**	**29,483.20**		**39,196.00**	**52,350.90**
	A2-20							451-070		451-078	451-084
	Price $							**23,391.80**		**38,999.80**	**52,350.90**
4337 Din Taper 	**Din 5**	442-100	442-104	442-110							
	Price $	**2,321.50**	**2,418.90**	**4,219.50**							
	Din 6	442-102	442-106	442-112	442-120						
	Price $	**2,208.10**	**2,418.90**	**4,219.50**	**5,930.90**						
	Din 8		442-108	442-114	442-122	442-128	442-134				
	Price $		**2,418.90**	**4,219.50**	**5,930.90**	**9,203.00**	**13,794.20**				
	Din 11			442-116	442-124	442-130	442-136	442-142		442-150	442-156
	Price $			**4,219.50**	**5,931.00**	**9,203.00**	**13,794.20**	**23,391.80**		**39,193.80**	**52,350.90**
	Din 15					442-132	442-138	442-144		442-152	442-158
	Price $					**9,203.00**	**13,794.20**	**23,391.80**		**39,193.80**	**52,350.90**
	Din 20									442-154	
	Price $									**39,193.80**	

Engineering Data See Page: J60-64

Spare Parts

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 wrench

Optional accessories


Soft top jaws

Spare Parts - see page: J59

4 Jaw Steel Body Independent Chucks - Hard Solid Jaws

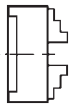
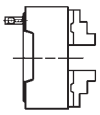
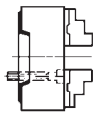
Features:

- 4 jaw, independent chuck with manual gripping, and a high quality steel body.
- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- 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

Mounting	Chuck Size	3-1/2"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"	49"
4306 Plain Back 	**Hole Size**	1.000	1.023	1.653	1.969	2.559	3.149	3.930	4.921	6.299	7.874	7.480	7.480	7.480
	Weight lbs.	3	8	9	30	55	86	135	231	359	702	770	902	2090
	Code No.	445-800	445-803	445-804	451-007	451-012	451-017	451-022	451-027	451-032	451-037	451-042	451-047	451-052
	Price $	**1,029.20**	**1,779.20**	**1,826.20**	**1,633.40**	**1,972.40**	**3,691.50**	**10,894.80**	**7,443.70**	**11,162.40**	**20,680.80**	**31,823.60**	**34,738.60**	**51,080.50**
4342 Camlock 	**D1-3**				442-300	442-308								
	Price $				**1,659.20**	**1,975.30**								
	D1-4				442-302	442-310								
	Price $				**1,659.20**	**1,975.30**								
	D1-5				442-304	442-312	442-318							
	Price $				**1,659.20**	**1,975.30**	**3,278.70**							
	D1-6				442-306	442-314	442-320	442-324	442-330					
	Price $				**1,659.20**	**1,975.30**	**3,278.70**	**4,463.50**	**5,135.30**					
	D1-8					442-316	442-322		442-332	442-338	442-344			
	Price $					**1,975.30**	**3,278.70**		**5,134.80**	**7,228.60**	**12,916.30**			
	D1-11							442-328	442-334	442-340	442-346	442-352	442-356	442-362
	Price $							**4,463.50**	**7,228.60**	**7,228.60**	**12,916.30**	**15,499.50**	**16,747.70**	**19,749.60**
	D1-15								442-336	442-342	442-348	442-354	442-358	442-364
	Price $								**5,135.30**	**7,228.60**	**12,916.30**	**15,499.50**	**16,747.70**	**19,749.60**
	D1-20										442-350		442-360	
	Price $										**12,916.30**		**16,747.70**	
4312 Short Taper 	**A2-4**				441-700	441-706								
	Price $				**1,501.40**	**1,580.20**								
	A2-5				441-702	441-708	441-714							
	Price $				**1,501.40**	**1,580.20**	**2,212.30**							
	A2-6				441-704	441-710		441-720	441-726					
	Price $				**1,501.40**	**1,856.70**		**2,923.20**	**4,582.10**					
	A2-8					441-712	441-718	441-722	441-728	441-734	441-740			
	Price $					**1,580.20**	**2,212.30**	**2,923.20**	**4,582.10**	**6,636.00**	**9,243.10**			
	A2-11							441-724	441-730	441-736	441-742	441-748	441-752	441-758
	Price $							**4,345.20**	**4,937.60**	**7,584.10**	**12,521.30**	**13,824.90**	**19,078.00**	**28,202.40**
	A2-15								441-732	441-738	441-744	441-750	441-754	441-760
	Price $								**6,508.30**	**4,937.60**	**12,521.30**	**13,824.90**	**19,078.00**	**29,592.60**
	A2-20										441-746		441-756	441-762
	Price $										**12,007.80**		**19,078.00**	**28,202.40**
4332 Din Taper 	**Din 5**				442-000	442-004	442-010	442-018						
	Price $				**1,580.20**	**1,896.10**	**3,239.10**	**4,345.20**						
	Din 6				442-002	442-006	442-012	442-020	442-026					
	Price $				**1,580.20**	**1,856.70**	**1,438.00**	**4,345.20**	**4,977.00**					
	Din 8					442-008	442-014	442-022	442-028	442-034	442-040			
	Price $					**1,896.10**	**3,239.10**	**4,345.20**	**4,898.00**	**6,557.00**	**12,521.30**			
	Din 11						442-016	442-024	442-030	442-036	442-042	442-046	442-050	442-056
	Price $						**3,160.10**	**4,345.20**	**4,898.00**	**7,584.10**	**12,521.30**	**14,022.20**	**17,530.10**	**29,625.70**
	Din 15								442-032	442-038	442-044	442-048	442-052	442-058
	Price $								**4,977.00**	**6,819.40**	**12,521.30**	**14,022.20**	**17,530.10**	**29,625.70**
	Din 20												442-054	
	Price $												**17,530.10**	

Engineering Data See Pages: J60-64

Spare Parts

Standard accessories



1 set of solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see page: J59

4 Jaw Cast Iron Body Independent Chucks - 2PC Hard Rev. Jaws

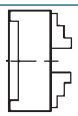
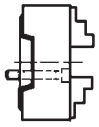
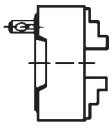
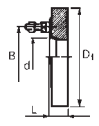
Features:

- 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



Mounting	Chuck Size	8"	10"	12"	16"	20"	25"	32"	32"	36"	40"	49"
4305 Plain Back 	**Hole*** **	1.968	2.559	3.149	3.937	4.931	6.299	7.874	10.500	7.4809	7.4809	7.4809
	Wt. lbs.	32	55	88	140	233	366	700	672	800	902	2,090
	Code No.	441-264	441-266	441-268	441-274	441-276	441-278	441-280	441-281	441-282	441-284	441-286
	Price $	**1,418.00**	**1,509.30**	**2,189.10**	**2,877.20**	**4,291.70**	**5,932.00**	**RFQ**	**RFQ**	**RFQ**	**RFQ**	**RFQ**
4315 Short Taper 	**A2-4**	441-800	441-806									
	Price $	**1,668.90**	**1,874.20**									
	A2-5	441-802	441-808	441-814								
	Price $	**1,668.90**	**1,874.20**	**2,605.20**								
	A2-6	441-804	441-810	441-816	441-820	441-826						
	Price $	**1,668.90**	**1,874.20**	**2,605.20**	**3,394.20**	**4,724.20**						
	A2-8		441-812	441-818	441-822	441-828	441-834	441-840				
	Price $		**1,874.20**	**2,605.20**	**3,394.20**	**4,724.20**	**6,070.30**	**RFQ**				
	A2-11				441-824	441-830	441-836	441-842			441-848	441-852
	Price $				**3,394.20**	**4,724.20**	**7,135.40**	**12,304.70**			**RFQ**	**RFQ**
	A2-15					441-832	441-838	441-844			441-850	441-854
	Price $					**4,840.30**	**6,402.10**	**12,304.70**			**RFQ**	**RFQ**
	A2-20							441-846				
	Price $							**RFQ**				
4345 Camlock 	**D1-3**	442-604	442-612									
	Price $	**1,703.50**	**1,876.40**									
	D1-4	442-606	442-614									
	Price $	**1,703.50**	**2,045.90**									
	D1-5	442-608	442-616	442-622								
	Price $	**1,703.50**	**1,876.40**	**2,535.30**								
	D1-6	442-610	442-618	442-624	442-630							
	Price $	**1,703.50**	**1,876.40**	**2,535.30**	**3,346.50**							
	D1-8		442-620	442-626	442-632	442-636	442-642 (5.00" hole dia.)	442-648 (5.00" hole dia.)				
	Price $		**1,876.40**	**2,840.00**	**3,346.50**	**5,019.70**	**6,300.50**	**RFQ**				
	D1-11			442-628	442-634	442-638	442-644 (6.30" hole dia.)	442-650 (7.00" hole dia.)				
	Price $			**2,535.30**	**3,346.50**	**5,019.70**	**6,300.50**	**RFQ**				
	D1-15					442-640	442-646 (6.30" hole dia.)	442-652 (8.00" hole dia.)				
	Price $					**5,170.20**	**6,489.60**	**RFQ**				
	D1-20							442-654 (8.00" hole dia.)				
	Price $							**RFQ**				
4335 Din Taper 	**Din 4**	442-200										
	Price $	**1,668.90**										
	Din 5	442-202	442-206	442-212	442-220							
	Price $	**1,668.90**	**1,874.20**	**2,605.20**	**3,394.20**							
	Din 6	442-204	442-208	442-214	442-222	442-228						
	Price $	**1,668.90**	**1,874.20**	**2,605.20**	**3,394.20**	**4,724.20**						
	Din 8		442-210	442-216	442-224	442-230	442-236 (5.00" hole dia.)	442-242 (5.00" hole dia.)				
	Price $		**1,874.20**	**2,605.20**	**3,394.20**	**4,724.20**	**6,070.30**	**RFQ**				
	Din 11			442-218	442-226	442-232	442-238 (6.30" hole dia.)	442-244 (7.00" hole dia.)				
	Price $			**2,605.20**	**3,394.20**	**4,724.20**	**6,070.30**	**RFQ**				
	Din 15					442-234	442-240 (6.30" hole dia.)	442-246 (8.00" hole dia.)				
	Price $					**5,334.50**	**6,402.10**	**RFQ**				

Engineering Data See Pages: J60-64

Spare Parts

Standard accessories



1 set of hard top jaws



1 set of hard master jaws



1 wrench

Optional accessories



Soft top jaws

Spare Parts - see page: J59

4 Jaw Cast Iron Body Independent Chucks - Hard Solid Jaws

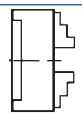
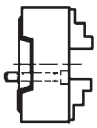
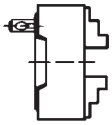
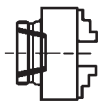
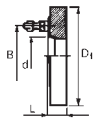
Features:

- 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

Mounting	Chuck Size	3-1/2"	5"	6"	8"	10"	12"	16"	20"	25"	32"	32"	36"	40"	49"
4304 Plain Back 	**Hole**	1.000	1.023	1.653	1.968	2.559	3.149	3.937	4.931	6.299	7.874	10.500	7.4809	7.4809	7.4809
	Wt. lbs.	3	8	9	32	55	88	140	233	366	700	672	800	902	2,090
	Code No.	445-800*	445-803*	445-804*	445-805	445-810	445-815	445-820	445-825	445-830	445-835	445-840	445-842	440-843	445-844
	Price $	**1,029.20**	**1,779.20**	**1,826.20**	**1,203.80**	**1,374.50**	**1,920.30**	**2,581.90**	**4,114.00**	**5,501.70**	**10,454.20**	**10,876.30**	**16,460.50**	**RFQ**	**RFQ**
		*Now 4306 Steel Body													
4314 Short Taper 	**A2-4**				445-900	445-912									
	Price $				**1,369.40**	**1,470.60**									
	A2-5				445-905	445-915	445-930								
	Price $				**1,337.00**	**1,533.40**	**2,032.10**								
	A2-6				445-910	445-920	445-935	445-945	445-957						
	Price $				**1,337.00**	**1,599.20**	**2,032.10**	**2,993.30**	**4,208.40**						
	A2-8					445-925	445-940	445-950	445-959	445-971	445-974				
	Price $					**1,661.00**	**2,032.10**	**2,993.30**	**4,208.40**	**5,518.80**	**RFQ**				
	A2-11							445-955	445-960	445-965	445-970			445-977	445-979
	Price $							**2,993.30**	**4,404.60**	**5,944.50**	**11,720.20**			**RFQ**	**RFQ**
	A2-15								445-961	445-973	445-975			445-978	445-980
	Price $								**4,334.90**	**5,889.40**	**11,720.20**			**RFQ**	**RFQ**
	A2-20										445-976				
	Price $										**RFQ**				
4344 Camlock 	**D1-3**			450-095	450-105	450-119									
	Price $			**1,983.00**	**1,223.70**	**1,631.60**									
	D1-4			450-100	450-110	450-120									
	Price $			**2,009.20**	**1,269.60**	**1,630.00**									
	D1-5				450-115	450-125	450-132								
	Price $				**1,385.70**	**1,653.90**	**2,034.30**								
	D1-6				450-117	450-130	450-135	450-145							
	Price $				**1,385.70**	**1,625.80**	**2,064.20**	**2,852.50**							
	D1-8						450-140	450-150	450-160	450-169 (5.00" hole dia.)	450-180 (5.00" hole dia.)				
	Price $						**2,182.10**	**2,867.80**	**3,926.50**	**6,078.70**	**RFQ**				
	D1-11						450-142	450-155	450-165	450-170	450-185 (7.00" hole dia.)				
	Price $						**2,279.70**	**3,008.40**	**4,166.70**	**5,648.60**	**11,720.20**				
	D1-15								450-167	450-175	450-190 (8.00" hole dia.)				
	Price $								**4,491.00**	**5,864.40**	**11,720.20**				
	D1-20										450-195 (8.00" hole dia.)				
	Price $										**RFQ**				
4354 Long Taper 	**L00**				450-205	450-215									
	Price $				**1,487.60**	**1,697.30**									
	L0				450-210	450-220	450-230								
	Price $				**1,487.60**	**1,697.30**	**2,199.10**								
	L1					450-225	450-235	450-245							
	Price $					**1,697.30**	**2,199.10**	**3,318.40**							
	L2						450-240	450-250	450-255						
	Price $						**2,199.10**	**3,318.40**	**4,675.70**						
4334 Din 	**Din 4**				450-340										
	Price $				**1,389.90**										
	Din 5				450-345	450-360	450-370	450-380							
	Price $				**1,364.90**	**1,622.10**	**2,128.30**	**2,988.20**							
	Din 6				450-350	450-300	450-305	450-385	450-400						
	Price $				**1,369.40**	**1,640.90**	**2,035.90**	**2,991.40**	**4,207.70**						
	Din 8					450-365	450-310	450-315	450-320	450-330				450-410	
	Price $					**1,723.50**	**2,159.80**	**2,935.60**	**4,112.90**	**5,607.50**				**RFQ**	
	Din 11						450-375	450-390	450-325	450-335				450-415	
	Price $						**1,934.80**	**3,127.90**	**4,343.90**	**6,067.90**				**RFQ**	
	Din 15									450-405				450-420	
	Price $									**7,171.30**				**RFQ**	

Spare Parts

Standard accessories



1 set of solid jaws



1 wrench

Optional accessories



1 set of soft solid jaws

Spare Parts - see page: J59

Spare Parts for 4 Jaw Independent Lathe Chucks



Hard Solid Rev. Jaws

Chuck Size (in.)	4 pc Set Code No.	Price $
8”	465-705	**583.60**
10”	465-710	**700.10**
12”	465-715	**853.50**
16”	465-720	**1,251.50**
20”	465-725	**1,752.40**
25”	465-730	**2,526.90**
32”	465-735	**3,742.70**



Soft Solid Jaws

Chuck Size (in.)	4 pc Set Code No.	Price $
8”	468-600	**369.00**
10”	468-602	**414.90**
12”	468-604	**772.20**
16”	468-606	**954.70**
20”	468-608	**1,431.50**
25”	468-610	**2,080.30**
32”	468-612	**3,987.10**



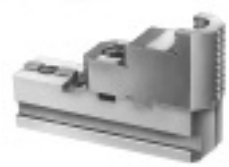
Hard Master Jaws

Chuck Size (in.)	Per Piece Code No.	Price $
8”	465-860	**493.80**
10”	465-862	**643.90**
12”	465-864	**295.50**
16”	465-866	**416.50**
20”	465-868	**1,513.70**
25”	465-870	**2,014.50**
32”	465-872	**3,739.50**



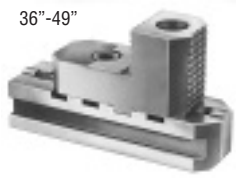
Hard Top Jaws

Chuck Size (in.)	Per Set Code No.	Price $
8”	465-840	**997.10**
10”	465-842	**944.60**
12”	465-844	**1,101.30**
16”	465-846	**1,327.50**
20”	465-848	**1,857.00**
25”	465-850	**1,857.00**
32”	465-851	**2,892.90**
36”	465-852	**2,922.40**
40”	465-852	**2,922.40**
49”	465-852	**2,922.40**



Hard 2PC Rev. Jaws

Chuck Size (in.)	Per Set Code No.	Price $
8”	468-616	**1,188.00**
10”	468-618	**1,462.10**
12”	468-619	**1,851.50**
16”	468-620	**2,618.80**
20”	468-622	**3,585.10**
25”	468-624	**4,332.00**
32”	468-625	**4,556.70**
36”	468-626	**10,384.30**
40”/49”	468-628	**10,384.30**





Operating Screws

Chuck Size (in.)	Code No.	Price $
5”	465-500	**90.30**
6”	465-495	**90.30**
8”	465-505	**90.30**
10”	465-510	**101.50**
12”	465-515	**108.90**
14”	465-517	**425.40**
16”	465-520	**136.40**
20”	465-525	**177.70**
25”	465-530	**242.20**
32”	465-535	**322.10**
36”	465-540	**425.40**
40”	465-545	**482.60**
49”	465-550	**535.90**



Thrust Bearings

Chuck Size (in.)	Code No.	Price $
5”	465-585	**64.90**
6”	465-585	**64.90**
8”	465-605	**61.20**
10”	465-610	**67.90**
12”	465-615	**79.70**
16”	465-620	**94.50**
20”	465-625	**113.60**
25”	465-630	**146.30**
32”	465-635	**169.10**
36”	465-640	**184.50**
40”	465-640	**184.50**
49”	465-640	**184.50**

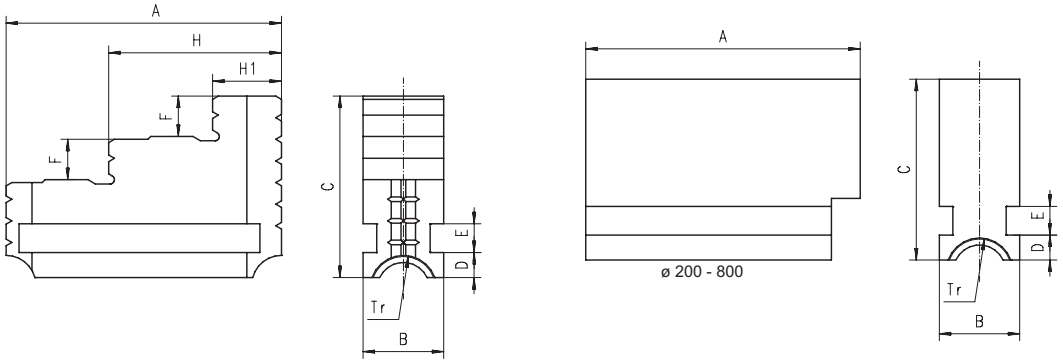


Wrenches

Chuck Size	Square	Code No.	
5”		465-800	**72.10**
6”		465-800	**72.10**
8”	.4331	465-805	**96.40**
10”	.4331	465-805	**96.40**
12”	.5512	465-815	**100.40**
16”	.5512	465-815	**100.40**
20”	.6693	465-825	**233.90**
25”	.6693	465-825	**233.90**
32”	.7480	465-835	**306.10**
36”		465-836	**314.50**
40”		465-836	**314.50**
49”		465-836	**314.50**

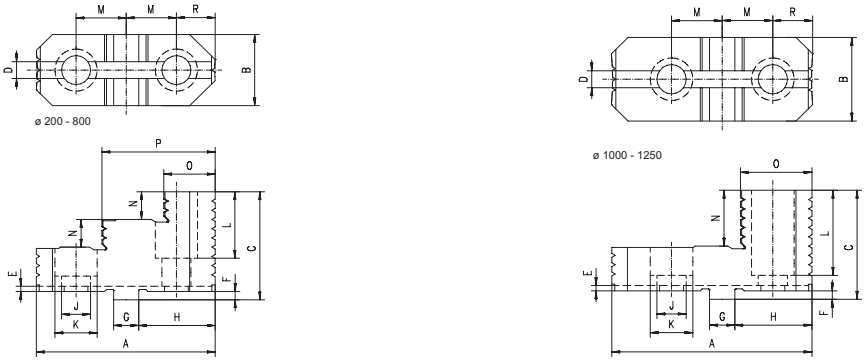
Specifications For Independent Chuck Jaws

Solid Reversible Jaws



Chuck Size	8"	10"	12"	16"	20"	25"	32"	36"	40"	49"
A	3.1102	3.7008	4.3307	5.0787	6.6142	8.1102	8.1102	9.6063	9.6063	9.6063
B	1.2598	1.2598	1.5748	1.5748	2.0472	2.0472	2.7559	2.7559	2.7559	2.7559
C	1.2598	1.4961	1.5354	1.7323	2.3228	2.3228	2.3228	2.3228	2.3228	2.3228
D	0.3425	0.3425	0.3819	0.3819	0.4606	0.4606	0.6181	0.6181	0.6181	0.6181
E	0.3937	0.3937	0.4724	0.4724	0.5906	0.5906	0.7874	0.7874	0.7874	0.7874
F-0.03	0.3126	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
G+0.01	0.4996	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496
H	1.3071	1.4764	1.7874	2.1614	2.1850	2.1850	2.1850	2.1850	2.1850	2.1850
J	0.1575	0.1575	0.1575	0.2835	0.2835	0.2835	0.2835	0.2835	0.2835	0.2835
K	0.8760	1.0630	1.2500	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
L	0.5512	0.7874	0.6890	0.8661	1.3189	1.3189	1.3189	1.3189	1.3189	1.3189
M	M10	M12	M12	M16	M20	M20	M20	M20	M20	M20
M	3/8-16	1/2-13	1/2-13	5/8-11	3/4-10	3/4-10	3/4-10	3/4-10	3/4-10	3/4-10
Tr-left hand	Tr 28x5	Tr 28x5	Tr 32x6	Tr 32x6	Tr 36x6	Tr 40x6	Tr 44x8	Tr 44x6	Tr 44x6	Tr44x8
Weight lbs	1.32	1.98	2.42	2.64	3.3	5.28	5.28	11.88	11.88	11.88

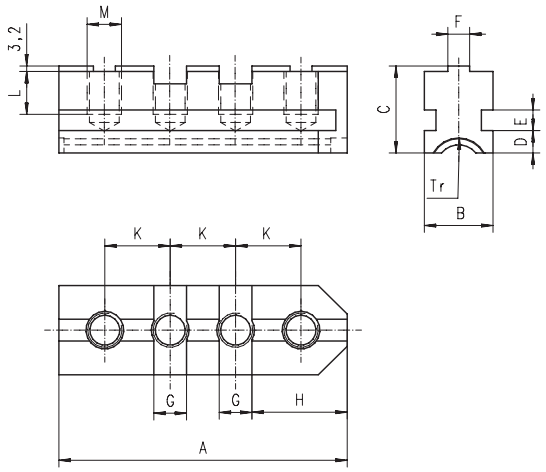
Hard Top Jaws



Chuck Size	8"	10"	12"	16"	20"	25"	32"	36"	40"	49"
A	3.2283	3.7992	4.4291	5.0787	5.3543	5.3543	5.3543	6.2992	6.2992	6.2992
B	1.3386	1.3386	1.6535	1.6535	2.1260	2.1260	2.8346	2.8346	2.8346	2.8346
C	1.7126	2.0276	2.1654	2.5394	2.9331	3.2283	3.4646	3.8189	3.8189	3.8189
D	0.3130	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004	0.5004
E	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575	0.1575
F-0.03	0.1260	0.1260	0.1260	0.2480	0.2480	0.2480	0.2480	0.2480	0.2480	0.2480
G+0.01	0.4996	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496	0.7496
H	1.3858	1.5748	1.8858	2.2598	2.2835	2.2835	2.2835	2.2835	2.2835	2.2835
J	0.4331	0.5512	0.5512	0.7087	0.8661	0.8661	0.8661	0.8661	0.8661	0.8661
K	0.7087	0.7874	0.7874	1.0236	1.2992	1.2992	1.2992	1.2992	1.2992	1.2992
L	0.8465	1.0433	1.0827	1.2598	1.5551	1.6929	1.8110	2.7953	2.7953	2.7953
M	0.8760	1.0630	1.2500	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
N	0.3740	0.4724	0.5118	0.5315	0.7087	0.8268	0.9449	1.9685	1.9685	1.9685
O	0.8661	0.9843	1.0630	1.0433	1.4764	1.4764	1.5748	2.3622	2.3622	2.3622
P	2.0866	2.4409	2.7756	3.1102	3.4252	3.4252	3.5039	-	-	-
R	0.7598	0.8858	1.0118	1.1339	1.1575	1.1575	1.1575	1.1575	1.1575	1.1575
Weight lbs	1.10	1.54	2.86	4.62	6.60	6.60	9.24	9.24	9.24	9.24

Specifications For Independent Chuck Jaws, cont'd

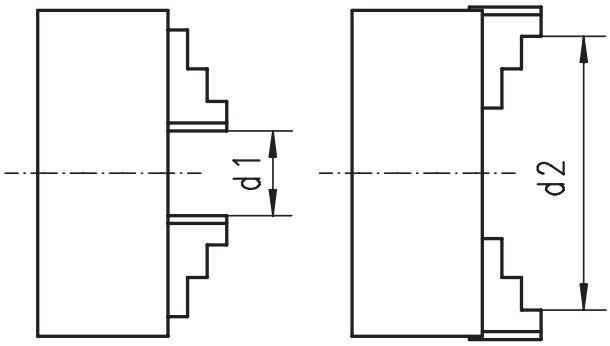
Master Base Jaws



Chuck Size	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"	25"	32"
A	1.3386	1.3386	2.0079	2.0079	3.1890	3.7992	4.3701	4.3701	5.0787	6.0039	6.9685	7.9528
B	0.5118	0.5118	0.6299	0.6299	1.2598	1.2598	1.5748	1.5748	1.5748	2.0472	2.0472	2.7559
C	1.1811	1.1811	1.3583	1.3583	2.4803	2.4803	3.0118	3.0118	3.0118	3.6811	3.6811	4.5079
D	0.1772	0.1772	0.2362	0.2362	0.3425	0.3425	0.3819	0.3819	0.3819	0.4606	0.4606	0.6181
E	0.1969	0.1969	0.1969	0.1969	0.3937	0.3937	0.4724	0.4724	0.4724	0.5906	0.5906	0.7874
F	0.2756	0.2756	0.3150	0.3150	0.5512	0.5512	0.7087	0.7087	0.7087	0.8661	0.9843	0.9843
H1	0.3150	0.3150	0.4921	0.4921	0.6890	0.9055	1.0630	1.0630	1.2795	1.3780	1.7717	1.7323
H	0.6890	0.6890	1.2402	1.2402	1.9094	2.3228	2.6378	2.6378	3.0906	3.6614	4.2913	4.8031
Tr-left hand	Tr 16x2	Tr 16x2	Tr 18x4	Tr 18x4	Tr 28x5	Tr 28x5	Tr 32x6	Tr 32x6	Tr 32x6	Tr 36x6	Tr 40x6	Tr 44x8
Weight lbs	0.220	0.220	0.264	0.264	1.590	2.860	3.300	3.330	3.960	7.480	8.800	17.160

Technical Data For Independent Chucks

Gripping Ranges for Independent Chucks



Chuck Size	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"	25"	32"	36"	40"	49"
d1 min.	0.118	0.118	0.315	0.315	0.393	0.393	0.590	0.590	0.787	1.771	1.968	1.968	4.724	6.692	6.692
d2 max.	3.346	3.937	4.921	6.299	7.874	9.842	12.401	13.779	15.748	19.685	24.803	31.496	36.023	39.370	49.212
max. swing diameter	3.976	4.566	5.905	7.283	9.252	11.653	14.527	15.905	18.307	22.440	28.346	34.960	39.488	42.834	52.677

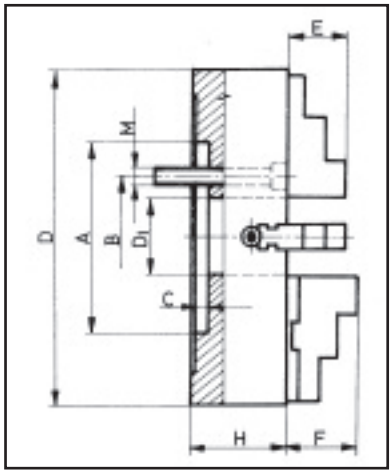
Maximum Permissible Rotation Speeds (rpm) for Independent Chucks

Chuck Size	3"	4"	5"	6"	8"	10"	12"	14"	16"	20"	25"	32"	36"	40"	49"
Steel Body	4000	3800	3500	3200	2500	2000	1500	1500	1100	700	550	450	200	200	150
Cast Iron Body	-	-	-	-	1800	1500	1200	1200	800	500	400	300	150	150	100

Independent Chuck Mounting Dimensions

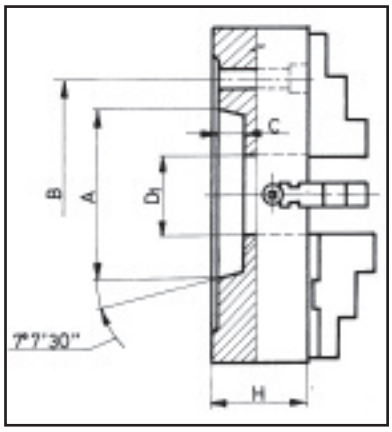
4 JAW INDEPENDENT SERIES 4300

Mounting Dimensions



Plain Back

Chuck Size	3"	5"	6"	8"	10"	12"	16"	20"	25"	32"	36"	40"	49"
D	3.35	5	6-1/4	8	10	12-1/2	15-3/4	20	25	31-1/2	36.02	39.37	49.21
A	2.4409	2.7500	3.2500	4.3307	5.9055	5.8898	7.8740	10.6299	10.6299	14.9606	14.5669	14.5669	21.6535
B	2.8346	2.1260	2.7500	3.2520	4.1260	5.2520	6.7480	9.2520	9.2520	13.0000	12.9921	12.9921	19.6850
C	.1969	.0984	.0984	.1969	.2756	.2756	.3937	.4724	.4724	.4724	.7090	.7090	.7090
D1	.9843	1.0236	1.6535	1.9685	2.5591	3.1496	3.9370	4.9213	6.2992	7.8740	7.4803	7.4803	7.4803
E	.6693	.7874	.7864	.7874	1.5866	1.5866	1.9606	1.9606	2.3543	2.7874	-	-	-
F	-	-	-	1.8268	2.3780	2.3976	2.8465	3.5551	3.8504	2.3629	4.0472	4.0472	4.0472
H	1.5748	1.6929	1.6929	3.1496	3.3465	3.7402	4.1339	4.7244	5.5118	6.2992	6.6929	6.6929	7.4803
M	1/4"-20	5/16"-18	3/8"-16	7/16"-14	1/2"-13	5/8"-11	5/8"-11	3/4"-10	3/4"-10	7/8"-9	1"xB	1"xB	1"xB



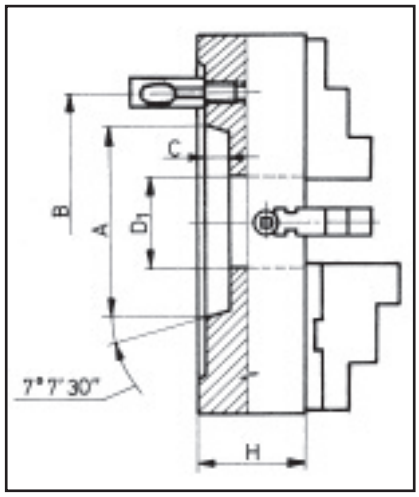
A-Type Mounting, ASA Standard B5.9

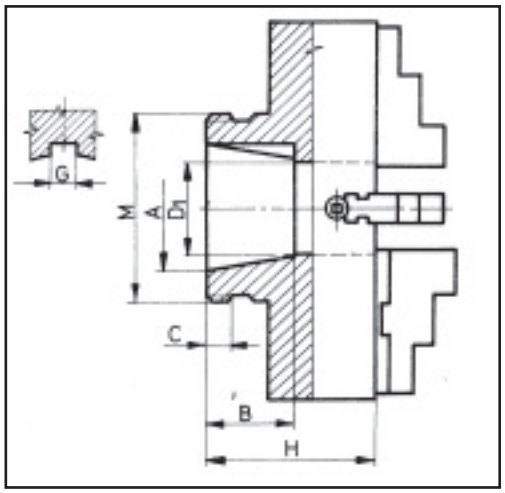
Chuck Size	8"		10"			12"		16"			20"		25"		32"	
D	8		10			12-1/2		15-3/4			20		25		31-1/2	
Taper Acc. to ASA	5	6	5	6	8	6	8	6	8	11	8	11	11	15	11	15
A	3.2503	4.1878	3.2503	4.1878	5.50055	4.1878	5.50055	4.1878	5.50055	7.75055	5.50055	7.75055	7.75055	11.2505	7.75055	
11.2505																
B(A1)	2-7/16	-	2-7/16	3-1/4	4-3/8	3-1/4	4-3/8	3-1/4	4-3/8	6-1/2	4-3/8	6-1/2	6-1/2	9-3/4	6-1/2	9-3/4
B(A2)	-	5-1/4	4-1/8	5-1/4	6-3/4	5-1/4	6-3/4	5-1/4	6-3/4	9-1/4	6-3/4	9-1/4	9-1/4	13	9-1/4	13
C	.6299	.6693	.6299	.6693	.7480	.6693	.7480	.6693	.7480	.8268	.7480	.8268	.8628	.8661	.8268	.8661
D1	1.969	2.559	3.150	3.937	4.921	6.299	7.087									
H	3.1496	3.3465	3.7402	4.1339	4.7244	5.5118	6.2992									

Independent Chuck Mounting Dimensions, cont'd

4 JAW INDEPENDENT SERIES 4300

Mounting Dimensions





D-Type Mounting, ASA Standard B5.9

Chuck Size	8"			10"			12"		16"			20"		25"	
D	8			10			12-1/2		15-3/4			20		25	
Taper 1:4	3	4	5	4	5	6	6	8	6	8	11	8	11	8	11
A	2.1250	2.5005	3.2505	2.5005	3.2505	4.1880	4.1880	5.5007	4.1880	5.5007	7.7507	5.57007	7.7505	5.5007	7.7507
B	2.7795	3.2520	4.1260	3.2520	4.1260	5.2520	5.2520	6.7480	5.2520	6.7480	9.2520	6.7480	9.2520	6.7480	9.2520
C	.5118	.5118	.5906	.5118	.5906	.6299	.6299	.7087	.6299	.7087	.7874	.7087	.7874	.7087	.7874
D1	1.9685			2.3622	2.5591		3.1496		3.9370			4.9213		4.9213	6.2992
H	3.1496			3.3465			3.7402		4.1339			4.7244		5.5118	

L-Type Mounting, ASA Standard B5.9

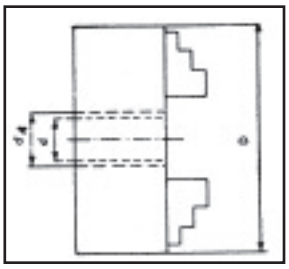
Chuck Size	8"		10"			12"				16"				20"			
D	8		10			12-1/2				15-3/4				20			
Taper	L00	L0	L00	L0	L1	L00	L0	L1	L2	L0	L1	L2	L3	L0	L1	L2	L3
A	2.7500	3.2500	2.750	3.2500	4.1250	2.7500	3.2500	4.1250	5.2500	3.2500	4.1250	5.2500	6.5000	3.2500	4.1250	5.2500	6.5000
B	2.1260	2.5000	2.1260	2.5000	2.9921	2.1260	2.5000	2.9921	3.5039	2.5000	2.9921	3.5039	4.0157	2.5000	2.9921	3.5039	4.0157
C	.5512	.5905	.5512	.5905	.6299	.5512	.5905	.6299	.8661	.5905	.6299	.8661	.9449	.5905	.6299	.8661	.9449
D1	1.9885	2.5591	3.1496	3.9370	4.9213												
G	.3839	.3839	.3839	.3839	.6358	.3839	.3839	.6358	.7598	.3839	.6358	.7598	1.0098	.3839	.6358	.7598	1.0098
H	4.0051	4.4488	4.0551	4.4488	4.9606	4.0551	4.7244	5.1969	5.7087	4.7244	5.1969	5.7087	6.2205	4.7244	5.5118	6.0630	6.5748
M	3-3/4"-6	4-1/2"-6	3-3/4"-6	4-1/2"-6	6"-6	3-3/4"-6	4-1/2"-6	6"-6	7-3/4"-5	4-1/2"-6	6"-6	7-3/4"-5	10-3/8"-4	4-1/2"-6	6"-6	7-3/4"-6	10-3/8"-4

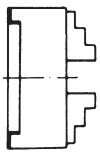
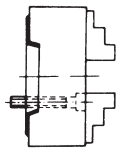
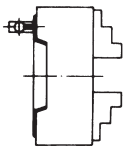
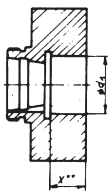
Independent Chuck Through Hole Diameters

INDEPENDENT JAW CHUCKS

THROUGH HOLE DIAMETERS

*d–through hole diameter made by manufacturer
d1–permissible enlargement of through hole
**Hole diameter d1 may be made only to depth X



Mounting	Hole Dia.	Chuck Size	D	5"	6"	8"	10"	12"	16"	20"	25"	32"	48"
4304 	d*	plain back		1.0236	1.6535	1.9685	2.5591	3.1496	3.9370	4.9213	6.2992	7.8740	10.4725
	d_1	plain back		1.3780	1.8504	1.9685	2.9528	3.7402	4.7244	6.1024	6.8898	7.8740	10.4725
4314 	d		5			1.9685	2.5591	3.1496					
			6			1.9685	2.5591	3.1496	3.9370	3.9370			
			8						3.9370	4.9213	6.2992	7.0866	
		Short	15							4.9213	6.2992	7.8740	
		Taper	5			1.9685	2.9528	3.1496					
	d_1	"A"	6			1.9685	2.9528	3.7402	3.9370	3.9370			
			8				2.9528	3.7402	4.7244	3.9370	4.9213	4.9213	
			11						4.7244	6.1024	6.8898	7.0866	
			15							6.1024	6.8878	7.8740	
4344 	d		3			1.9685	1.9685						
			4			1.9685	2.3622						
			5			1.9685	2.5591	3.1496					
			6				2.5591	3.1496	3.9370	3.9370			
			8					3.1496	3.9370	4.9213	4.9213	4.9213	
			11						3.9370	4.9213	6.2992	7.0866	
		Camlock	15							4.9213	6.2992	7.8740	
		"D"	3			1.9685	1.9685						
			4			1.9685	2.3622						
	d		5			1.9685	2.9528	3.1496					
			6				2.9528	3.7795	3.9370	3.9370			
			8					3.7795	4.7244	5.3150	5.3150	5.3150	
			11						4.7244	6.1024	6.8898	6.4903	
		15							6.1024	6.8898	6.8740		
4354 	d		L00			1.9685	2.5591	3.1496					
			L0			1.9685	2.5591	3.1496	3.9370	4.9213			
			L1				2.5591	3.1496	3.9370	4.9213			
			L2					3.1496	3.9370	4.9213	6.2992	6.8740	
		Long	L3						3.9370	4.9213	6.2992	6.8740	
		Taper	L00			1.9685	2.5591	3.1496					
			L0			1.9685	2.9528	3.3465	3.9370	4.9213			
			L1				2.9528	3.7795	4.1339	4.9213			
	d1		L2					3.6220	4.7244	5.3150	6.2992	7.8740	
			L3						4.7244	6.1024	6.4961	7.8740	
		X**				-	1.9448	2.2047	2.2047	2.5590	2.7165	-	

4 Jaw Manual Gripping Steel Body Independent Chucks - 2PC Hard Jaws

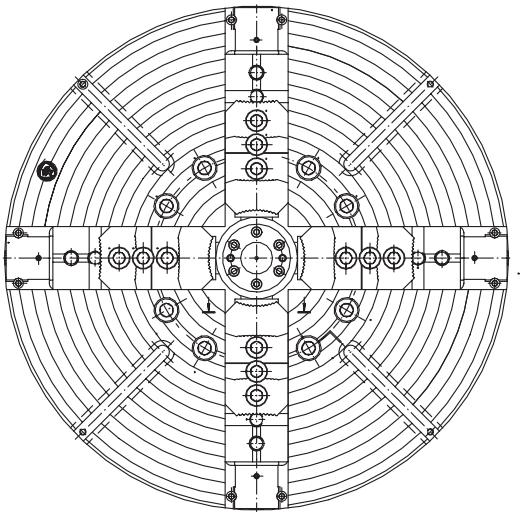


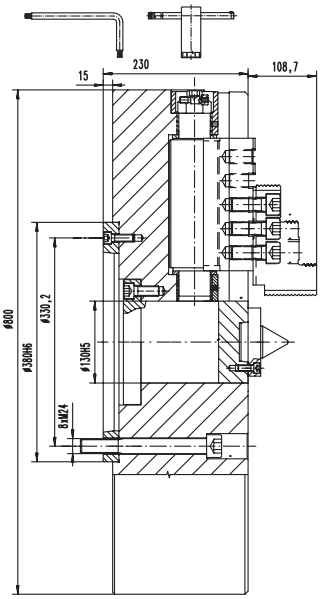
Features:

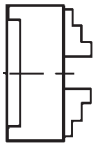
- 4 jaw, independent chuck with manual gripping, and a high quality steel body.
- Steel body extends machine life while providing higher rigidity and greater wear resistance, enabling the chuck to withstand higher machining forces
- 4 jaws ensure the precise centering of square-shaped workpieces with maximum permitted gripping force
- The design of this lathe chuck allows workpieces to be clamped with a gripping force equal to:
  - 20 000 daN per jaw for 32”
  - 25,000 daN per jaw for 40”

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





Mounting 4317MSP		Chuck Size	32”	40”
Plain		Max RPM	800	600
		Gripping Range	4”-32”	4”-40”
		Weight lbs.	1,760	3,080
		Code No.	442-660	442-662
		Price $	RFQ	RFQ

Standard accessories


1 set of hard top jaws


1 set of hard master jaws


1 allen wrench


1 hex wrench



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

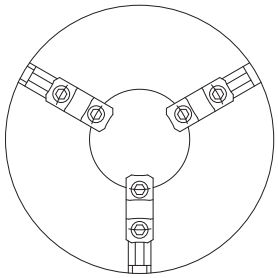
Application:

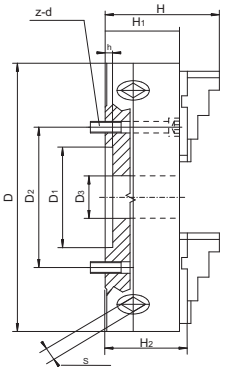
- This chuck is designed for all types of workshop machining operations on conventional lathes and milling fixtures

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	**254.00**
4"	2.835"	3.307"	0.866"	2.933"	2.165"	-	0.138"	0.315"	3-M6	44.26	3,500	7.04	4440505	**265.80**
5"	3.740"	4.252"	1.181"	3.307"	2.283"	-	0.157"	0.394"	3-M8	73.76	3,000	11.00	4440510	**283.50**
6"	5.118"	5.591"	1.575"	3.740"	2.559"	-	0.197"	0.394"	3-M8	118.02	2,500	19.36	4440515	**403.80**
8"	6.496"	7.087"	2.559"	4.291"	2.953"	-	0.197"	0.472"	3-M10	184.40	2,000	34.10	4440520	**478.10**
10"	8.110"	8.898"	3.150"	4.724"	3.150"	-	0.197"	0.472"	3-M12	236.03	1,600	56.54	4440525	**638.00**
12"	10.236"	11.22"	3.937"	5.787"	3.543"	-	0.236"	0.551"	3-M16	295.04	1,200	103.40	4440530	**1,097.40**

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

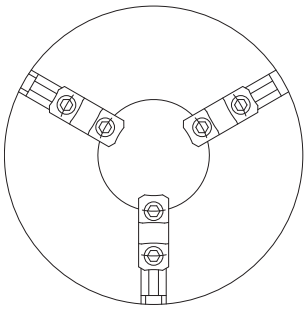
Application:

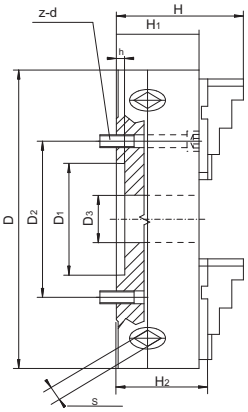
- This chuck is designed for all types of workshop machining operations on conventional lathes and milling fixtures

Plain Back









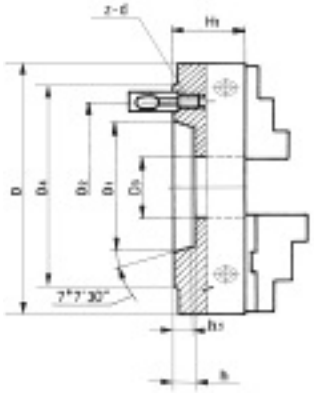
Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	H2 (in.)	h (in.)	S (in.)	z-d	Max. input torque (ft/lbs)	Max Speed r/min.	Weight (lbs.)	Code No.	Price $
6"	5.118"	5.591"	1.575"	4.291"	2.559"	2.795"	0.197"	0.394"	3-M8	118.02	2,500	18.26	4440710	**513.50**
8"	6.496"	7.087"	2.559"	4.803"	2.953"	3.150"	0.197"	0.472"	3-M10	184.40	2,000	31.02	4440715	**613.80**
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	**814.40**
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	**1,274.40**
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	**1,681.50**
20"	17.323"	18.307"	8.268"	7.953"	4.528"	4.961"	0.236"	0.669"	6-M16	464.69	800	258.72	4440735	**3,333.00**
25"	22.047"	23.425"	10.63"	8.583"	5.256"	5.591"	0.276"	0.748"	6-M16	590.08	600	457.60	4440740	**9,438.20**

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	**669.00**
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	**790.50**
8" D1-5	3.251"	4.126"	1.969"	5.748"	3.386"	0.591"	0.472"	6-M12x1	184.40	2000	37.40	4440925	**808.90**
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	**826.10**
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	**1,082.40**
10" D1-8	5.501"	6.748"	3.150"	8.858"	3.858"	0.709"	0.551"	6-M20x1.5	236.03	1600	70.40	4440941	**1,085.70**
12" D1-6	4.188"	5.252"	3.937"	7.126"	4.075"	0.630"	0.512"	6-M16x1.5	295.04	1200	112.20	4440945	**1,604.70**
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	**1,628.40**
12" D1-11	7.751"	9.252"	4.135"	11.732"	4.075"	0.787"	0.630"	6-M22x1.5	295.04	1200	116.60	4440951	**1,652.00**
16" D1-8	5.501"	6.748"	5.118"	8.858"	4.646"	0.709"	0.551"	6-M20x1.5	368.80	1000	178.20	4440954	**2,530.90**
16" D1-11	7.751"	9.252"	5.315"	11.732"	4.646"	0.787"	0.630"	6-M22x1.5	368.80	1000	178.20	4440957	**2,566.20**
20" D1-11	7.751"	9.252"	7.480"	11.732"	5.315"	0.787"	0.630"	6-M22x1.5	464.69	800	349.80	4440959	**4,188.30**

3 Jaw Plain Back Precision Steel Body Scroll Chucks - 2PC Hard Rev. Jaws

Features:

- 3 jaw, self-centering scroll chuck with manual gripping
- Steel body extends machine life while providing higher rigidity and greater wear resistance
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Balanced scroll plate and chuck allows higher rotation speeds without excess vibration
- Mounted on the machine-tool spindle from the back of the chuck, using the adapter plate

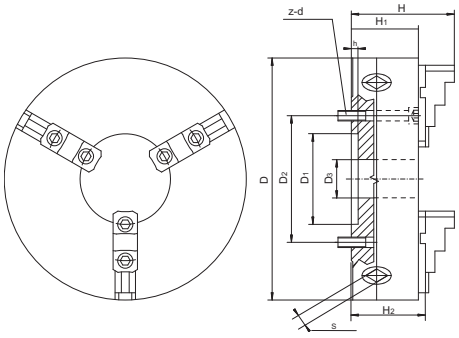
Application:

- This chuck is designed for all types of workshop machining operations on conventional lathes

Plain Back







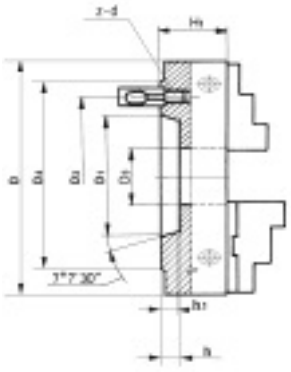
Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	H2 (in.)	h (in.)	S (in.)	z-d	Max. input torque (ft/lbs)	Max Speed r/min.	Weight (lbs.)	Code No.	Price $
6"	5.118"	5.591"	1.575"	4.291"	2.559"	2.795"	0.197"	0.394"	3-M8	118.02	3800	18.26	4440755	**914.60**
8"	6.496"	7.087"	2.559"	4.803"	2.953"	3.150"	0.197"	0.472"	3-M10	184.40	3000	31.02	4440760	**1,103.50**
10"	8.110"	8.898"	3.150"	5.354"	3.150"	3.386"	0.197"	0.472"	3-M12	236.03	2400	50.60	4440765	**1,386.50**
12"	10.236"	11.220"	3.937"	6.024"	3.543"	3.740"	0.236"	0.551"	3-M16	295.04	1900	90.20	4440770	**2,289.00**
16"	13.386"	14.488"	5.433"	6.772"	3.937"	4.252"	0.236"	0.669"	3-M16	368.80	1500	156.20	4440775	**3,215.10**

3 Jaw Camlock Mount Precision Steel 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	3800	22.00	4440965	**1,178.00**
8" D1-6	4.188"	5.252"	1.969"	7.126"	3.386"	0.630"	0.512"	6-M16x1.5	184.40	3000	37.40	4440980	**1,398.40**
10" D1-6	4.188"	5.252"	2.756"	7.126"	3.858"	0.630"	0.512"	6-M16x1.5	236.03	2400	70.40	4440985	**1,823.00**
10" D1-8	5.501"	6.748"	3.150"	8.858"	3.858"	0.709"	0.551"	6-M20x1.5	236.03	2400	70.40	4440990	**1,823.00**
12" D1-6	4.188"	5.252"	3.937"	7.126"	4.075"	0.630"	0.512"	6-M16x1.5	295.04	1900	112.20	4440992	**2,607.50**
12" D1-8	5.501"	6.748"	4.134"	8.858"	4.075"	0.709"	0.551"	6-M20x1.5	295.04	1900	112.20	4440994	**2,625.20**
16" D1-11	7.751"	9.252"	5.315"	11.732"	4.646"	0.787"	0.630"	6-M22x1.5	368.80	1500	178.20	4440998	**4,235.50**

4 Jaw Plain Back Cast Iron Body Independent Chucks - Hard Solid Jaws

Features:

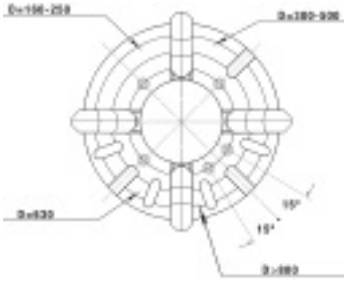
- 4 jaw, independent chuck with manual gripping, and a high quality cast iron body.
- Chuck bodies in sizes up to 6" diameter, are made from steel
- 4 jaws ensure the precise centering of square-shaped workpieces with maximum permitted gripping force
- Chucks with diameters 10" and above are equipped 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

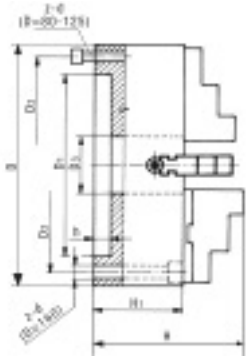
Application:

- 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

Plain Back







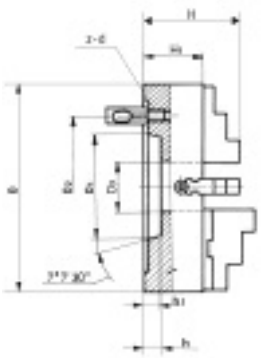
Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	h (in.)	z-d	Max. input torque (ft/lbs)	Max Speed r/min.	Weight (lbs.)	Code No.	Price $
3-1/2"	2.165"	2.598"	0.866"	2.205"	1.654"	0.138"	4-M6	18.44	4000	-	4445800	**194.90**
5"	3.740"	4.252"	1.181"	3.071"	2.205"	0.177"	4-M8	36.88	3000	11.00	4445803	**242.10**
6"	2.559"	3.740"	1.772"	3.661"	2.556"	0.197"	4-M10	51.63	2500	19.80	4445804	**407.40**
8"	3.150"	4.409"	2.205"	4.213"	2.953"	0.236"	4-M10	73.76	2000	33.00	4445805	**478.60**
10"	4.331"	5.118"	2.953"	4.724"	3.150"	0.236"	4-M12	110.64	1600	50.60	4445810	**578.40**
12"	5.984"	5.118"	2.953"	5.276"	3.543"	0.236"	4-M12	132.77	1200	85.80	4445815	**826.10**
16"	6.299"	7.283"	4.921"	5.630"	3.740"	0.315"	4-M16	206.53	1000	121.00	4445820	**1,156.50**
20"	7.874"	9.291"	6.299"	6.339"	4.173"	0.315"	4-M20	258.16	800	224.40	4445825	**1,911.40**
25"	8.661"	10.157"	7.087"	7.087"	4.646"	0.394"	4-M20	295.04	600	349.80	4445830	**4,300.30**
32"	9.843"	11.811"	8.268"	7.953"	5.197"	0.472"	8-M20	368.80	500	561.00	4445835	**7,739.30**

4 Jaw Camlock Mount Cast Iron Body Independent Chucks - Hard Solid Jaws

Camlock Mount



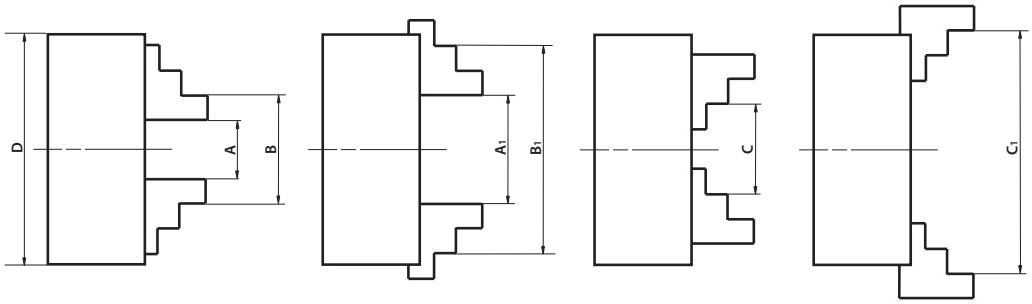




Chuck Size D (in.)	D1 (in.)	D2 (in.)	D3 (in.)	H (in.)	H1 (in.)	h (in.)	h1 (in.)	z-d	Max. input torque (ft/lbs)	Max Speed r/min.	Weight (lbs.)	Code No.	Price $
6" D1-4	2.501"	3.252"	1.772"	3.740"	2.638"	0.512"	0.394"	3-M10x1	51.63	2500	19.80	4450100	**472.20**
8" D1-4	2.501"	3.252"	2.205"	4.213"	2.953"	0.512"	0.394"	3-M10x1	73.76	2000	33.00	4450110	**596.20**
8" D1-5	3.251"	4.126"	2.205"	4.213"	2.953"	0.591"	0.472"	6-M12x1	73.76	2000	33.00	4450115	**638.70**
10" D1-4	2.501"	3.252"	2.402"	4.724"	3.150"	-	0.394"	3-M10x1	110.64	1600	50.60	4450120	**708.10**
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	**719.90**
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	**1,032.70**
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	**1,044.40**
16" D1-6	4.188"	5.252"	3.740"	5.630"	3.740"	0.630"	0.512"	6-M16x1.5	206.53	1000	121.00	4450145	**1,445.40**
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	**1,445.40**
16" D1-11	7.751"	9.252"	4.921"	5.630"	3.740"	0.787"	0.630"	6-M22x1.5	206.53	1000	149.60	4450155	**1,457.30**
20" D1-8	5.501"	6.748"	5.354"	6.339"	4.173"	-	0.551"	6-M20x1.5	258.16	800	233.20	4450160	**2,477.80**
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	**2,483.60**
25" D1-11	7.751"	9.252"	7.087"	7.087"	4.646"	0.787"	0.630"	6-M22x1.5	295.04	600	349.80	4450170	**4,383.00**

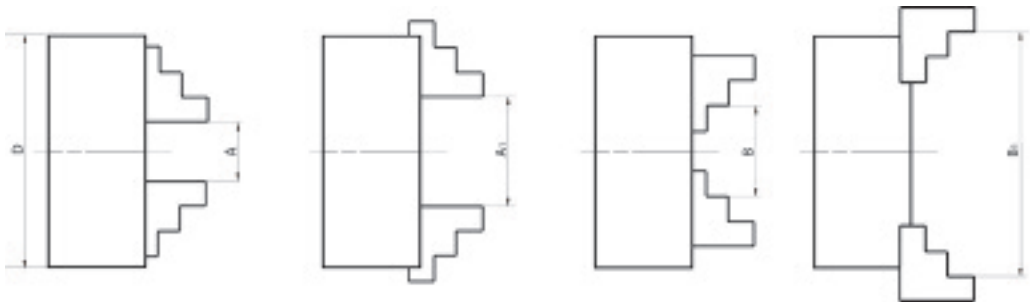
Clamping Ranges for 3 & 4 Jaw Chucks

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”

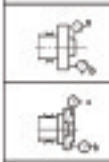
Clamping Range - 4 Jaw Independent Chucks



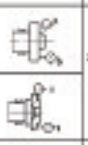
Chuck Size (in.)	Internal Jaws Clamping Range A-A1 (in.)	External Jaws Clamping Range B-B1 (in.)
3”	0.197” - 1.378”	1.378” - 3.150”
4”	0.236” - 1.772”	1.575” - 3.937”
5”	0.276” - 2.244”	1.890” - 4.921”
6”	0.315” - 3.150”	1.969” - 6.299”
8”	0.394” - 3.937”	2.480” - 7.874”
10”	0.591” - 5.118”	3.150” - 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

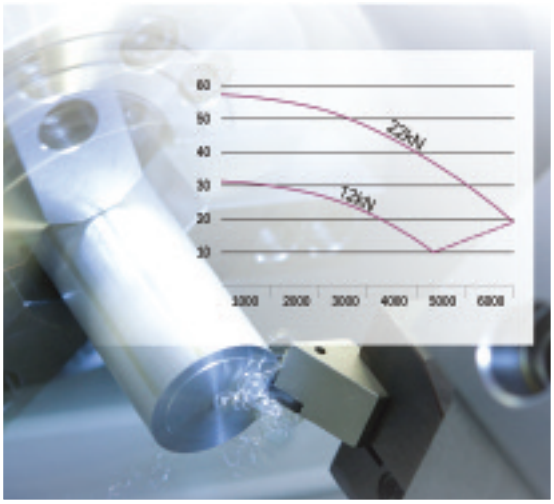
Diagram of test	Test item	Chuck diameter								
		≤8"				8"~10"		12"~16"		20"
		3"	4"	5"	6"	8"	10"	12"	16"	20"
	a. Radial run-out b.Axial run-out	a : 0.0002" b : 0.0002"								
	Radial run-out of chuck	0.0012"/				0.0016"/		0.0024"/		0.0031"/
		0.0012"/				0.0016"/		0.0024"/		0.0031"/
	Axial run-out 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	0.0008"/		0.0008"/	0.0008"/		0.0008"/	0.0013"/	0.0013"/		
	Axial run-out of step of jaw	0.0008"/		0.0008"/	0.0013"/		0.0013"/	0.0016"/	0.0016"/		
	Linearity of front face of chuck	—		—	—		0.0013"/ (⟷)	0.0013"/ (⟷)	0.0016"/ (⟷)		

POWER CHUCKS





Features:

- Manufactured from high grade alloy steel which extends machine life while providing higher rigidity and greater wear resistance
- The unique design of wedge nut results in its very rigid structure and enables direct power transmission to the master jaws in direct area of jaw guideways – effectively counteracting the loss of gripping force and resulting in high power transmission efficiency
- Hardened and ground working surfaces ensure longer life with maintained accuracy and repeatability
- Large through-hole works well with high rotational speeds
- Master jaws secured against throw-off
- Master jaws lubricated directly
- Unbalance G 6,3
- Flat back mounting, dimensions according to DIN 6353
- Special insert set available that allows for easy transformation into a non-through hole model

Application:

- This first class chuck, with increased gripping accuracy, is made for very high precision machining on CNC lathes and turning centers
- Designed for high rotation speeds without compensating elements

Options:

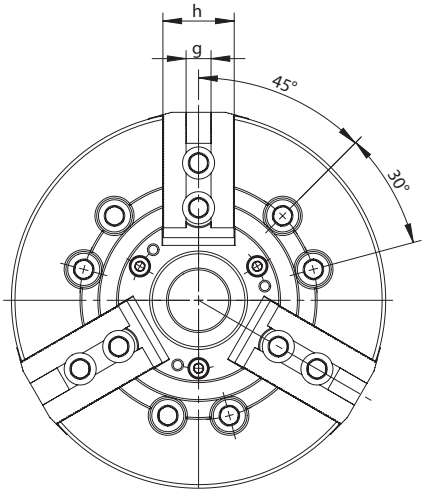
- Special insert set allows for non through-hole execution
- Chucks with diameters 500 mm, 630 mm and 800 mm are available on request

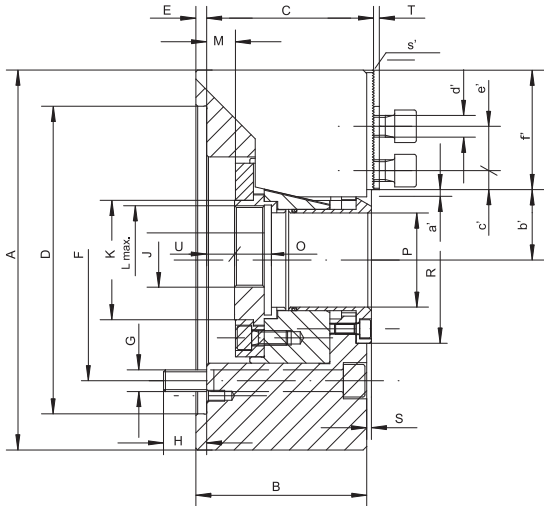
Standard accessories:

- Chuck and jaw mounting bolts
- Reversible top jaws hardened and ground
- T-nuts
- Key for chuck installation
- Eye bolt (for sizes greater than 8” - 200 mm)
- Special insert set

Bison 2405-K Power Chucks With 1.5mm x 60º Serrations

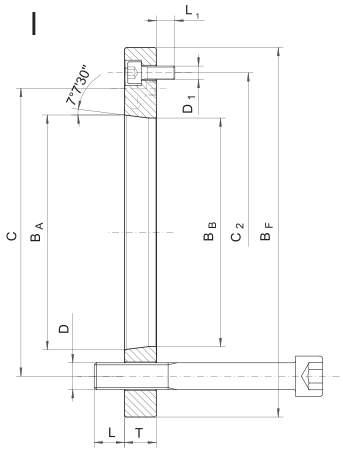
Standard accessories:
- Chuck and jaw mounting bolts
- Reversible top jaws hardened and ground
- T-nuts
- Blank Draw Bar Nut
- Key for chuck installation
- Eye bolt (for sizes greater than 8"/200 mm)
- Special insert set



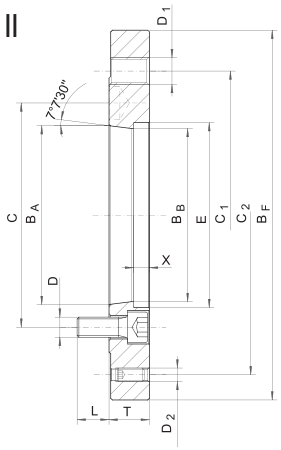


Size (mm)	160	200	250	315
Size (inch)	**6"**	**8"**	**10"**	**12"**
Code No.	468-104	468-116	468-124	468-129
Price $	**3,780.70**	**4,103.30**	**4,950.10**	**6,840.10**
A	169	210	254	315
B	81	95	106	108
C	79	93	104	106
D (H4)	140	170	220	220
E	6	6	6	6
F	104.8	133.4	171.4	171.4
G	6xM10	6xM12	6xM16	6xM16
H	13.5	18	28	-
J	M27x2	M36x2	M50x2	M56x2
K	60	94	140	-
L max.	M55x2	M60x2	M85x2	M100x2
M max. (Wedge stroke)	16	22.5	27	27
O	19	20.5	25	28
P (Thru hole)	45	52	75	91
R	70	92	117	134
S	2.6	2.6	2.6	0.6
T	2.4	3.40	3.40	2.90
U min.	-5.0	-8.0	-18.5	-19.0
U max.	11.0	14.5	8.5	8.0
a (Jaw stroke)	3.5	5.0	6.0	6.0
b min.	30.2	35.5	47.9	56.9
b max.	33.7	40.5	53.9	62.9
c min.	9.0	10.5	11.7	13.2
c max.	25.5	33	41.7	60
d	M10	M12	M12	M16
e	20	25	30	30
f	51	64.5	73	94
g (H7)	12	14	16	21
h	38	40	45	52
s	1.5x60º	1.5x60º	1.5x60º	1.5x60º
Max. draw bar pull (daN)	2200	3400	4300	5600
Max. total gripping force (daN)	5700	8600	11100	14400
Max. speed (rpm)	6000	5000	4200	3300
Moment of inertia (kgm^2)	0.057	0.15	0.31	0.73
Weight without top jaws (kg)	12	22	35	56.5

I

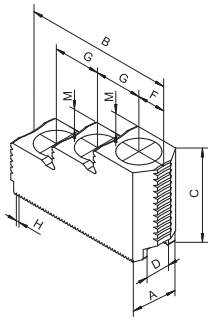


II



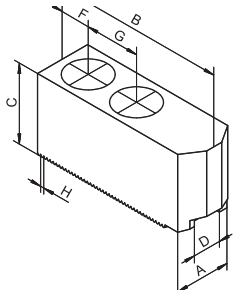
Adapters For 2405-K Power Chucks

Type	160-A5	200-A6	250-A6	250-A8	315-A6	315-A8
Code No.	468-952	468-956	468-958	468-960	468-962	468-964
Price $	**758.00**	**809.30**	**1,007.20**	**1,007.20**	**999.60**	**999.60**
Spindle Nose	A5	A6	A6	A8	A6	A8
Drawing No.	I	I	II	I	II	I
BF	140	170	220	220	220	220
BA	82.563	106.375	106.375	139.719	106.375	139.719
BB	79.5	103	103	136.1	103	136.1
C	104.8	133.4	133.4	171.4	133.4	171.4
C1	-	-	171.4	-	171.4	-
C2	116	150	190	190	190	190
D	6xM10	6xM12	6xM12	6xM16	6xM12	6xM16
D1	3xM6	3xM6	6xM16	3xM8	6xM16	3xM8
D2	-	-	3xM8	-	3xM8	-
E	-	-	110	-	110	-
L	13.5	19.5	19	20	18	20
L1	8	7	-	12	-	12
T	15	17	25	18	30	18
X	-	-	10.5	-	15.5	-
Weight (kg)	1.5	2.3	5.2	4.2	6.2	4.2



2405-K Hard Top Jaws

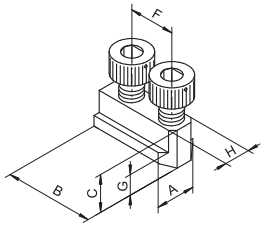
Size	A	B	C	D H7	F	G	H	M	Screw	Weight kg	Code No.	Price $
160	32	64	43	12	12.5	20	1.5 x 60	10	M10	0.31	468-205	**548.40**
200	35	79	49	14	14.5	25	1.5 x 60	12	M12	0.56	468-210	**601.10**
250	40	102	54	16	19	30	1.5 x 60	14	M12	1.02	468-215	**601.10**
315	45	102	58	21	21	30	1.5 x 60	14	M16	1.08	468-220	**736.20**



2405-K Soft Top Jaws

Size	A	B	C	D H7	F	G	H	Screw	Weight kg	Code No.	Price $
160	26	66	28	12	12	20	1.5 x 60	M10	0.265	468-305	**190.60**
200	35	95	38	14	24	25	1.5 x 60	M12	0.776	468-310	**240.00**
250	40	110	42	16	30	30	1.5 x 60	M12	1.194	468-315	**280.40**
315	50	111	50	21	21	30	1.5 x 60	M16	1.750	468-320	**404.80**

Note: Other sizes available from stock - please call



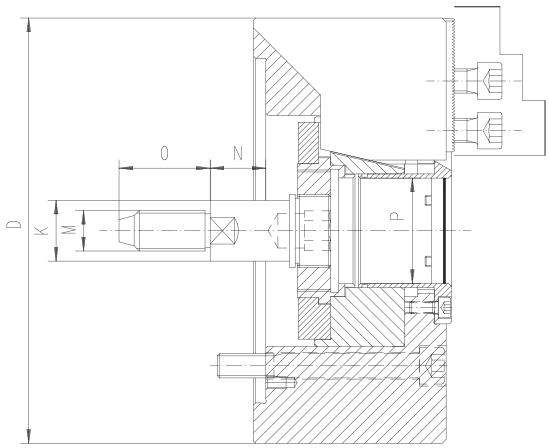
2405-K T-Nuts

Size	A	B	C	F	G	H h6	Screw	Weight kg	Code No.	Price $
160	17.5	36	18.5	20	7.5	12	M10 x 20	0.039	468-405	**95.30**
200	20.5	46.5	20.5	25	8.5	14	M12 x 25	0.091	468-410	**96.00**
250	22.5	51	21.5	30	8.5	16	M12 x 30	0.121	468-415	**119.70**
315	29	55.5	27	30	10.5	21	M16 x 30	0.209	468-420	**137.40**

Special Insert Sets For 2405-K

Features:

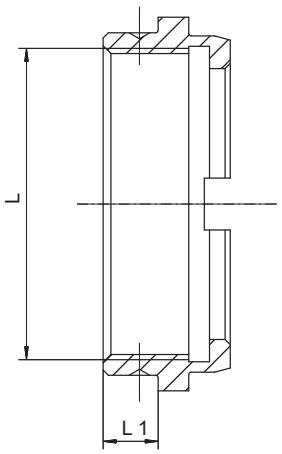
- Special insert set for power chucks with through-hole enable conversion to closed center option
- The set includes:
  1) Cover to be mounted on front surface of power chuck body instead of originally supplied hollowed cover
  2) Special screw for connecting threaded nut of power chuck body with the drawbar of actuating cylinder
- Sets are available in different sizes matching the chuck size



Size	160	200	250	315
Code No.	468-902	468-904	468-906	468-908
Price $	**859.00**	**937.50**	**1,015.80**	**1,094.30**
D	169	210	254	315
P	45	52	75	91
K	24	30	36	36
M	M16	M20	M24	M24
N	25.5	27.5	33	34
O	40	45	55	55

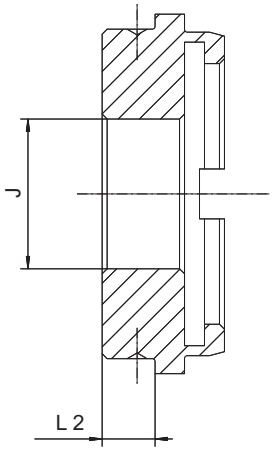
Drawbar Nuts - Threaded

Chuck Size	L	L1	Code No.	Price $
160	M42x1.5	8	468-720	**155.10**
160	M55x1.5	8	468-722	**155.10**
160	M42x2	8	468-724	**155.10**
160	M50x1.5	8	468-726	**155.10**
160	M55x2	8	468-728	**155.10**
200	M50x1.5	11.6	468-730	**170.20**
200	M55x1.5	11.6	468-732	**170.20**
200	M60x1.5	11.6	468-734	**170.20**
200	M50x2	11.6	468-736	**170.20**
200	M55x2	11.6	468-738	**170.20**
200	M60x2	11.6	468-740	**170.20**
250	M60x1.5	23	468-742	**201.10**
250	M85x1.5	23	468-744	**201.10**
250	M60x2	23	468-746	**201.10**
250	M80x2	23	468-748	**201.10**
250	M85x2	23	468-750	**201.10**
315	M100x1.5	19.5	468-752	**278.50**
315	M100x2	19.5	468-754	**278.50**

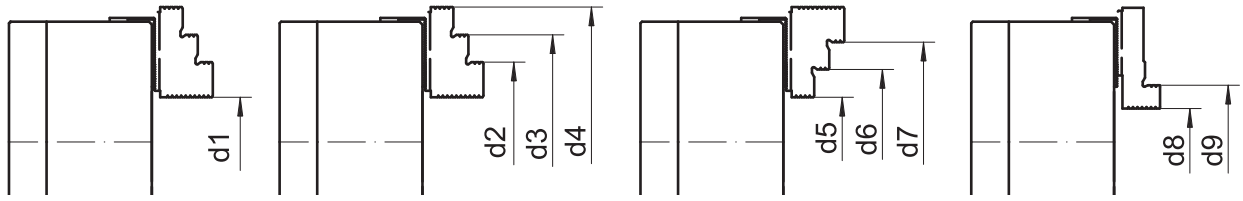


Drawbar Nuts - Blank

Chuck Size	J	L2	Code No.	Price $
160	M27x2	8	468-702	**155.10**
160	Ø20	28	468-703	**155.10**
200	M36x2	11.6	468-704	**170.20**
200	Ø30	31.6	468-705	**170.20**
250	M50x2	23	468-706	**201.10**
250	Ø45	43	468-707	**201.10**
315	M56x2	19.5	468-708	**278.50**
315	Ø50	39.5	468-709	**278.50**

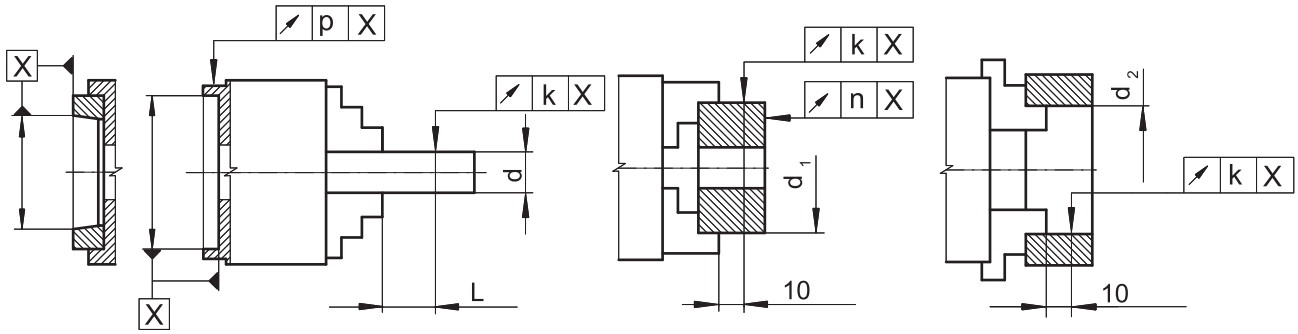


Gripping Range With Hard Top Jaws For 2405-K



Size	d1	d2	d3	d4	d5	d6	d7
160	15-88	65-136	104-176	145-218	17-90	59-133	99-172
200	16-111	80-172	128-222	178-272	16-111	64-161	116-211
250	16-134	98-213	160-276	225-341	16-134	80-198	144-262
315	47-177	125-254	185-315	255-385	47-177	117-247	177-307

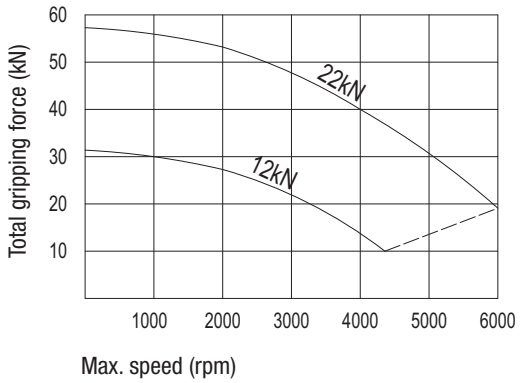
Centering Accuracy For 2405-K



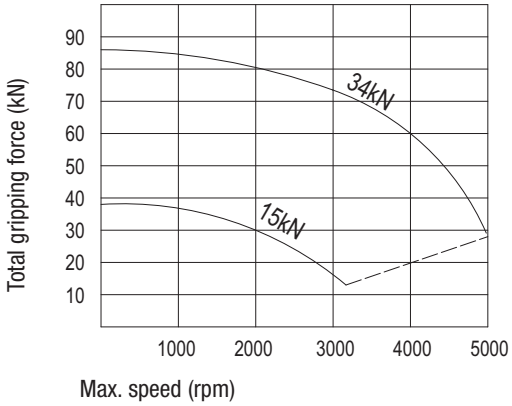
Size	160	200	250	315
d	20	32	32	50
d	32	50	50	80
d	50	80	80	125
L	40	40	60	80
d1	125	200	200	2501
d2	100	125	162	162
k	0.02	0.025	0.03	0.04
n	0.02	0.02	0.03	0.03
p	0.01	0.01	0.01	0.01

Gripping Force Properties During Chuck Rotation

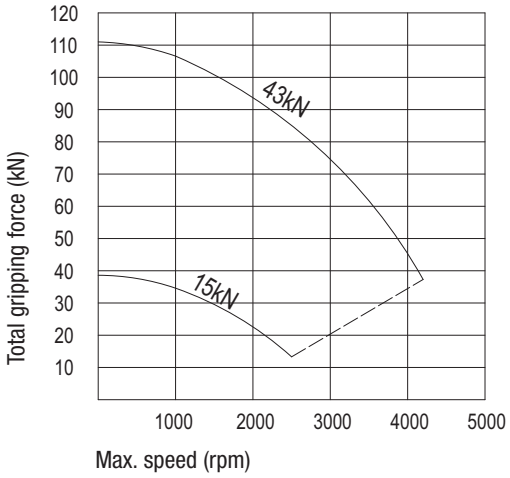
Chuck size 6”



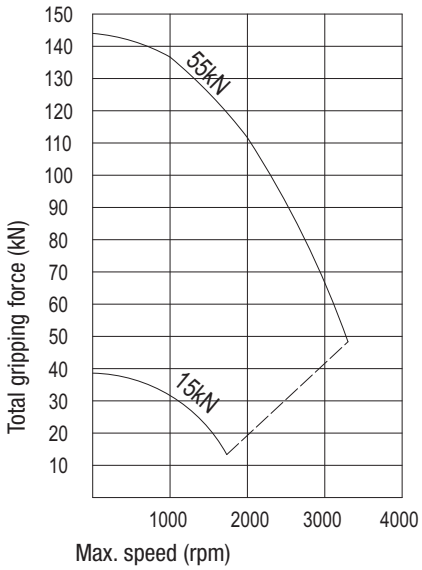
Chuck size 8”



Chuck size 10”



Chuck size 12”





Quick Change 3 Jaw Chucks

High efficiency hand operated chuck

- With reversible one-piece jaws, reversible top jaws, base jaws, thrust ring and key bars, self centering, three jaw chucks, steel body





Cylindrical centre mount (Plain Back)

Size (mm)	Size (inch)	Through Hole (mm)	D (mm)	With reversible 1pc jaws (type 000) Rohm Id No.	Code No.	Price $	With reversible top jaws (type 003) Rohm Id No.	Code No.	Price $
125	5	32	46.5	437475	391-181	**3,623.60**			
160	6-1/4	42	63	437476	391-182	**4,647.60**	437490	391-188	**4,897.10**
200	8	52	81	437477	391-183	**5,002.10**	437491	391-189	**5,277.80**
250	10	62	92	437478	391-184	**6,564.40**	437492	391-191	**6,905.80**
315	12-1/2	87	111	437479	391-185	**9,767.80**	437493	391-192	**11,238.20**
400	15-3/4	102	118	437480	391-186	**15,229.20**	437494	391-193	**17,329.80**
500	20	162	118	437481	391-187	**23,631.50**	437495	391-194	**27,045.00**
630	25	252	143				437496	391-196	**40,698.80**

3 Jaw Chucks - Solid Jaws - Series ZG & ZS

ZG-Cast Iron Body - ZS-Steel Body

Includes:

- 1 set of outward stepped jaws mounted on the chuck
- 1 set of inward jaws
- 1 operating key, mounting bolts





Cylindrical centre mount (Plain Back)

Size (mm)	Size (in.)	Thru Hole (mm)	Cast Iron Body (Type 300) Rohm Id No.	Code No.	Price $	Steel Body (Type 600) Rohm Id No.	Code No.	Price $
80	3-1/4	19	-	-	-	102513	389-028	**1,360.30**
100	4	20	101781	389-006	**1,293.80**	101782	389-030	**1,517.90**
125	5	32	101628	389-010	**1,427.10**	101672	389-032	**1,705.60**
160	6-1/4	42	100300	389-014	**1,623.80**	100717	397-055	**1,972.30**
200	8	55	100000	389-016	**1,963.30**	100186	389-036	**2,384.20**
250	10	76	100200	389-018	**2,787.00**	100533	389-038	**3,311.10**
315	12-1/2	103	101248	399-848	**3,829.30**	101344	389-040	**4,716.60**
400	15-3/4	136	-	-	-	102062	389-044	**8,469.80**
500	20	190	-	-	-	102555	389-046	**18,972.10**
630	25	240	-	-	-	102720	389-048	**25,815.00**

DIN Mount



Type 615

Size (mm)	DIN Taper Mount	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
125	4	32	101692	389-118	**2,196.50**
160	4	42	100740	389-128	**2,562.90**
160	5	42	100744	389-130	**2,562.90**
200	5	55	100152	389-136	**3,053.70**
200	6	55	100156	389-138	**3,053.70**
250	6	76	100555	389-144	**4,171.50**
250	8	76	100556	389-146	**4,171.50**
315	6	103	101364	389-150	**6,007.10**
315	8	103	101365	389-152	**6,007.10**
315	11	103	101366	389-154	**6,422.10**
400	8	136	102202	389-164	**10,799.40**
400	11	136	102210	389-166	**10,799.40**
500	11	190	102548	389-170	**22,416.30**
500	15	190	102915	389-172	**23,064.60**
630	11	192.7	102752	389-174	**29,883.30**
630	15	240	102760	389-176	**30,413.40**

Camlock Mount



Type 630

Size (mm)	Camlock Taper Mount	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
125	4	32	108895	389-258	**2,302.40**
160	4	42	108897	389-263	**2,872.00**
160	5	42	109150	389-264	**2,872.00**
200	5	55	109151	389-267	**3,414.20**
200	6	55	109154	389-268	**3,414.20**
250	6	76	109155	389-271	**4,619.90**
250	8	76	109159	389-272	**4,619.90**
315	6	103	109156	399-832	**6,467.50**
315	8	103	109160	389-274	**6,467.50**
315	11	103	109165	389-275	**6,828.20**
400	8	136	109161	389-280	**11,359.70**
400	11	136	109166	389-281	**11,359.70**
500	11	190	109167	389-283	**23,155.40**
500	15	190	109170	389-284	**23,882.40**
630	11	192.7	109168	389-285	**30,649.60**
630	15	240	109171	389-286	**31,007.00**

ROHM

3 Jaw Chucks - 2PC Jaws - Series ZGU & ZSU

ZSU-Steel Body

Includes:

- Set of master base and top reversible jaws



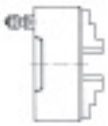
Cylindrical centre mount (Plain Back)



Type 603

Size (mm)	Size (in.)	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
100	4	20	101788	389-302	**1,845.10**
125	5	32	101678	389-303	**2,011.70**
160	6-1/4	42	100725	389-305	**2,311.60**
200	8	55	100189	389-306	**2,832.60**
250	10	76	100541	397-049	**6,962.10**
315	12-1/2	103	101350	389-307	**5,622.40**
350	14	115	104803	389-308	**8,188.10**
400	15-3/4	136	102068	389-309	**9,639.30**
500	20	190	102585	389-310	**20,992.70**
630	25	240	102726	389-311	**26,914.60**
700	27-1/2	310	147501	389-312	**48,664.00**
800	31-1/2	380	104913	389-313	**58,495.40**
1000	39-1/2	460	104925	389-314	**82,022.30**
1250	49-1/2	550	104941	389-315	**93,826.30**

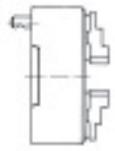
DIN Mount



Type 618

Size (mm)	DIN Taper Mount	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
125	4	32	101695	389-358	**2,511.40**
160	4	42	100743	389-363	**2,917.40**
160	5	42	100747	389-364	**2,917.40**
200	5	55	100155	389-367	**3,517.30**
200	6	55	100159	389-368	**3,517.30**
250	6	76	100564	389-371	**4,837.90**
250	8	76	100565	389-372	**4,837.90**
315	6	103	101373	389-374	**6,915.90**
315	8	103	101374	389-375	**6,915.90**
315	11	103	101375	389-376	**7,358.20**
400	8	136	102208	389-381	**11,974.60**
400	11	136	102216	389-382	**11,974.60**
500	11	190	102554	389-384	**24,445.90**
500	15	190	102921	389-385	**25,082.10**
630	11	192.7	102758	389-386	**30,985.80**
630	15	240	102766	389-387	**31,509.90**

Camlock Mount

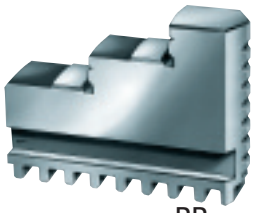


Type 633

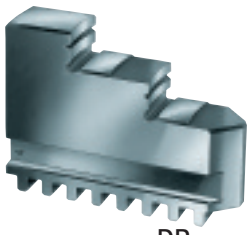
Size (mm)	Camlock Taper Mount	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
125	4	32	105870	389-486	**2,675.00**
160	3	42	106310	389-487	**3,305.20**
160	4	42	105883	389-488	**2,572.10**
160	5	42	105898	389-489	**3,305.20**
200	5	55	106330	389-492	**3,968.40**
200	6	55	106346	397-060	**3,968.40**
250	6	76	106386	389-495	**5,383.10**
250	8	76	106402	397-065	**5,383.10**
315	6	103	106442	397-102	**7,539.80**
315	8	103	106458	397-088	**7,539.80**
315	11	103	106474	399-828	**7,539.80**
400	8	136	106498	399-962	**15,427.20**
400	11	136	106614	389-501	**12,856.10**
500	11	190	103274	389-503	**25,184.90**
500	15	190	103275	389-504	**25,902.90**
630	11	192.7	106658	389-505	**31,737.20**
630	15	240	103328	389-506	**32,336.80**

ROHM

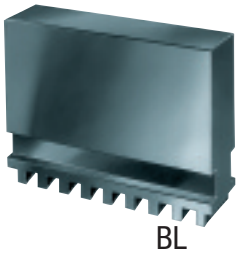
Replacement Jaws For ZG, ZS, ZGU, ZSU Series Chucks



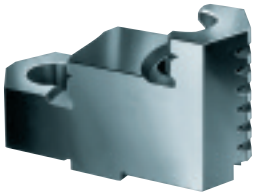
BB



DB



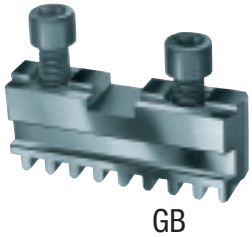
BL



UB



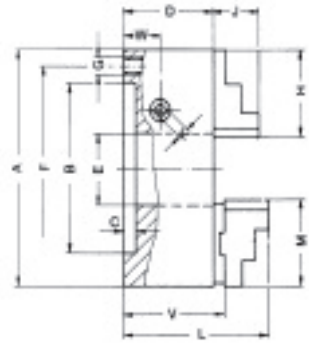
AB



GB

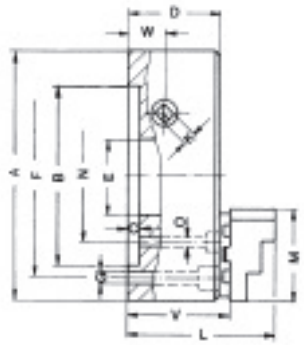
Chuck Size	Rohm Id No.	Code No.	Price $ Set of 3
BB Inside Jaw Outward Step Hardened Set of 3			
80/85	110155	389-521	**295.90**
100/110	110156	397-075	**330.50**
125	110157	397-077	**376.00**
160	110159	389-525	**403.10**
200	110160	389-526	**457.70**
250	110161	389-527	**575.90**
315	110162	399-868	**903.00**
350/400	110163	399-867	**1,072.60**
500/630	110164	389-528	**2,284.30**
DB Outside Jaw Inward Step Hardened Set of 3			
80/85	110165	389-529	**295.90**
100/110	110166	389-530	**330.50**
125	110167	389-531	**376.00**
160	110169	399-866	**403.10**
200	110170	399-865	**457.70**
250	110171	399-864	**554.60**
315	110016	389-533	**987.80**
350/400	110017	399-863	**1,072.60**
500/630	110018	389-534	**2,284.30**
BL Block Jaw No Steps Soft Set of 3			
80/85	107588	389-536	**204.80**
100/110	107589	389-537	**204.80**
125	107590	389-538	**242.20**
160	107592	389-540	**306.30**
200	107593	397-076	**345.60**
250	107594	389-541	**457.70**
315	107595	389-542	**675.80**
350/400	107596	389-543	**688.00**
500/630	107597	389-544	**1,502.80**
UB Reversible Top Jaw Hardened Set of 3			
100/110	108045	399-871	**330.50**
125	108046	399-870	**376.00**
140/160	107936	397-020	**454.70**
200	107937	397-025	**460.70**
250	108049	397-030	**645.40**
315	108050	397-035	**824.20**
350/400	108051	397-098	**1,245.30**
500/630	108052	397-068	**2,587.30**
AB Top Block Jaw No Step Soft Set of 3			
100/110	107633	389-548	**150.80**
125	107634	389-549	**178.40**
140/160	108581	399-842	**178.40**
200	108582	389-550	**206.10**
250	107637	389-551	**298.10**
315	107638	389-552	**424.50**
350/400	107639	399-862	**539.50**
500/630	107640	389-553	**1,072.60**
GB Base Jaw with Mounting Bolts Set of 3			
100/110	107500	399-877	**588.00**
125	107501	399-876	**594.00**
160	107503	399-875	**688.00**
200	107504	397-040	**778.80**
250	107505	399-873	**1,051.50**
315	107506	397-045	**2,460.70**
350/400	107507	397-046	**3,417.60**
500	107508	399-872	**2,987.10**
630	107509	389-555	**3,468.70**

Dimensions For ZG, ZS, ZGU, ZSU Series Chucks



Chuck Size A	74	80	85	100	110	125	140	160	200	250	315	350	400	500	630
B^{H6}	56	56	60	70	80	95	105	125	160	200	260	290	330	420	545
C	2.5	3	3	3	3	4	4	4	4	5	5	6	5	5	7
D	32.5	39.5	39.5	50	50	56	60	65	73.5	82	95	100	105	120	135
E	15	19	19	20	27	32	40	42	55	76	103	115	136	190	240
E_{max}	-	-	-	21	-	33	43	50	70	92	114	120	150	210	253
F	63	67	72	83	95	108	120	140	176	224	286	318	362	458	586
G	3 x M6	3 x M6	3 x M6	3 x M8	3 x M8	3 x M8	3 x M8	3 x M10	3 x M10	3 x M12	3 x M16	3 x M16	3 x M16	3 x M16	3 x M16
G_1	-	-	-	-	-	3 x 9	-	3 x 10.5	3 x 11	3 x 14	3 x 14	-	3 x 18	6 x 18	6 x 18
H	32	37	37	48	48	52	61	61	69	90	130	130	130	190	190
J	14	14	14	18	18	22.5	22.5	26	32.5	40	46	45	43	54.5	54.5
K	6	6	6	8	8	9	9	10	11	12	14	14	17	19	19
L	-	-	-	80.5	-	95.5	106	108	119.6	139.3	155	168.5	171.5	201.5	216.5
M	-	-	-	47	47	56	66.7	66.7	79.5	95	109.5	127	127	127	127
V	-	-	-	53.6	53.6	61	67.7	69.7	80.2	89.9	100.4	110.4	113.4	128.4	143.3
W	13	14.5	14.5	18	18	20	21	22.45	25.7	26.5	30	34	35	38	48
Weight kg	1	1.3	1.9	2.9	3.4	4.5	5.8	8.2	14.6	25.7	44.2	56	80	126	208

E_{max} - Enlarged bore max
G_1 - Mounting from front



Chuck Size A	700	800	1000	1250
B	610	710	910	910
$C^{2)}$	$7^{+0.03}$	$7^{+0.03}$	$7^{+0.03}$	$7^{+0.03}$
D	147	147	157	157
E	310	380	460	550
E_{max}	330	420	580	580
F	660	760	950	950
G	6 x 22	6 x 22	6 x 26	6 x 26
K	19	19	24	24
L	240.6	240.6	269.6	269.6
M	210	210	210	210
N	360	460	610	610
O	6 x 18	6 x 18	6 x 18	6 x 18
V	158	158	166	166
W	48	48	53	53
Weight kg	280	350	590	850

C^{2} - Adapter plate - $7^{-0.03}$
E_{max} - Enlarged bore max

Parts For 3 Jaw Chucks







Chuck Size	Rohm Id No.	Scroll Code No.	Scroll Price $	Rohm Id No.	Driving Pinion Code No.	Driving Pinion Price $	Rohm Id No.	Pinion Holder Screw Code No.	Pinion Holder Screw Price $
80	102183	389-557	**242.20**	102184	389-568	**50.40**	102185	389-584	**2.70**
100	101754	399-998	**342.60**	101755	389-570	**80.40**	100305	389-585	**2.70**
125	101721	399-999	**382.00**	101722	389-572	**82.20**	100305	389-585	**2.70**
160	100303	389-560	**454.70**	100304	389-574	**91.90**	100305	389-585	**2.70**
200	100003	399-899	**563.60**	100005	389-575	**112.10**	100006	389-586	**5.20**
250	100203	399-898	**684.80**	100204	389-577	**127.60**	100006	389-586	**5.20**
270	100203	389-562	**745.40**	112267	389-578	**146.90**	100006	389-586	**5.20**
315	101552	389-563	**990.90**	101553	389-579	**158.00**	101554	389-587	**7.80**
350	105228	389-564	**1,714.70**	-	-	-	-	-	-
400	102497	399-963	**2,299.40**	102498	397-114	**218.80**	102499	389-588	**8.40**
500	-	-	-	116695	389-581	**330.50**	103300	389-589	**20.90**
630	-	-	-	117395	389-582	**527.40**	103300	389-589	**20.90**

Wrenches For 3 Jaw Chucks



Chuck Size	Square (mm)	Length (mm)	Rohm Id No.	Code No.	Price $
74	6		006325	389-590	**5.50**
80/85	6	62	107426	389-591	**53.70**
100/110	8	75	107427	389-592	**62.10**
125/140	9	80	107428	389-593	**64.70**
160	10	90	107429	389-594	**69.10**
200/230	11	100	107430	389-595	**77.10**
250/270	12	100	107431	389-596	**92.00**
315	14	110	107432	389-597	**94.70**
350	14	140	107433	389-598	**96.40**
400	17	140	107434	389-599	**104.50**
500/630	19	150	107435	389-600	**219.00**

DIN Backplates For 3 Jaw Chucks

- Finished on machine side, faced on chuck side



Type 619-25

Dia. (mm)	Taper	Diameter (in.)	Width (mm)	Rohm Id No.	Code No.	Price $
125	3	5	19	319650	389-882	**347.80**
125	4	5	19	319651	389-883	**347.80**
160	3	6-1/4	21	319652	389-884	**347.80**
160	4	6-1/4	21	319653	389-885	**347.80**
160	5	6-1/4	21	319654	389-886	**347.80**
200	4	8	21	319655	389-887	**435.30**
200	5	8	21	319656	389-888	**435.30**
200	6	8	23	319657	389-889	**435.30**
250	5	10	21	319659	389-890	**543.50**
250	6	10	23	319660	389-891	**543.50**
250	8	10	26	319661	389-892	**543.50**
315	5	12-1/4	26	319662	389-893	**684.00**
315	6	12-1/4	26	319663	389-894	**684.00**
315	8	12-1/4	26	319664	389-895	**684.00**
315	11	12-1/4	33	319665	389-896	**684.00**
400	6	15-3/4	31	319666	389-897	**1,158.20**
400	8	15-3/4	31	319667	389-898	**1,158.20**
400	11	15-3/4	31	319668	389-899	**1,158.20**
500	8	20	33	319669	389-900	**1,158.20**
500	11	20	41	319671	389-901	**1,809.90**
500	15	20	41	319672	389-902	**1,809.90**

Camlock Backplates For 3 Jaw Chucks

• Finished on machine side, faced on chuck side

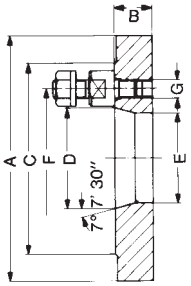


Type 619-25

Dia. (mm)	Taper	Diameter (in.)	Width (mm)	Rohm Id No.	Code No.	Price $
125	3	5	27	319673	389-903	**382.40**
125	4	5	28	319674	389-904	**382.40**
160	4	6-1/4	22	176807	389-905	**1,927.30**
160	5	6-1/4	22.5	176808	389-906	**2,033.30**
200	3	8	25	102658	389-907•	**1,191.80**
200	5	8	22.5	176810	389-908	**1,120.80**
200	6	8	21.5	176811	389-909	**2,394.70**
250	5	10	21	176813	389-910	**3,044.00**
250	6	10	26	176814	389-911	**3,044.00**
250	8	10	26	176815	389-912	**3,129.20**
315	5	12-1/4	38	112364	389-645•	**1,181.60**
315	6	12-1/4	31.5	176816	389-913	**3,794.70**
315	8	12-1/4	31	176817	389-914	**3,794.70**
315	11	12-1/4	31	176818	389-915	**4,119.40**
400	6	15-3/4	32.5	176819	389-916	**4,966.80**
400	8	15-3/4	32	176820	389-917	**4,966.80**
400	11	15-3/4	32.5	176821	389-918	**4,966.80**
500	8	20	36	176823	389-919	**6,092.70**
500	11	20	36	176824	389-920	**6,092.70**
500	15	20	36	176825	389-921	**6,184.80**
630	11	25	39	176826	389-922	**7,266.90**
630	15	25	39	176827	389-923	**7,266.90**

• Available only while supplies last.

DIN & Camlock Backplate Dimensions



Short Taper Size	3	4	5	6	8	11	15
C	98	117	146	181	225	298	403
D	53.985	63.525	82.575	106.390	139.735	196.885	285.8
E	51.2	60.6	79.4	103	135.7	192.5	281
F*	75(70.66)	85(82.55)	104.8	133.4	171.4	235	330.2
G DIN	M10	M10	M10	M12	M16	M20	M24
G Camlock	7/16-20	7/16-20	1/2-20	5/8-18	3/4-16	7/8-14	1-14
Set screws	3	3	4	4	4	6	6
No. DIN Studs	3	3	4	4	4	6	6
No. Camlock Studs	3	3	6	6	6	6	6

*F - DIN (Camlock)

Jaw Cutting Attachment





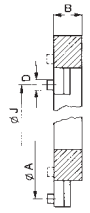
BAV Type 091

For 3 jaw chucks, for turning unhardened jaws and grinding hardened jaws, with reversible and stepless adjustable setting jaws.

Size	Mainly with Chucks up to	Rohm Id No.	Code No.	Price $
0*	125	220206	389-660	**2,326.70**
1	200	220207	389-661	**2,599.40**
2	250	220208	389-662	**2,872.00**
3	250	220209	389-663	**3,084.00**
4	315	220210	389-664	**3,380.80**
5	400	220211	389-665	**4,568.30**

* light duty design

Jaw Cutting Attachment Dimensions



Size	Outer (mm)	Inner (mm)	Overhang Distance J	Overhang Distance A	B	D	Screw Head Thread
0	153	110	50-115	150-215	20	8.5	M5
1	176	110	35-125	170-260	31	13	M8
2	215	135	70-140	215-285	31	13	M8
3	244	162	100-175	240-315	31	13	M8
4	290	208	145-215	290-360	31	13	M8
5	342	260	160-270	330-440	31	16	M10

Combination 3 Jaw Chucks - Solid Jaw

650-Steel Body

Lathe chucks with reversible jaws, with scroll, self centering and individually adjustable. Particularly suitable for lining up and chucking workpieces of irregular shape.





Cylindrical centre mount (Plain Back)

Type 650

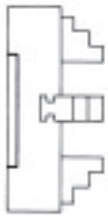
Size (mm)	Size (in.)	Thru Hole (mm)	Rohm Id No.	Steel Body Code No.	Price $
160	6-1/4	42	111360	389-675	**4,828.80**
200	8	55	111365	389-676	**5,195.30**
250	10	76	111370	389-677	**6,761.40**
315	12-1/2	103	111375	389-678	**8,430.40**
400	15-3/4	136	111380	389-679	**12,880.40**
500	20	190	111385	389-680	**24,115.70**
630	25	240	111390	389-681	**35,702.30**

ROHM

4 Jaw Independent Chucks

Type 499- 1pc Solid Reversible Jaws - Steel Body
Type 497- 2 pc Top Reversible Jaws - Steel Body

- Jaws individually adjustable through threaded adjustable spindle
- Plain back





Size (mm)	Size (in.)	Thru Hole (mm)	Steel Body (Type 499) Rohm Id No.	Code No.	Price $	Steel Body (Type 497) Rohm Id No.	Code No.	Price $
260	10-1/4	70	139781	389-924	**4,346.70**	137147	389-932	**3,690.30**
310	12	75	139796	389-925	**5,202.00**	139720	389-933	**4,399.20**
400	16	95	139827	389-926	**6,903.40**	135368	389-934	**5,689.80**
450	18	95	139842	389-927	**9,560.40**	136944	389-935	**6,398.80**
500	20	95	139857	389-928	**13,912.90**	135631	389-936	**8,871.00**
630	25	135	139887	389-929	**17,652.10**	139723	389-937	**13,451.90**
710	28	135	140800	389-930	**31,432.30**	141097	389-938	**17,632.80**
800	31-1/2	190	140801	389-931	**19,814.20**	141106	389-939	**22,722.70**

Adjusting Spindle & Chuck Keys





Size (mm)	Square Size (mm)	Adjusting Spindle (1pc) Rohm Id No.	Code No.	Price $	Chuck Key Rohm Id No.	Code No.	Price $
260	10	-	-	-	160096	399-844	**153.60**
310	10	-	-	-	160096	399-844	**153.60**
350	10	-	-	-	160096	399-844	**153.60**
400	13	082141	389-748•	**143.60**	082144	399-974	**167.10**
450	13	-	-	-	160098	389-760	**194.70**
500	13	-	-	-	160098	389-760	**194.70**
560	16	-	-	-	160099	389-761	**264.00**
600/630/710	16	-	-	-	160099	389-761	**264.00**
800	18	247826	389-753	**364.00**	160100	389-762	**373.40**
900	18	150544	389-754	**1,028.80**	160100	389-762	**373.40**
1000	18	150545	389-755	**1,254.40**	160100	389-762	**373.40**
1100	18	150546	389-756	**1,458.30**	160100	389-762	**373.40**
1200	24	149776	389-757	**1,815.70**	150548	389-763	**768.50**

- **Available only while quantities last**

JAWS FOR 4 JAW INDEPENDENT LATHE CHUCKS

EB Reversible Jaws

- Sold in Sets



Chuck Size	Rohm Id No.	Code No.	Set Price $
150	022983	389-710	**787.80**
200	022984	389-711	**863.60**
260	022985	389-712	**1,236.30**
310/350	022986	389-713	**1,381.60**
400/450	022988	389-714	**1,909.80**
500	022990	389-715	**2,366.10**
560/600/630	022991	389-716	**3,065.80**
710	026599	389-717	**3,568.80**

UB Reversible Top Jaws

- Sold in Sets



Chuck Size	Rohm Id No.	Code No.	Set Price $
200	107939	389-719	**818.00**
260	108057	389-720	**975.80**
310/350	108058	389-721	**1,381.60**
400/450	108059	389-722	**1,887.40**
500/560/600/630/710	108060	389-723	**3,444.50**
800/900	105085	389-724	**6,308.40**
1000/1100/1200	105101	389-725	**8,582.80**

AB Top Block Jaw

- Sold in Sets



Chuck Size	Rohm Id No.	Code No.	Set Price $
200	108584	389-726	**270.30**
260	107579	389-727	**385.00**
310/350	107580	389-728	**566.80**
400/450	107581	389-729	**715.10**
500/560/600/630/710	107582	389-730	**1,275.50**
800/900	105105	389-731	**2,094.10**
1000/1100/1200	105109	389-732	**4,145.50**

GB Base Jaw With Mounting Bolts

- Sold in Sets



Chuck Size	Rohm Id No.	Code No.	Set Price $
200	304655	389-733	**746.90**
260	304656	389-734	**1,089.60**
310/350	304657	389-735	**1,275.80**
400/450	304658	389-736	**1,711.60**
500	304659	389-737	**2,614.90**
560/600/630	304660	389-738	**3,332.30**
710	304661	389-739	**4,804.40**
800/900/1000/1100	304662	389-740	**6,685.70**
1200	150543	389-741	**3,986.00**

ROHM

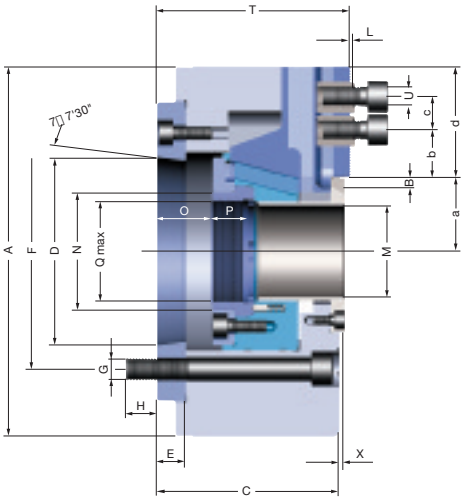
Power Chucks

KFD 3 Jaw Power Chucks With 60º Serrations

Type 440-92- For use on modern lathes. With large thru hole, suitable for both bar work and chucking of flange type parts. With 60º serrations and pre-machined draw tube connector.







Size (inch)			5	6	8	10	12	12
Size (mm)			**130**	**170**	**210**	**254**	**315**	**315**
Rohm ID No.			**154809**	**154393**	**154394**	**154395**	**154813**	**154832**
Sowa Code No.			389-800	389-801	389-802	389-803	389-804	389-805
Price $			**7,710.30**	**7,872.10**	**8,970.40**	**11,163.40**	**18,334.60**	**18,334.60**
		A	130	170	210	254	315	315
Jaw travel		B	2.7	3.4	4.3	5.1	5.3	5.3
		C	67.5	90.6	103.2	112.8	121.8	127.4
Short Taper		D	4	5	6	8	8	11
		E	11.5	15	16	17.8	17.8	19.4
		F	82.6	104.8	133.4	171.4	171.4	235
		G	3 x M10	3 x M10	3 x M12	3 x M16	3 x M16	3 x M20
		H	13	15	18	23	24	29
Wedge stroke		K	10	14	16	19	23	23
		L	2.9	3.2	3.2	3.2	3.2	3.2
Large bore		M	33	43	52	75	91	121
		N	45	57	66	94	108	143
	min./max	O	2.5/12.5	12/26	15.5/31.5	7.5/26.5	3/26	10/33
		P	20	19	20.5	28	32	26
		Q/Q max.	12/M40 X 1.5	20/M53 x 2	30/M60 x 2	45/M85 x 2	50/M100 x 2	60/M130 x 2
		T	72.5	96.6	109.2	118.8	127.8	133.4
		U	M8	M10	M12	M16	M16	M16
		V$^{H7}_{-0.05}$	57	74	92	125	135	170
		X	3	3	3	3	3	3
	min./max	a	23.8/26.5	34.8/38	37.7/42	50.9/56	56/61.3	72.2/77.5
	min.	b	7	4.5	9	10	12	12
	min./max	c	14	20	25	30	30	30
		d	38.5	47	63	71	96	80
		e	25	32	40	50	50	50
		f$^{H7}_{-0.025}$	10	12	14	16	21	21
Max. swing of top jaws		mm	170	230	290	345	410	410
Max. draw bar pull		kN	16	25	40	60	60	60
Max. total clamping force approx.		kN	36	66	90	135	150	150
Max. admissible speed		min^{-1}	7000	6000	5000	4200	3300	3300
Moment of inertia J		kgm^2	0.011	0.038	0.09	0.22	0.8	0.8
Weight without top jaws approx.		kg	5.5	12	18	29	53	50

ROHM

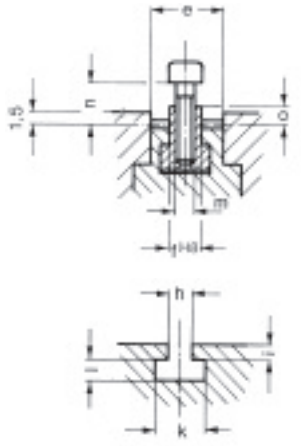
Power Chucks

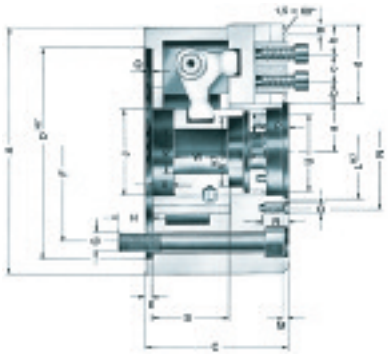
KFG 2 & 3 Jaw Lever Type Power Chucks With 60º Serrations

Type 522-05 2 Jaw
Type 532-05 3 Jaw

A highly versatile chuck with large through-hole, suitable for both bar work and chucking the most varied parts. Toggle joint levers convert the axial operating force into radial jaw movements.

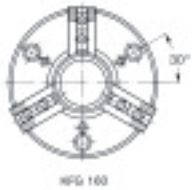
- **Long jaw movement**







Size			160	215	280	350
2 Jaw Rohm ID No.			**020686**	**020687**	**020688**	**020689**
Sowa Code No.			389-820	389-821	389-822	389-823
Price $			**18,185.30**	**21,853.80**	**27,910.00**	**41,079.20**
3 Jaw Rohm ID No.			**020666**	**020667**	**020668**	**020669**
Sowa Code No.			389-824	389-825	389-826	389-827
Price $			**21,335.60**	**25,630.10**	**33,133.00**	**48,495.10**
		A	160	215	280	350
Jaw travel		B	16	20	25	25
		C	79	92	116.2	134.7
		D^{H7}	140	190	255	320
		E	4.2	4.2	5.7	5.7
		F	104.8	133.4	133.4	171.4
		G	3 x M10	6 x M12	6 x M12	6 x M16
2 Jaws		G	4 x M10	4 x M12	4 x M12	4 x M16
		H	20	25	25	35
		J	54	74	102	135
		K	26	45.5	66.5	90.5
		L^{H7}	66	80	105	140
		M	2.5	2.5	2.5	2.5
		N	76	90	120	156
		O	M6	M8	M8	M10
		P	14	16.5	18.7	13.1
		Q	3.2	3.7	3.2	4.1
		R	13	15	15	20
Draw head stroke	min./max.	S	19.8/39.8	25.3/50.3	28.8/63.8	32.9/77.9
		T	8	12	18	22
		U	M46 x 1.25	M65 x 1.25	M90 x 1.25	M112 x 1.5
		V^{H7}	43	62	87	109
		W	23	29	32	37
	min./max.	a	23/39	31.5/51.5	47.5/72.5	69.5/94.5
		b	8	10	13	14
	min./max.	c	16/41	20/46	26/54	28/65
		d	57	66	80	93
		e	28	35	45	50
		f^{H8}	11	14	20	21
		g	-	35	63	73.5
		h	-	16	16	22
		i	--	10	10	15
		k	--	24	24	35
		l	--	10	10	17
		m	M8	M10	M12	M16
		n	7.5	8.5	13	15
		o	1.5	1.5	2.5	3
Max. swing of jaws		mm	242	295	380	480
Max draw bar pull 2jaws		kN	16	22.5	29	35
Max draw bar pull 3jaws		kN	24	33.9	43	52
Max. total clamping force approx. 2jaws		kN	14	20	28	44
Max. total clamping force approx. 3jaws		kN	21	30	42	66
Max. admissible speed		min.$^{-1}$	3400	2700	1950	1800
Moment of inertia J 3jaws		kgm^2	0.031	0.11	0.425	1.22
Weight without jaws approx. 3 jaws		kg	9.3	17	41	75



KFG 160



KFG 160+280+350



KFG 215+350



KFG 215

ROHM

Power Chucks

SP STATIONARY POWER CHUCKS

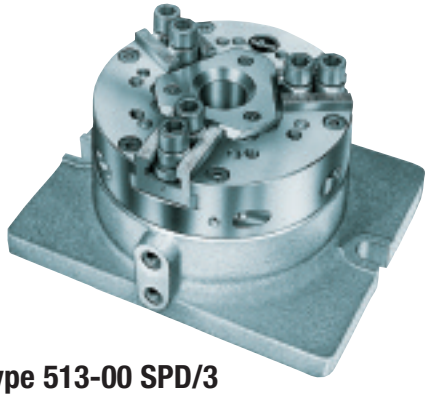
SPD- Thru hole

SPO- Without thru hole

Rohm Power Chucking Fixtures, used as stationary chucks on drilling, milling and special purpose machines, offer many advantages

Features:

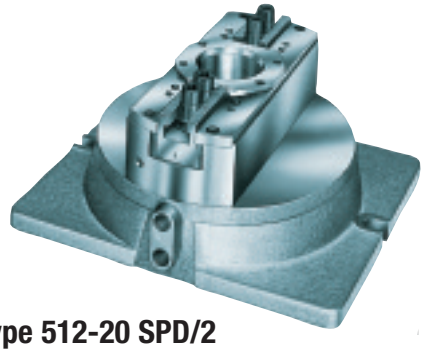
- Quick and efficient chucking
- Concentric gripping of round as well as angular parts
- Universal through use of different jaws
- Ideal for series production
- Suitable for use in automated work cycles
- Gripping force adjustable by changing the pressure
- Oil or air operated



Type 513-00 SPD/3

3 Jaw Stationary Power Chuck With Through Hole

Chuck Size	Rohm Id No.	Code No.	Price $
160	020926	389-828	**12,543.60**
215	020927	389-829	**14,487.80**
300	020928	389-830	**26,148.30**



Type 512-20 SPD/2
Mounting slots offset 90º

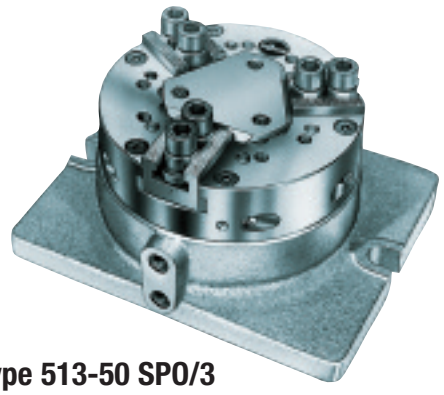
2 Jaw Stationary Power Chuck With Through Hole

Chuck Size	Rohm Id No.	Code No.	Price $
160	020935	389-834	**11,200.50**
215	020936	389-835	**13,227.60**
300	020937	389-836	**23,470.40**

Type 512-00 SPD/2
Mounting slots same direction as jaw guides

2 Jaw Stationary Power Chuck With Through Hole

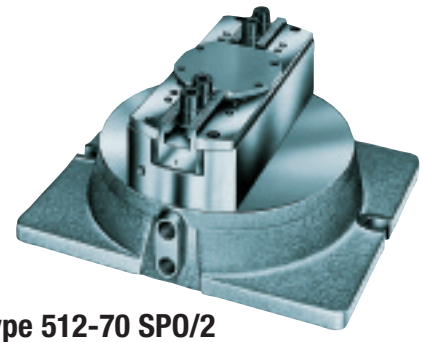
Chuck Size	Rohm Id No.	Code No.	Price $
160	020932	389-840	**11,200.50**
215	020933	389-841	**13,227.60**
300	020934	389-842	**23,470.40**



Type 513-50 SPO/3

3 Jaw Stationary Power Chuck Without Through Hole

Chuck Size	Rohm Id No.	Code No.	Price $
160	020929	389-831	**12,543.60**
215	020930	389-832	**14,487.80**
300	020931	389-833	**26,148.30**



Type 512-70 SPO/2
Mounting slots offset 90º

2 Jaw Stationary Power Chuck Without Through Hole

Chuck Size	Rohm Id No.	Code No.	Price $
160	020941	389-837	**11,200.50**
215	020942	389-838	**13,227.60**
300	020943	389-839	**23,470.40**

Type 512-50 SPO/2
Mounting slots same direction as jaw guides

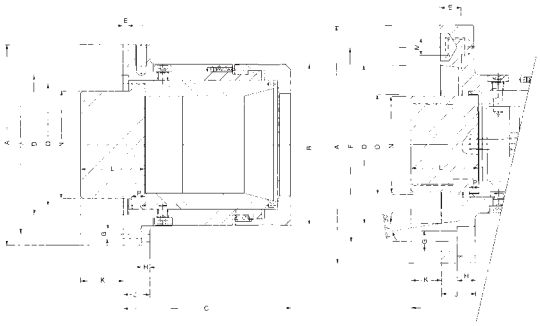
2 Jaw Stationary Power Chuck Without Through Hole

Chuck Size	Rohm Id No.	Code No.	Price $
160	020938	389-843	**11,200.50**
215	020939	389-844	**13,227.60**
300	020940	389-845	**23,470.40**

KZF Power Operated Collet Chucks

Type 508-31- Power operated collet chucks with bayonet catch are mainly used for chucking bar work on NC/CNC lathes. The bar stock can be fed in through the chuck. Profiles can also be chucked with the appropriate collets.





Size		40/5	40/6	60/6	60/8	80/8
Rohm ID No.		417252	417253	417256	417257	417259
Code No.		389-850	389-851	389-852	389-853	389-854
Price $		**4,224.20**	**4,224.20**	**5,248.00**	**5,592.10**	**11,494.90**
Short Taper		5	6	6	8	8
	A	135	170	170	210	210
	B	100	100	122	122	150
	C	127	128	144	146	170
	D	82.563	106.375	106.375	139.719	139.719
	E	16	18	18	22	22
	F	104.8	133.4	133.4	171.4	171.4
	G	4 x 11.5	4 x 14	4 x 14	4 x 18	4 x 18
	H	18	12	12	16	16
	J	25	25	25	30	30
	K min.	35.5	34.5	34.5	32.5	28.35
	K max.	28	27	27	25	25.5
	L	60	60	60	60	60
	M	4 x M10	4 x M12	4 x M12	4 x M16	4 x M16
	N	62	62	85	85	100
	O	M66 x 1.5	M66 x 1.5	M88 x 1.5	M88 x 1.5	M114 x 1.5
	P	8.5	8.5	8.5	8.5	12.5
Total stroke	mm	7.5	7.5	7.5	7.5	3.5
Max. draw bar pull	kN	25	25	30	30	35
Max. admissible speed	$min.^{-1}$	8000	8000	5000	5000	4000
Moment of inertia J	kgm^2	0.029	0.029	0.049	0.092	0.119
Weight without collet	kg	7.5	7.5	10.2	14	18

Call for Collet Inquiries

ALSO AVAILABLE FROM ROHM

AIR OPERATED SELF-CONTAINED CHUCKS





CALL TODAY FOR YOUR ROHM CHUCK CATALOGUE 1-800-265-8221

SMW AUTOBLOK

BH-M High Precision Power Chucks

BH-M: Master Jaws with metric serration (1.5mm x 60°)

- Suitable for Kitagawa top jaws
- Large through-hole
- 3 Jaws

Standard Equipment:

- 3 Jaw chuck
- 1 Set T-nuts w/ bolts
- 1 Set soft top jaws
- Mounting bolts
- Grease gun



Technical Features:

- Gripping force transmission via wedge hook
- Case hardened body to assure greatest precision and long chuck life
- 2 and 3 Jaw version available in all dia.
- 4 Jaw available starting from 165mm dia.

SMW-AutoBlok Model No		BH-M 130	BH-M 165	BH-M 210	BH-M 250	BH-M 315
Size		**130mm**	**165mm**	**210mm**	**250mm**	**315mm**
Number of Jaws		**3**	**3**	**3**	**3**	**3**
Through-hole	mm	32	43	52	66	95
Radial jaw stroke	mm	3.2	3.2	4	5	5
Wedge stroke	mm	15	15	19	26	24
Max. draw-pull	kN	15	17	25	34	40
Max. gripping force	kN	60	70	110	145	175
Max. speed	rpm	7000	6000	5000	4000	3200
Mass (w/out top jaws)	kg	5	9.5	19	30	46
Moment of inertia	kg m2	0.012	0.036	0.12	0.27	0.62
Recommended cylinders		**SIN-S 100 VSNC 101-39**	**SIN-S 85/100 VSNC 80-32**	**SIN-S 100/125 VSNC 140-52**	**SIN-S 125/150 VSNC 180-67**	**SIN-S 125/150 VSNC 240-95**
ORDERING INFORMATION						
Code No.		485-350	485-355	485-360	485-365	485-370
Price $		**3,069.00**	**3,527.30**	**4,487.90**	**4,984.70**	**7,338.70**

BB-D & BB-M High Precision Power Chucks

BB-D: Inch serration (1/16" x 90°)
BB-M: Metric serration (1.5mm x 60°)

- Suitable for Kitagawa top jaws, metric Serration
- For open centre or partial open centre clamping
- For machines with very large spindle bore

Standard Equipment:

- 3 Jaw chuck
- 1 Set T-nuts w/ bolts
- 1 Set soft top jaws
- Mounting bolts
- Grease gun



Technical Features:

- Extra large through-hole
- Gripping force transmission via wedge hook
- Case hardened body to assure greatest precision and long chuck life

The diagrams refer to 3-jaw chucks. The max. gripping force is the total, acting on the 3 jaws, obtained by applying to the chuck the max. allowed traction to the draw bar. The data refers to a chuck in good conditions, using SMW-AutoBlok K05 grease.

The dynamic gripping forces have been measured using the standard soft top jaws placed in the most external position, but not exceeding the outer dia. of the chuck. Using larger and heavier jaws and/or in a more external position, it is necessary to reduce the rotation speed.

SMW-AutoBlok Model No.		BB-D 140	BB-M 140	BB-D 175	BB-M 175	BB-D 210	BB-M 210	BB-D 250	BB-M 250	BB-D 315	BB-M 315
Code No.		485-300	485-302	485-305	485-307	485-310	485-312	485-315	485-317	485-320	485-322
Price $		**3,497.90**	**3,497.90**	**4,176.30**	**4,176.30**	**4,546.60**	**5,399.10**	**4,788.60**	**5,910.50**	**10,028.10**	**11,054.70**
Size		**140**		**175**		**210**		**250**		**315**	
Number of Jaws		**3**		**3**		**3**		**3**		**3**	
Through-hole	mm	39		56		66		77		122	
Radial jaw stroke	mm	3.2		3.2		4		5		5	
Wedge stroke	mm	15		15		19		24		24	
Max. draw-pull	kN	22		25		38		50		50	
Max. gripping force	kN	58		70		108		145		145	
Max. speed	rpm	7000		6000		5000		4000		3200	
Mass (w/out top jaws)	kg	6		11.5		19.5		30		44	
Moment of inertia	kg m2	0.016		0.06		0.12		0.27		0.62	
Recommended cylinders		**SIN-S 100 VSNC 101-39**		**SIN-S 100 VSNC 140-52**		**SIN-S 100/125 VSNC 180-67**		**SIN-S 125/150 VSNC 200-76**		**SIN-S 125/150 VSNC 320-127**	

SMW AUTOBLOK

High Precision Pull-Down Chucks



TSF-C: Floating Jaws to clamp rough components and easily deformed parts
TSR-C: Rigid jaws to clamp on pre-machined diameters with highest precision

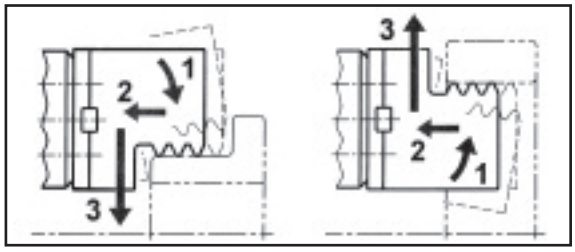
From middle size to very big production batches of parts requiring close squareness and parallelism tolerances. Used in first and second operation to clamp easily deformed parts. Long life with minimal maintenance, reducing the machine down time.

Standard Equipment:

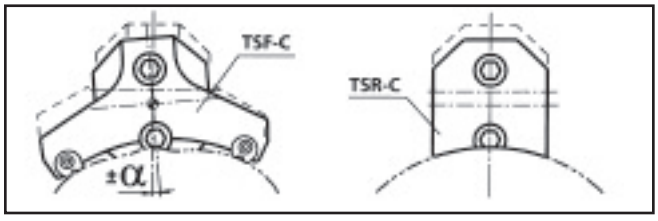
- 3 Jaw chuck
- 1 Set fine adjustment keys
- Mounting bolts

Features

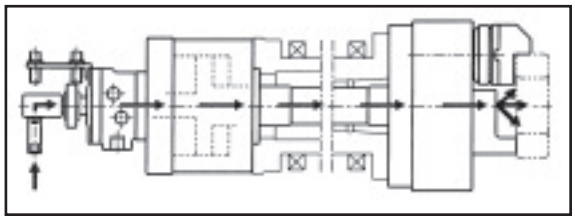
- Case hardened body and internal parts constantly grease-lubricated to assure greatest precision and long chuck life
- Swarf and coolant-proof, prevents contamination of the internal mechanism
- Unique clamping mechanism design
- Tongue and groove master jaws equipped with specially designed top jaws
- Minimum maintenance, very low wear, constant accuracy over a long period of time, constant clamping force
- Constant grease-lubrication of the clamping mechanism
- Compensation of centrifugal force
- Suitable for High-Low clamping



- Active pull down effect = the jaws slide on the part
- Clamping movement:
  1 centering - 2 pull-down - 3 gripping
- Internal and external clamping on the same chuck



- Floating jaws to clamp on rough dia. and easily deformed components on 6 points of contact. used in both 1st and 2nd operation
- Rigid jaws to clamp pre-machined dia. of not easily deformed parts, with highest centering repeatability

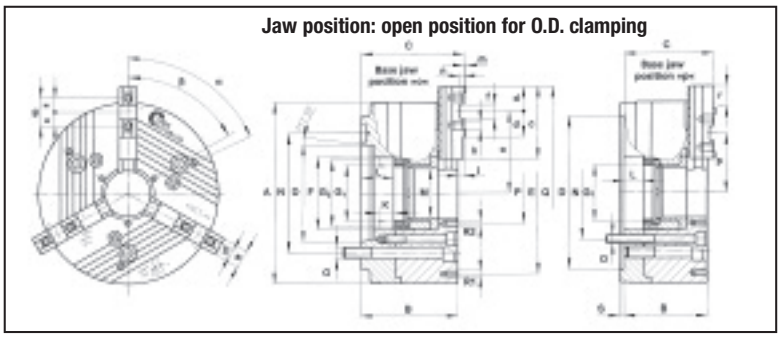


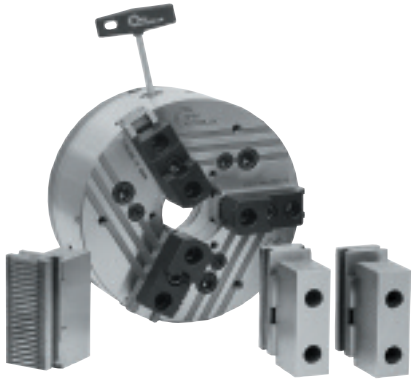
- TSF-C and TSR-C chucks actuated by SIN-S cylinder with central bore for coolant or air to flush away chips or to automatically control the correct position of the workpiece on the axial supports (PEL system)

SMW-AutoBlok – Model No.		TSF-C170	TSR-C170	TSF-C210	TSR-C210	TSF-C250	TSR-C250	TSF-C315	TSR-C315	TSF-C400	TSR-C400
Angular jaw stroke	deg.	5.2°		5.2°		4.9°		4.9°		4.7°	
Radial jaw stroke (at distance h)	mm	5.3		6.3		7		7		6.7	
Pull down movement (standard)	mm	0.6		0.6		0.6		0.6		0.8	
Wedge Stroke	mm	21		25		25		25		30	
Max. draw-pull	kN	18		25		40		40		50	
Max. gripping force (at distance h)	kN	44		60		96		96		120	
Max. speed	rpm	5000		4500		3800		3000		2200	
Mass (plain black w/out top jaw)	kg	15		27		41		66		115	
Moment of inertia (m r²)	kgm²	0.06		0.16		0.34		0.83		2.3	
Recommended cylinders		SIN-S 85		SIN-S 100		SIN-S 125		SIN-S 125		SIN-S 150	
ORDERING INFORMATION											
Code No.		485-005	485-007	485-010	485-012	485-015	485-017	485-020	485-022	485-025	485-027
Price $		**11,678.00**	**11,678.00**	**12,669.80**	**12,669.80**	**14,481.10**	**14,481.10**	**17,683.90**	**17,683.90**	**24,756.70**	**24,756.70**

SMW AUTOBLOK

KNCS-N Quick Jaw Change





Main Dimensions and Technical Data Quick Jaw Change

Subject to technical changes

Type KNCS-N		**325-104**				**400-128**				**500-155**			**630-165**
Code No.		485-200	485-205	485-210	485-215	485-220	485-225	485-230	485-235	485-240	485-245	485-250	485-255
Price $		**16,065.10**	**16,065.10**	**15,221.80**	**15,221.80**	**21,399.90**	**21,399.90**	**25,009.60**	**25,009.60**	**27,766.90**	**31,323.50**	**31,323.50**	**52,089.00**
Mounting	Dim.	Z220	Z300	A8	A11	Z300	Z380	A11	A15	Z380	A11	A15	Z380
	A	**324**				**400**				**500**			**630**
	B	130	130	149	151	140	140	161	163	174	195	197	174
	C	139.2	139.2	158.2	160.2	149.2	149.2	170.2	172.2	184	205	207	184
H6	D	220	300	139.73	196.88	300	380	196.88	285.77	380	196.88	285.77	380
	E	268				330				420			585
	F	144				180				207			217
Rotating ring nut/depth	G1	M115 x 2/22				M138 x 2/22				M165 x 2/25			M175 x 2/25
Piston thread/depth	G2	M132 x 2/25				M160 x 2/25				M185 x 2/28			M195 x 2/28
Piston stroke max.	K	25/28				32				42			42
	L	28	28	47	49	32	32	53	55	42	63	65	42
	M	104				128				155			165
Fixing bolt circle	N	171.4	235	171.4	235	235	330.2	235	330.2	330.2	235	330.2	330.2
Fixing bolt	O	M16	M20	M16	M20	M20	M24	M20	M24	M24	M20	M24	M24
	P	130				152				180			195
	Q	385				452				552			643
Thread/thread depth	R1	M10/16				M12/18				M16/25			M16/25
Thread/thread depth	R2	M10/16				M12/18				M12/18			M12/18
	S	6				8				8			8
	a	32				32				45			45
f7	b	12				12				18			18
	c	115				125				160			200
	d	36				43				50			50
H7	f	20				26				30			30
	g	40				54				60			60
Thread/thread depth	k	M12/17				M12/17				M16/34			M16/34
	l	9.3				9.3				10			10
	m	3				3				4			4
	n	6				7				9			9
max./min.	o	155.7/106.2				182.3/121.8				225/141			270.5/179.5
max./min.	p	111.7/62.2				143.3/82.2				164/80			170.5/79.5
Base jaw tooth pitch	—	5.5				5.5				7			7
Base Jaw offset	r	49.5				60.5				70			91
Base jaw offset	teeth	9				11				12			13
	$\alpha°$	60				60				60			60
	$\beta°$	60				60				60			60
Stroke/jaw at piston stroke K	mm	7.0			25								
Stroke/jaw at piston stroke K max.	mm	8.0			28	8.0			32	10.0		42	10.0 42
Max. actuating force 3-jaw chuck	KN	95				115				120			120
Max. total grip force 3-jaw chuck	KN	180				240				250			250
Max. speed 3-jaw chuck	rpm	4000				3500				2200			1700
Mass without top jaws	kg	65	65	68	68	111	111	116	116	225	231	231	390
Moment of Inertia	kg m²	1.2				2.5				6.5			18
Recommended closed centre cylinder	Type	SIN-S 150/200				SIN-S 200				SIN-S 200			SIN-S 200
Recommended open centre cylinder	Type	VNK 250-110				VNK 320-127				VSG 450-165			VSG 450-165

SMW AUTOBLOK

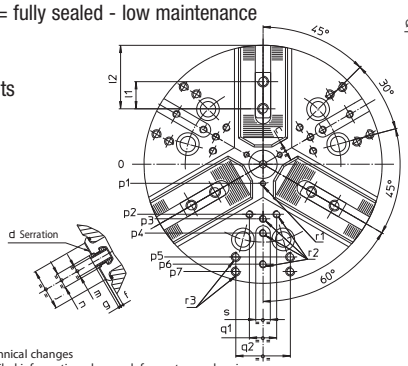
AP-D & AP-M High Precision Power Chucks

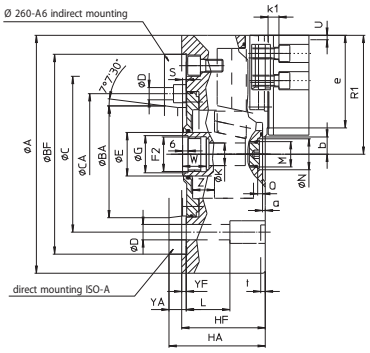
- AP-D - inch serration
- AP-M - metric serration
- Closed center
- For mid to large batch production
- Fully sealed, ideal for dry machining of castings and forgings or if high pressure coolant is used
- Constant gripping force with permanent grease lubrication
- Central bore for coolant and/or air
- Chuck body and internal parts are case hardened
- proofline® chucks = fully sealed - low maintenance

Standard Equipment

- 3 jaw chuck
- 1 set T-nuts and bolts
- 1 set soft top jaws
- mounting bolts







Subject to technical changes
For more detailed information please ask for customer drawing

Type	AP-D 170 / AP-M 170	AP-D 215 / AP-M 215	AP-D 260 / AP-M 260	AP-D 315 / AP-M 315	AP-D 400 / AP-M 400
AP-D Code No.	485-920	485-924	485-928	485-932	485-936
Price	**5,961.90**	**6,268.00**	**7,468.80**	**10,334.20**	**15,537.10**
AP-M Code No.	485-922	485-926	485-930	485-934	485-938
Price $	**6,323.00**	**6,792.30**	**7,914.30**	**10,952.10**	**16,323.60**
Mount's Available	Z140 A5	Z170 A6	Z220 A6 A8	Z220 A8	Z300 A11
Dimensions (mm) **A**	**172**	**216**	**262**	**315**	**390**
BF/BA (H6)	140 82.563	170 106.375	220 106.375 139.719	220 139.719	300 196.869
C	104.8	133.4	171.4 171.4	171.4	235
Ca			133.4		
D	11.5	13.5	17 13.5 17	17	21
E	32	42	48	48	75
F2	M24 x 2	M32 x 1.5	M38 x 1.5	M38 x 1.5	M60 x 1.5
G	25	33	39	39	61
HF/HA	68 78	81 93	92 111 106	101 115	112 127
K	18.5	20	25	25	48
L	23	32	38	38	54
M	M22 x 1.5	M22 x 1.5	M28 x 1.5	M28 x 1.5	M52 x 1.5
N (H9)	24	24	34	34	60
Q	5.5	5.5	5.5	5.5	9
Chuck open R1	86.5	108	131	157.5	195
max./min. S	21/4	26/4	28/4	34/4	37/4
Jaw stroke U	3.6	4.6	5	6.3	7
W	22	26	26	26	38
YF/YA	5 15	5 17	5 24 19	5 19	6 21
max./min. Z	17/0	22/0	24/0	30/0	33/0
a	3	3	3	3	3
min. b	8.5	12	14	16.5	31
min. c	9	13	14	16	38
AP-D d	1/16" x 90°	1/16" x 90°	1/16" x 90°	1/16" x 90°	3/32" x 90°
AP-M d	1.5 x 60°	1.5 x 60°	1.5 x 60°	1.5 x 60°	1.5 x 60°
e	67	82	102	123	144
f	3	3	3	3	6
g	2.5	2.5	2.5	3.5	3.5
j	34	46	48	58	63
k1	10	11	12	12	14
AP-D l1	16.5	23	30	30	38
AP-M l1	20	25	30	30	38
max./min. l2	43/24	53/33	70/41	84/43	98/54
AP-D m	M10	M12	M12	M16	M20
AP-M m	M10	M12	M12	M16	M20
AP-D n (h8)	14	17	17	21	25.5
AP-M n (h8)	12	14	16	21	22
p1	16	16	21	21	37.5
p2	-	-	-	60	80
p3	38	49	55	62.5	83
p4	-	80	70	80	110
p5	65	80	102	102	140
p6	70	-	102	120	155
p7	-	-	-	135	170
q1	-	-	-	30	36
q2	36	45	60	60	80
r1	M5/7	M5/8	M6/10	M6/10	M6/12
r2	M6/14	M8/17	M8/17	M8/17	M10/19
r3	M8/17	M8/17	M10/19	M10/19	M12/22
s	16	16	16	16	20

* Actuated Cylinders available, please call today

MARIO PINTO S.p.A.

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Live Tooling



Now offering live tooling for:
Mazak, Mori, Okuma, Haas, Doosan, Daewoo, DMG, Hwa-cheon, Hyundai Kia, Murata, Takisawa, Takamaz, Goodway, Emco, Baruffaldi, Angelini, Duplomatic, Sauter, Ecoca, Goodway, Hurco, Romi, Spinner, Victor, Weiler, YCM...and more!

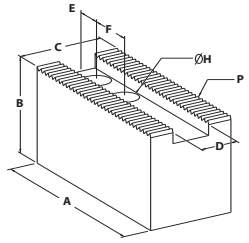
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Metric Serrated Soft Top Jaws - Rectangular

STM Jaws
- Made in Italy
- For Autoblok, Howa, Kitagawa, Matsumoto, Shunk

USA Jaws
- For Kitagawa power chucks





Chuck Dia.	Serration	A	B	C	D	E	F	H	Wt. (kg)	Model No.	USA Code No.	Sold Individually Price $	STM Italy Code No.	Sold Individually Price $	STM Italy Code No.	Set of 3 Price $
110	1.5x60°	50	25	20	8	8	15	7	0.15	HKM.11.01/S			491-215	**35.40**		
110	1.5x60°	55	25	25	10	13	14	9	0.196	HKM.11.05/S			491-220	**36.60**		
110	1.5x60°	55	50	25	10	13	14	9	0.412	HKM.11.06/S			491-225	**53.60**		
135	1.5x60°	55	30	25	10	10	18	9	0.239	HKM.13.01/S			491-235	**36.80**		
135	1.5x60°	55	40	25	10	10	18	9	0.316	HKM.13.02/S			491-240	**52.20**		
135	1.5x60°	55	25	25	10	14	19	9	0.192	HKM.13.05/S			491-250	**37.10**		
150(6")	1.5x60°	73	38	32	12	15	20	11		D6SSH38	656-205	**36.30**				
150(6")	1.5x60°	73	75	32	12	15	20	11		D6SEH38	656-252	**58.70**				
165(6")	1.5x60°	80	30	30	12	19	20	11	0.40	HKM.16.05/S			491-265	**38.50**	491-266	**114.10**
165(6")	1.5x60°	75	60	30	12	19	20	11	0.76	HKM.16.08/S			491-280	**62.20**	491-281	**191.50**
200(8")	1.5X60°	100	50	38	14	25	25	13		D8SSH1	656-215	**48.40**				
210(8")	3x60°	95	40	40	14	24	25	13	0.96	HKM.21.3.01/S			491-395	**53.60**		
210(8")	1.5x60°	95	40	35	14	24	25	13	0.80	HKM.21.00/S			491-295	**46.70**		
210(8")	1.5x60°	95	40	40	14	20	25	13	0.97	HKM.21.01/AL			491-305	**146.80**		
210(8")	1.5x60°	95	40	40	14	20	25	13	0.97	HKM.21.01/S			491-315	**44.20**	491-316	**132.90**
210(8")	1.5x60°	95	50	40	14	20	25	13	1.20	HKM.21.02/S			491-325	**58.00**		
210(8")	1.5x60°	95	60	40	14	20	25	13	1.44	HKM.21.03/S			491-335	**65.20**		
210(8")	1.5x60°	95	80	40	14	20	25	13	1.82	HKM.21.04/S			491-345	**94.60**		
210(8")	1.5x60°	95	100	40	14	20	25	13	2.43	HKM.21.05/S			491-355	**110.10**		
210-254(8")	1.5x60°	95	40	40	16	20	25	13	0.96	HKM.21.10/S			491-375	**48.40**		
210-254(8")	1.5x60°	95	50	40	16	20	25	13	1.19	HKM.21.11/S			491-380	**62.20**		
210-254(8")	1.5x60°	95	60	40	16	20	25	13	1.40	HKM.21.12/S			491-385	**69.70**		
254(10")	1.5x60°	118	50	38	16	25	30	13		D10SSH	656-180	**49.50**				
254-270(10")	1.5x60°	110	40	40	16	30	30	13	1.11	HKM.25.01/AL			491-405	**82.20**		
254-270(10")	1.5x60°	110	40	40	16	30	30	13	1.11	HKM.25.01/S			491-420	**48.60**	491-421	**151.80**
254-270(10")	1.5x60°	110	40	40	16	-	-	-	1.11	**HKM.25.01/SB			491-425	**48.60**		
254-270(10")	1.5x60°	120	40	40	16	30	30	13	1.36	HKM.25.01/SL120			491-430	**54.60**		
254-270(10")	1.5x60°	130	40	40	16	30	30	13	1.61	HKM.25.01/SL130			491-435	**61.00**		
254-270(10")	1.5X60°	160	40	40	16	30	30	13	2.36	HKM.25.01/SL160			491-437	**306.80**		
254-270(10")	1.5x60°	110	60	40	16	30	30	13	1.70	HKM.25.02/S			491-495	**67.70**		
254-270(10")	1.5x60°	110	60	40	16	-	-	-	1.70	**HKM.25.02/SB			491-450	**67.70**		
254-270(10")	1.5x60°	110	80	40	16	30	30	13	2.28	HKM.25.03/S			491-465	**97.30**		
254-270(10")	1.5x60°	110	80	40	16	-	-	-	2.28	**HKM.25.03/SB			491-470	**97.30**		
254-270(10")	1.5x60°	110	100	40	16	30	30	13	2.90	HKM.25.04/S			491-480	**116.70**	491-481	**349.60**
304(12")	1.5x60°	118	50	38	18	25	30	15		D11SSH2	656-193	**69.70**				
304(12")	1.5x60°	140	63	50	21	19	30	17		D212SSH	656-197	**81.20**				
304(12")	1.5x60°	140	100	50	21	19	30	17		D212SEH	656-242	**131.80**				
304-381(12")	1.5x60°	130	50	50	18	25	30	15	2.05	HKM.30.01/S			491-445	**73.30**	491-496	**219.30**
304-381(12")	1.5x60°	130	80	50	18	25	30	15	3.44	HKM.30.03/S			491-515	**111.00**		
304-381(12")	1.5x60°	130	100	50	18	25	30	15	4.30	HKM.30.04/S			491-530	**123.50**	491-531	**370.00**
304(12")	1.5x60°	130	50	50	21	22	30	17	2.04	HKM.30.10/S			491-545	**63.30**	491-546	**226.00**
304(12")	1.5x60°	130	80	50	21	22	30	17	3.33	HKM.30.12/S			491-550	**110.10**	491-551	**330.00**
304(12")	1.5x60°	130	100	50	21	22	30	17	4.20	HKM.30.13/S			491-560	**145.20**	491-561	**442.30**
304(12")	1.5x60°	130	50	50	21	22	35	17	2.04	HKM.30.15/S			491-570	**73.30**		
381(15")	1.5x60°	159	75	63	22	25	43	21		D15SSH1	656-198	**138.70**				
381(15")	1.5x60°	159	100	63	22	25	43	21		D15SEH1	656-244	**190.50**				
381(15")	1.5x60°	159	75	63	25.5	25	43	21		D215SSH	656-199	**138.70**				
381(15")	1.5x60°	155	60	60	22	37	43	21	3.65	HKM.38.00/S			491-585	**145.20**	491-586	**443.80**
381-454(15")	1.5x60°	165	70	70	22	37	43	21	5.40	HKM.38.01/S			491-605	**178.50**		
381(15")	1.5x60°	155	100	60	22	37	43	21	6.00	HKM.38.02/S			491-610	**204.30**	491-611	**591.30**
381(15")	1.5x60°	155	60	60	22	30	60	21	3.65	HKM.38.04/S			491-615	**180.00**		
381(15")	1.5x60°	156	70	70	22	30	60	21	5.10	HKM.38.05/S			491-630	**178.50**		
381-454(15")	3x60°	155	60	60	22	30	50	21	3.65	HKM.38.3.00/S			491-670	**145.20**	491-671	**417.50**
381-454(15")	3x60°	156	70	70	22	30	50	21	5.10	HKM.38.3.01/S			491-685	**178.50**		
381(15")	3x60°	140	60	60	26	30	42	21	3.20	HKM.38.3.05/S			491-695	**120.90**		
381(15")	1.5x60°	135	60	50	25.5	26	43	21	2.49	HKM.38.10/S			491-650	**100.80**	491-651	**310.40**
381(15")	1.5x60°	135	100	50	25.5	26	43	21	4.14	HKM.38.12/S			491-660	**171.30**	491-661	**513.80**
454-610(18")	3x60°	200	70	70	25	40	60	21	6.60	HKM.53.3.01/S			491-705	**218.90**		
381-610(18")	3x60°	156	70	70	26	34	50	21	5.05	HKM.61.3.01/S			491-710	**196.20**		

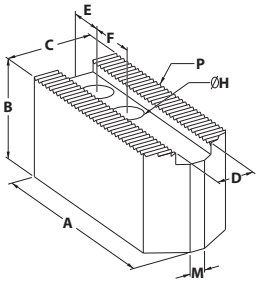
** Blank jaws

Metric Serrated Soft Top Jaws - Pointed

STM Jaws

- Made in Italy
- For Autoblok, Howa, Kitagawa, Matsumoto, Shunk



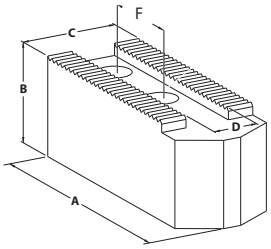


QUALITY IMPORT

Quality Import Jaws

- For Kitagawa power chucks:
  Models B, BT, B200, BT200, HOH, HOB, N, NL





Chuck Dia.	Serration	A	B	C	D	E	F	H	M	Wt. (kg)	Model No.	Quality Import Code No.	Sold Individually Price $	STM Italy Code No.	Sold Individually Price $	STM Italy Code No.	Set of 3 Price $
135	1.5x60°	55	30	25	10	10	18	9	5	0.239	HKM.13.01			491-230	**36.60**		
135	1.5x60°	55	25	25	10	14	19	9	4	0.192	HKM.13.05			491-245	**37.10**		
150(6")	1.5x60°	70	38	25	12		20	11				656-010	**27.90**			656-050**	**65.50**
165(6")	1.5x60°	80	30	30	12	19	20	11	7	0.40	HKM.16.05			491-255	**38.50**	491-256	**119.90**
165(6")	1.5x60°	75	60	30	12	19	20	11	7	0.76	HKM.16.08			491-275	**62.20**		
210(8")	1.5x60°	90	50	38	14		25	13				656-015	**39.40**			656-055**	**89.10**
210(8")	1.5x60°	95	40	35	14	24	25	13	5	0.80	HKM.21.00			491-290	**46.70**		
210(8")	3x60°	95	40	40	14	24	25	13	12	0.96	HKM.21.3.01			491-390	**53.60**		
210(8")	1.5x60°	95	40	40	14	20	25	13	12	0.97	HKM.21.01			491-300	**46.70**	491-301	**144.90**
210(8")	1.5x60°	95	50	40	14	20	25	13	12	1.20	HKM.21.02			491-320	**58.00**		
210(8")	1.5x60°	95	60	40	14	20	25	13	12	1.44	HKM.21.03			491-330	**65.20**		
210(8")	1.5x60°	95	80	40	14	20	25	13	12	1.82	HKM.21.04			491-340	**94.60**		
210(8")	1.5x60°	95	100	40	14	20	25	13	12	2.43	HKM.21.05			491-350	**110.10**		
210-254(8")	1.5x60°	95	40	40	16	20	25	13	12	0.96	HKM.21.10			491-365	**48.40**		
254(10")	1.5x60°	110	42	40	16		30	13				656-020	**27.60**			656-060**	**103.10**
254-270(10")	1.5x60°	110	40	40	16	30	30	13	12	1.11	HKM.25.01			491-400	**48.60**	491-401	**151.80**
254-270(10")	1.5x60°	130	40	40	16	30	30	13	8	1.36	HKM.25.01 L130			491-415	**61.00**		
254-270(10")	1.5x60°	110	60	40	16	30	30	13	12	1.70	HKM.25.02			491-440	**67.70**		
254-270(10")	1.5x60°	110	80	40	16	30	30	13	12	2.28	HKM.25.03			491-455	**97.30**		
254-270(10")	1.5x60°	110	100	40	16	30	30	13	12	2.90	HKM.25.04			491-475	**116.70**	491-476	**349.60**
254(10")	1.5x60°	110	45	45	18	25	30	15	15	1.57	HKM.25.10			491-485	**52.20**		
304(12")	1.5x60°	120	50	38	18		30	15				656-025	**70.70**			656-065**	**161.80**
304-381(12")	1.5x60°	130	50	50	18	25	30	15	20	2.05	HKM.30.01			491-490	**73.30**	491-491	**219.30**
304-381(12")	1.5x60°	130	60	50	18	25	30	15	22	2.55	HKM.30.02			491-500	**78.80**		
304-381(12")	1.5x60°	130	80	50	18	25	30	15	22	3.44	HKM.30.03			491-505	**111.00**		
304-381(12")	1.5x60°	130	100	50	18	25	30	15	22	4.30	HKM.30.04			491-520	**123.50**	491-521	**370.00**
304(12")	1.5x60°	130	50	50	21	22	30	17	20	2.04	HKM.30.10			491-535	**73.30**	491-536	**225.90**
304(12")	1.5x60°	130	100	50	21	22	30	17	20	4.20	HKM.30.13			491-555	**145.20**	491-556	**435.20**
304(12")	1.5x60°	130	50	50	21	22	35	17	20	2.04	HKM.30.15			491-565	**73.30**		
381(15")	1.5x60°	165	62	62	22		43	21								656-070**	**421.00**
381(15")	1.5x60°	155	60	60	22	37	43	21	-	3.65	HKM.38.00			491-580	**145.20**	491-581	**443.80**
381-454(15")	1.5x60°	165	70	70	22	37	43	21	-	5.40	HKM.38.01			491-590	**178.50**		
381(15")	1.5x60°	156	70	70	22	30	60	21	-	5.10	HKM.38.05			491-620	**178.50**		
381-454(15")	3x60°	155	60	60	22	30	50	21	-	3.65	HKM.38.3.00			491-665	**138.30**	491-666	**414.30**
381-454(15")	3x60°	156	70	70	22	30	50	21	-	5.10	HKM.38.3.01			491-675	**178.50**		
381(15")	1.5x60°	135	60	50	25.5	26	43	21	-	2.49	HKM.38.10			491-640	**100.80**	491-641	**302.30**
381-454(15")	1.5x60°	165	70	70	25.5	37	43	21	-	5.40	HKM.38.11			491-655	**178.50**	491-656	**543.80**
381(15")	1.5X60°	135	100	50	25.5	26	43	21	-	4.14	HKM.38.12			491-672	**171.30**		
454-610(18")	3x60°	200	70	70	25	40	60	21	-	6.60	HKM.53.3.01			491-700	**218.90**		

** Quality Import

Inch Serrated Soft Top Jaws - Rectangular

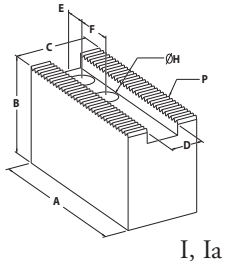
STM Jaws (Type I, Ia, III)

- Made in Italy
- Type I: For SMW, Berg, Gamet, Shunk, Rohm, Forkardt
- Type Ia: For self contained pneumatic power chucks
- Type III: For SMW Autoblok

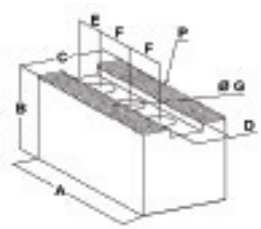
USA Jaws (Type II)

- For AutoBlok, Erickson, Forkardt, Gamet, Powerhold, Pratt Burnerd, Rohm and Howa (Ho12M-Self Contained Air)

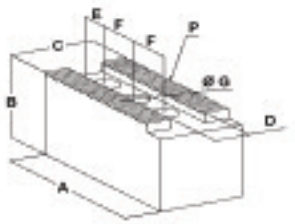




I, Ia



II



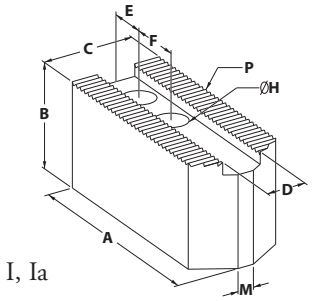
III

Chuck Dia.	Serration	Type	A	B	C	D	E	F	G	H	Wt. (kg)	Model No.	USA Code No.	Sold Individually Price $	STM Code No.	Sold Individually Price $
125	1/16x90°	I	68	40	30	11	-	18	-	M8	-	192200/S			491-848	**52.80**
150	1/16X90°	II	75	38	29	11	11	18	-	5/16"	-	D6PSH	656-300	**45.50**		
160	1/16x90°	I	88	50	35	14	-	25	-	M10	-	192201/S			491-850	**62.20**
160	1/16X90°	I	70	60	40	17	15	22	-	M12	1.05	242200/F			491-130	**56.70**
200	1/16x90°	Ia	88	50	38	17	-	28	-	1/2"	-	HKM200			491-800	**106.10**
200	1/16x90°	I	98	50	40	17	-	29	-	M12	-	192202/S			491-852	**65.70**
200	1/16X90°	I	90	60	40	17	25	22	-	M12	1.40	242201/F			491-131	**58.40**
200-250	1/16X90°	II	108	50	32	13	14	22	-	3/8"	-	D10PSH	656-305	**58.20**		
250	1/16x90°	I	108	70	50	21	-	30	-	M14	-	192203/S			491-854	**78.00**
250	1/16X90°	I	120	80	50	21	30	28	-	M16	3.08	242202/F			491-132	**82.40**
250HD	1/16X90°	II	115	50	44.5	20	16	30	-	1/2"	-	D11PSH	656-310	**86.90**		
250-315	1/16x90°	Ia	120	38	50	21	-	30	-	1/2"	-	HKM250-315			491-802	**148.10**
300	1/16X90°	II	130	63	44.5	20	16	30	-	1/2"	-	D12PSH	656-315	**97.30**		
300	1/16X90°	I	140	90	60	25.5	30	35	-	M20	4.70	242203/F			491-133	**145.80**
315	1/16x90°	I	120	70	50	21	-	30	-	M16	-	192204/S			491-856	**108.50**
315	1/16X90°	I	140	70	50	21	-	30	-	M16	-	192204/S L140			491-086	**131.50**
355-560	1/16X90°	II	165	63	44.5	21	19	40	-	5/8"	-	D15PSH	656-320	**146.80**		
400	3/32x90°	Ia	160	75	63	25	-	40	-	3/4"	-	HKM400			491-804	**357.30**
400	3/32x90°	Ia	160	100	63	25	-	35	-	M18	-	HKM400S			491-806	**308.20**
400	3/32x90°	I	160	80	60	25.5	-	40	-	M18	-	192205/S			491-090	**171.60**
400-500	3/32x90°	Ia	172	63	63	25	-	38	-	M20	-	HKM400-500L6.75A			491-820	**322.60**
400-500	3/32x90°	I	200	90	60	25.5	-	35	-	M20	-	242204/F L200			491-862	**233.60**
400-500	3/32x90°	I	250	90	60	25.5	-	35	-	M20	-	242204/F L250			491-864	**285.60**
400-500	3/32X90°	I	155	90	60	25.5	30	35	-	M20	6.40	242204/F			491-135	**164.00**
500	3/32x90°	Ia	160	750	63	25	-	40	-	3/4"	-	HKM500			491-808	**355.80**
500	3/32x90°	Ia	200	100	63	25	-	40	-	M18	-	HKM500S			491-810	**421.80**
500	3/32x90°	III	170	60	60	28	27	38	38	M20	3.62	102210/A			491-050	**177.60**
500	3/32x90°	III	170	60	60	25.5	27	38	38	M20	3.62	102210/A c25.5			491-055	**177.60**
630	3/32x90°	Ia	210	88	88	30	-	63	-	1"	-	HKM630			491-812	**496.20**
630	3/32x90°	Ia	241	88	75	30	-	65	-	M24	-	HKM630S			491-814	**545.90**
630	3/32x90°	Ia	242	83	83	30	-	50	-	M24	-	HKM630AL9.50			491-822	**545.90**
800	3/32x90°	Ia	210	88	88	30	-	63	-	1"	-	HKM800			491-816	**496.20**
800	3/32x90°	Ia	300	88	75	30	-	65	-	M24	-	HKM800S			491-818	**620.20**
800-1000	3/32x90°	Ia	318	83	83	30	-	50	-	M24	-	HKM800-1000AL12.5			491-824	**645.10**

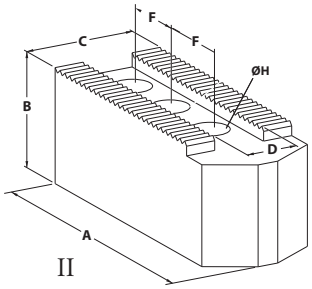
Inch Serrated Soft Top Jaws - Pointed

STM Jaws

- Made in Italy
- Type I: For SMW Autoblok
- Type Ia: SMW, Berg, Gamet, Shunk, Rohm, Forkardt
- Type II: For self contained pneumatic power chucks



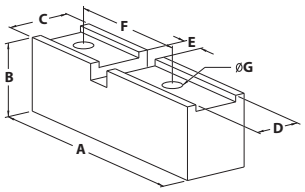
I, Ia



II

Chuck Dia.	Serration	Type	A	B	C	D	E	F	H	M	Wt. (kg)	Model No.	STM Code No.	Sold Individually Price $
125	1/16x90°	II	2.50"	1.50"	1.00"	0.433"	-	0.660"	5/16"	-	-	HKM125P	491-826	**173.80**
125-130	1/16X90°	Ia	60mm	30mm	30mm	12mm	15mm	16mm	9mm	10mm	0.32	102201/A	491-126	**31.90**
160	1/16x90°	II	3.25"	1.50"	1.50"	0.522"	-	0.875"	3/8"	-	-	HKM160P	491-828	**173.80**
165	1/16x90°	I	75mm	35mm	35mm	14mm	16mm	16mm	11mm	8mm	0.54	102202/A	491-000	**33.70**
170-180	1/16X90°	Ia	85mm	40mm	40mm	14mm	19mm	20mm	11mm	10mm	0.82	102203/A	491-127	**37.90**
200	1/16x90°	II	4.25"	2.00"	1.50"	0.669"	-	0.875"	1/2"	-	-	HKM200P	491-830	**200.20**
200-220	1/16x90°	I	95mm	40mm	40mm	17mm	20mm	23mm	13mm	12mm	0.96	102205/A	491-005	**41.50**
200-220	1/16x90°	I	95mm	50mm	40mm	17mm	20mm	23mm	13mm	12mm	1.18	102205/A H50	491-010	**55.20**
200-220	1/16x90°	I	95mm	60mm	40mm	17mm	20mm	23mm	13mm	12mm	1.42	102205/A H60	491-015	**59.90**
250	1/16x90°	I	115mm	50mm	50mm	21mm	20mm	30mm	17mm	20mm	1.76	102207/A	491-020	**56.40**
250	1/16x90°	I	115mm	60mm	50mm	21mm	20mm	30mm	17mm	20mm	2.10	102207/A H60	491-030	**78.10**
250-315	1/16x90°	II	5.25"	2.50"	2.00"	0.827"	-	1.187"	1/2"	-	-	HKM250-315P	491-832	**168.80**
250-350	1/16x90°	I	125mm	80mm	50mm	21mm	20mm	30mm	17mm	20mm	3.15	102207-8/A H80	491-025	**103.60**
300-350	1/16x90°	I	130mm	50mm	50mm	21mm	22mm	30mm	17mm	20mm	2.10	102208/A	491-040	**66.80**
300-350	1/16x90°	I	130mm	60mm	50mm	21mm	22mm	30mm	17mm	22mm	2.38	102208/A H60	491-045	**89.50**
400	3/32x90°	II	8.00"	3.00"	2.50"	1.000"	-	1.562"	3/4"	-	-	HKM400P	491-834	**411.50**
400-500	3/32x90°	II	9.00"	3.00"	2.50"	1.000"	-	1.562"	3/4"	-	-	HKM400/500PL9	491-838	**426.80**
500	3/32x90°	II	9.00"	3.00"	2.50"	1.000"	-	1.562"	3/4"	-	-	HKM500P	491-836	**640.10**
630	3/32x90°	II	11.00"	3.50"	3.50"	1.181"	-	2.50"	1"	-	-	HKM630P	491-840	**659.90**
800	3/32x90°	II	11.00"	3.50"	3.50"	1.181"	-	2.50"	1"	-	-	HKM800P	491-842	**704.60**
630-800	3/32x90°	II	12.00"	3.50"	3.50"	1.181"	-	2.50"	1"	-	-	HKM630/800PL12	491-844	**803.80**
630-800	3/32x90°	II	13.00"	3.50"	3.50"	1.181"	-	2.50"	1"	-	-	HKM630/800PL13	491-846	**769.00**

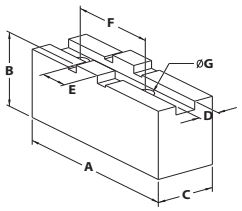
Soft Top Jaws For TOS Chucks



Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Individual Code No.	Individual Price $
282200/T	100	50	20	20	14	12	20	5.5	0.117	491-196	**40.90**
282201/T	125	65	25	25	16	12	28	5.5	0.26	491-197	**42.50**
282202/T	160	80	35	25	18	12	38	7	0.42	491-198	**44.90**
282204/T	200	100	40	30	22	14	48	11	0.74	491-200	**51.10**
282206/T	250	125	40	30	25	14	55	11	0.96	491-205	**56.10**
282207/T	315	155	60	40	32	20	60	13	2.25	491-210	**85.90**
282208/T	400-630	165	70	40	32	20	70	13	3.00	491-211	**117.10**

Soft Top Jaws - Metric Tongue & Groove

• FOR SMW/AUTOBLOK, BERG, FORKARDT, ROHM, SCHUNK

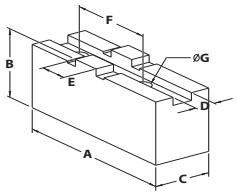




Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Individual Price $
232200/F	160	85	40	20	8	18	32	9	0.38	491-095	**43.70**
232201/F	200	105	50	25	10	20	40	9	0.62	491-102	**48.10**
232202/F	250	125	50	30	12	20	40	13	1.12	491-105	**61.60**
232203/F	315	145	60	35	12	26	54	13	1.93	491-115	**84.60**
232204/F	400	180	80	50	18	30	60	17	4.56	491-125	**152.30**

Soft Top Jaws - American Tongue & Groove

• FOR ROHM MODELS ZG,ZS,ZGU,ZSU

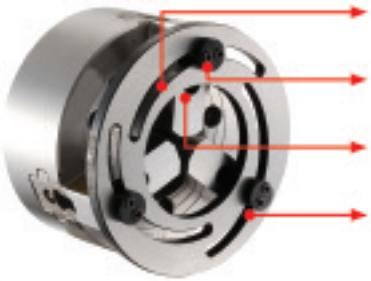




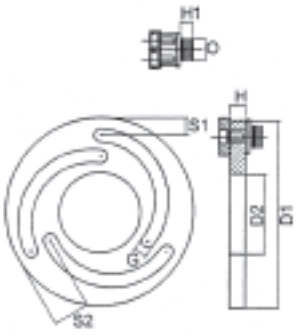
Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Individual Price $
262200/R	100	53	30	25	7.96	9.49	24	7	0.24	491-151	**42.50**
262201/R	125	62	40	25	7.96	12.67	32	9	0.36	491-155	**45.30**
262202/R	160	74	45	30	7.96	12.67	38.1	9	0.61	491-160	**52.50**
262203/R	200	87	45	30	7.96	12.67	44.45	9	0.76	491-165	**55.80**
262204/R	250	103	50	35	12.72	19.02	53.95	13	1.1	491-170	**60.90**
262205/R	315	120	60	40	12.72	19.02	63.50	13	1.87	491-180	**76.00**
262205/R	315	140	60	40	12.72	19.02	63.50	13	2.2	491-181	**127.80**
262206/R	350-400	140	70	50	12.72	19.02	76.20	17	3.0	491-190	**145.80**
262207/R	450-800	160	80	50	12.72	19.02	76.20	21	3.5	491-195	**191.70**

Soft Jaw Forming Ring

The forming ring is used for cutting soft jaws by clamping and extending the thru hole to increase the accuracy of clamping the workpiece



- The size can be adjusted against the helical slot.
- Pin can be rotated 180º 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

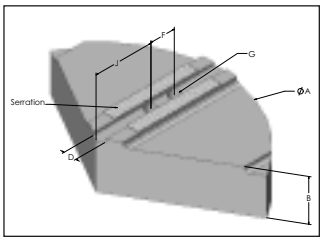


Model No.	For Chuck Dia.	H (mm)	D1 (mm)	D2 (mm)	S1 (mm)	S2 (mm)	G (mm)	H1 (mm)	O (mm)	Weight kg.	Code No.	Price $
VFR-05	5”	12	140	60	12	28	10	9	13.5	1	326-250	**341.10**
VFR-06	6”	12	168	80	12	32	10	9	16.5	1.5	326-255	**433.00**
VFR-08	8”	12	218	115	17	36	10	9	18.5	2.4	326-260	**498.50**
VFR-10	10”	12	258	150	15	40	10	9	18.5	3.2	326-265	**524.70**
VFR-12	12”	15	316	118	21	50	10	9	21.5	5	326-270	**787.10**

Pie Jaws 1.5mm x 60º Serrations

- Made with 319 Cast Aluminum



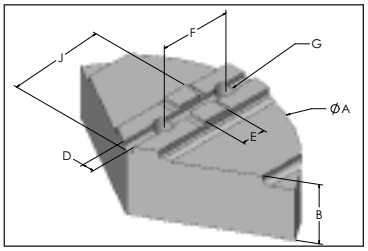


Chuck Dia.	Aluminum Model No.	A Diameter	B Height	D Slot	F Hole Spacing	G Bolt Size	J Dim	Weight lbs.	Set of 3 Code No.	Set of 3 Price $
6	KTT6P	6	2	0.472	0.787	10mm	1-21/32	5.7	658-236	**136.20**
6	KTT6P1	6	4	0.472	0.787	10mm	1-21/32	10.8	658-238	**195.40**
6	KTT8-6P	8	2	0.472	0.787	10mm	1-21/32	10.2	658-240	**171.70**
8	KTT8P	8	2	0.551	0.984	12mm	2”	10.2	658-242	**159.90**
8	KTT8P1	8	4	0.551	0.984	12mm	2”	19.8	658-244	**278.20**
8	KTT10-8P	10	2	0.551	0.984	12mm	2”	16.2	658-246	**284.20**
8	KTT12-8P	12	2	0.551	0.984	12mm	2”	23.4	658-248	**396.60**
10	KTT10P	10	2	0.630	1.181	12mm	2-1/2	16.2	658-250	**272.30**
10	KTT10P1	10	4	0.630	1.181	12mm	2-1/2	31.5	658-252	**426.20**
10	KTT12-10P	12	2	0.630	1.181	12mm	2-1/2	23.4	658-254	**396.60**
10	KTT15-10P	15	3	0.630	1.181	12mm	2-1/2	53.7	658-256	**663.00**
12	KTT12P	12	2	0.709	1.181	14mm	3-1/2	23.4	658-258	**384.80**
12	KTT12P1	12	4	0.709	1.181	14mm	3-1/2	45.3	658-260	**663.00**
12	KTT15-12P	15	3	0.709	1.181	14mm	3-1/2	53.7	658-262	**663.00**
12	KTTB212P	12	2	0.827	1.181	14mm	3-1/2	23.4	658-264	**384.80**
12	KTT212P1	12	4	0.827	1.181	14mm	3-1/2	45.3	658-266	**663.00**
15	KTT15P	15	3	0.866	1.693	20mm	4-5/16	36.6	658-268	**651.10**
15	KTT15P1	15	4	0.866	1.693	20mm	4-5/16	53.7	658-270	**941.10**

Pie Jaws American Standard Tongue & Groove

- Made with 319 Cast Aluminum

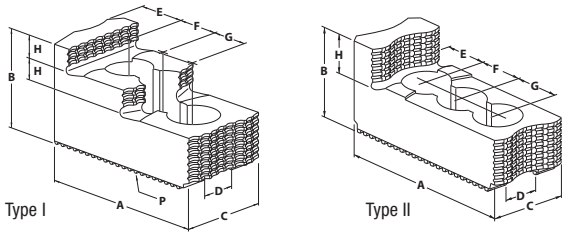




Chuck Dia.	Aluminum Model No.	A Dia.	B Height	D Slot	E Tongue	F Hole Spacing	G Bolt Size	J Dim.	Weight lbs.	Set of 3 Code No.	Set of 3 Price $
6	TG6MDP	6	2	0.313	0.500	1.500	3/8	2”	5.7	658-272	**148.00**
6	TG6MDP1	6	4	0.313	0.500	1.500	3/8	2”	10.8	658-274	**207.20**
6	TG8-6MDP	8	2	0.313	0.500	1.500	3/8	2”	10.2	658-276	**189.50**
8	TG8MDP	8	2	0.313	0.500	1.750	3/8	2-3/4	10.2	658-278	**171.70**
8	TG8MDP1	8	4	0.313	0.500	1.750	3/8	2-3/4	19.8	658-280	**290.10**
8	TG10-8MDP	10	2	0.313	0.500	1.750	3/8	2-3/4	16.2	658-282	**301.90**
10	TG10MDP	10	2	0.500	0.750	2.125	1/2	3-1/2	16.2	658-284	**284.20**
10	TG10MDP1	10	4	0.500	0.750	2.125	1/2	3-1/2	31.5	658-286	**438.00**
10	TG12-10MDP	12	2	0.500	0.750	2.125	1/2	3-1/2	23.4	658-288	**414.40**
10	TG15-10MDP	15	3	0.500	0.750	2.125	1/2	3-1/2	45.3	658-290	**680.70**
12	TG12MDP	12	2	0.500	0.750	2.500	1/2	4-1/4	23.4	658-292	**396.60**
12	TG12MDP1	12	4	0.500	0.750	2.500	1/2	4-1/4	45.3	658-294	**674.80**
12	TG15-12MDP	15	3	0.500	0.750	2.500	1/2	4-1/4	53.7	658-296	**680.70**
15	TG15MDP	15	3	0.500	0.750	3.000	5/8	5-1/4	53.7	658-298	**663.00**
15	TG15MDP1	15	4	0.500	0.750	3.000	5/8	5-1/4	70.8	658-300	**953.00**
15	TG15HDP	15	3	0.500	0.750	3.000	3/4	5-1/4	53.7	658-302	**663.00**
15	TGHDP1	15	4	0.500	0.750	3.000	3/4	5-1/4	70.8	658-304	**953.00**

Hard Top Jaws - 90º Serrations

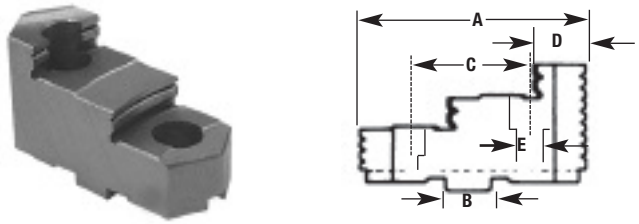
• HARD TOP JAWS SERRATED 90º FOR AUTOBLOK, BERG, FORKARDT, GAMET, M.P.T, ROHM, SMW



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	1/16x90º	I	58	34	29	12	14	16	16	8.5	0.2	491-712	**1,644.40**
3102/MTR	160	1/16x90º	I	65	39	34	14	18	16	16	10	0.3	491-714	**1,896.20**
3103/MTR	200-220	1/16x90º	I	82	45	40	17	19	23	23	10.5	0.6	492-000	**2,148.10**
3104/MTR	250-315	1/16x90º	I	105	56	45	21	28	30	30	13.5	0.98	492-002	**2,655.30**
3105/MTR	315-350	1/16x90º	I	122	56	50	21	43	30	30	13.5	1.43	492-005	**4,207.80**
3106/MTR	400	1/16x90º	I	120	74	55	21	31	34	34	22	1.9	492-006	**4,646.70**
3107/MTR	400	1/16x90º	I	152	74	55	21	57	34	34	22	2.58	492-007	**5,047.20**
3108/MTR	500	3/32x90º	II	147	73	55	28	46	38	38	32	2.23	492-008	**5,810.30**
3109/MTR	610-800	3/32x90º	II	147	75	70	28	46	38	38	32	3.2	492-009	**6,111.60**
3110/MTR	500-630	3/32x90º	II	147	73	55	25.5	46	38	38	32	2.25	492-011	**6,111.60**
3111/MTR	610-800	3/32x90º	II	147	75	70	25.5	46	38	38	32	3.23	492-012	**6,451.20**

Hard Top Jaws American Tongue And Groove

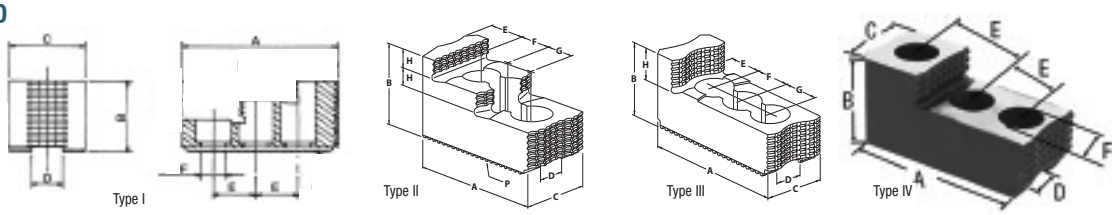
For most manual lathe chucks



Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Made in Italy Code No.	Made in Italy Price $	Code No.	Price $
125	56	12.68	32	13	9			399-870	**376.00**
160	66.7	12.68	38.1	15.8	9			397-020	**454.70**
200	79.5	12.68	44.45	19	9			397-025	**460.70**
250	95.3	19.03	53.95	22.2	14			397-030	**645.40**
250-315	90	20	40	-	-	492-030	**1,571.90**		
315	109.5	19.03	63.5	25.4	14			397-035	**824.20**

Hard Top Jaws - 60º Serrations

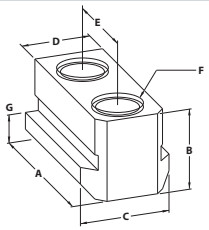
HARD TOP JAWS SERRATED 60º KITAGAWA, HOWA, MATSUMOTO, SUGA, NIKKO AND OTHER BRANDS



Chuck Dia.	Drawing No.	Serration	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	Sold By	Made in Italy Code No.	Made in Italy Price $	Code No.	Price $
6"	IV	1.5x60º	66	36	34.7	12	20	11	Set			395-505	**912.40**
6"	III	1.5x60º	67.5	36	31	12	14.5	20	Set	492-010	**1,770.50**		
8"	I	1.5x60º	81	49	36	14	25	13	Set			395-510	**953.70**
10"	I	1.5x60º	99.5	54	44.5	16	30	13	Set			395-515	**1,256.30**
12"	IV	1.5x60º	97.5	50	55	18	30	15	Piece			395-517	**429.20**
12"	III	1.5x60º	98	55	50	18	20	30	Set	492-015	**3,326.80**		
12"	IV	1.5x60º	103	55.5	50	21	30	17	Set			395-520	**1,335.10**
15"	IV	1.5x60º	149	62	80	22	43	21	Piece			395-521	**626.40**
15"	IV	1.5x60º	149	62	86	25.5	43	21	Piece			395-522	**626.40**
15"	II	1.5x60º	149	86	62	22	27	43	Set	492-020	**5,470.70**		
15"	II	1.5x60º	149	86	62	25.5	27	43	Set	492-025	**5,470.70**		

T-Nuts For Matsumoto Chucks

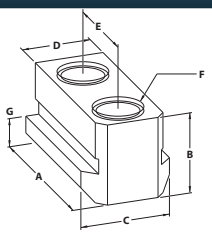




Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Price $
2903/GT20	125-150	32	20	16.5	11	20	M8	7	0.04	494-126	**56.90**
2905/GT22	150-200	45	22	20	14	25	M12	8.5	0.08	494-124	**65.10**
2905/GT23	200-280	53	23	22	16	30	M12	8	0.12	494-075	**65.10**
2907/GT33.5	300	55	33.5	25	18	30	M12	13.5	0.2	494-110	**71.20**
2909/GT50	381-457	90	39.5	33	22	50	M20	19.5	0.52	494-130	**265.50**

T-Nuts For Kitagawa Chucks



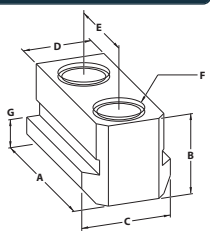


OTHER T-NUTS AVAILABLE ON REQUEST

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	494-052	**56.90**
2903/GT18	100	28	18	15	10	14	M8	5.5	0.028	494-053	**56.90**
2903/GT15-14	100-130	26	15	15	10	14	M8	5.5	0.021	494-055	**56.90**
2903/GT18-19	125	32	18	15	10	19	M8	5.5	0.02	494-056	**56.90**
2903/GT15.5	135	30	15	14	10	18	M8	5.2	0.025	494-057	**56.90**
2904/GT22	160	40	22	18	12	20	M10	7	0.068	494-073	**56.90**
2904/GT18.5	160	40	18.5	18	12	20	M10	7.5	0.071	494-060	**56.90**
2905/GT24.5	200-210	45	24.5	20	14	25	M12	8.5	0.096	494-080	**65.10**
2905/GT20.5	200-210	45	20	20	14	25	M12	8	0.08	494-070	**65.10**
2906/GT24.5	250	53	24.5	22	16	30	M12	8.5	0.136	494-095	**65.10**
2906/GT21.5	250	53	21.5	22	16	30	M12	8.5	0.124	494-085	**65.10**
2907/GT33.5	300	55	33.5	25	18	30	M14	13.5	0.218	494-110	**71.20**
2907/GT30	300	55	30	25	18	30	M14	9.5	0.180	494-111	**71.20**
2909/GT28	300	58	28	30	21	30	M16	11.5	0.225	494-115	**85.30**
2910/GT43	381-457	80	45.5	34	24	43	M20	16.5	0.511	494-135	**260.70**
2911/GT50	457	90	45	37.5	25	50	M20	19	0.695	494-140	**265.80**
2911/GT60	457	100	45	37.5	25	60	M20	19	0.800	494-141	**265.50**
2912/GT	381	80	39.2	35	25.5	43	M20	19	0.548	494-150	**265.50**
2912/GT60	457	100	54	37.5	25	60	M20	19	0.925	494-145	**274.50**

T-Nuts For Howa Chucks





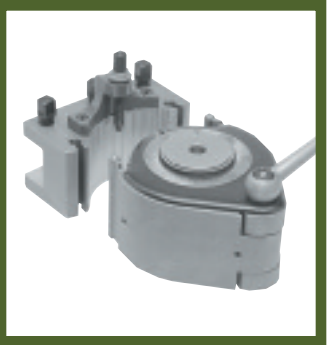
Model No.	Chuck Dia.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Weight kg.	Code No.	Price $
2904/GT22	160	40	22	18	12	20	M10	7	0.068	494-073	**56.90**
2905/GT23	200-210	45	23	20	14	25	M12	8.5	0.083	494-075	**65.10**
2906/GT23	250	53	23	22	16	30	M12	8	0.12	494-090	**65.10**
2906/GT26.5	250	45	26.5	22	16	25	M12	8.5	0.12	494-100	**65.10**
2907/GT27.5	300	55	27.5	25	18	30	M14	9.5	0.161	494-105	**71.20**
2907/GT33.5	300	55	33.5	25	18	30	M14	13.5	0.2	494-110	**71.20**
2909/GT29	300	68	29	30	21	40	M16	10.5	0.264	494-120	**85.30**
2909/GT29-35	300	61	29	30	21	35	M16	10.5	0.24	494-125	**85.30**
2909/GT40	381-610	82	40	34	26	50	M20	23	0.52	494-127	**265.50**













LATHE ACCESSORIES

Skoda Live Centres	K2-5
STM Live Centres	K2
Skoda Live Centre Sets	K6
STM Carbide Tipped Dead Lathe Centres	K6
Rohm Live Centres	K7-12
Rohm Live Centre Sets	K11
Rohm Dead Centres	K13
Rohm Face Drivers	K14-16
CNC Toolholder Bushings	K16
Quick Change Tool Posts & Holders	K17-20

SOWA
METALWORKING SOLUTIONS

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Skoda Heavy Duty Live Centres - CSN 243324/CSN 243324M

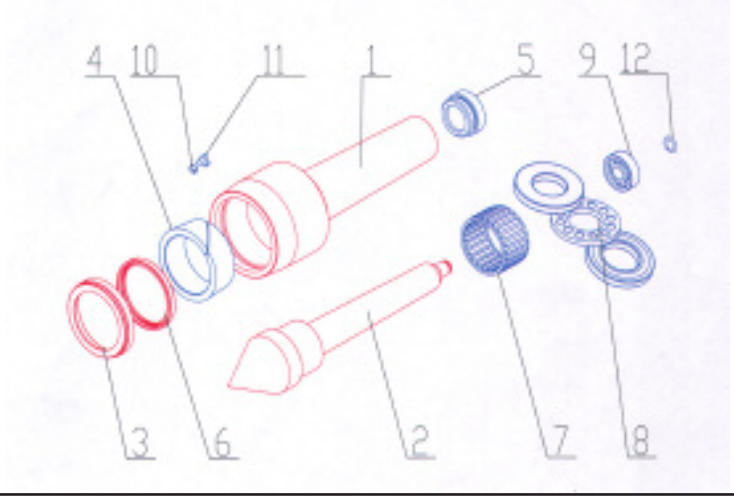
Features

- 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	310-105	**112.40**	320-105	**102.60**
2	60°	7/8	1-1/2	5	6,000	750 lb	310-110	**168.50**	320-110	**182.20**
3	60°	1-1/8	1-7/8	6-1/4	5,000	880 lb	310-115	**209.80**	320-115	**210.90**
4	60°	1-1/2	2-3/16	7-1/2	4,000	2860 lb	310-120	**263.80**	320-120	**238.60**
5	60°	1-3/4	2-3/4	9-1/2	3,500	4400 lb	310-125	**368.00**	320-125	**307.90**
6	60°	2-3/8	3-1/2	12-3/4	2,500	8800 lb	310-130	**635.90**	320-130	**601.60**

PARTS FOR HEAVY DUTY LIVE CENTRES



Skoda Model #CSN243324M has new design for part #'s 2,3 & 6 (red)

All remaining parts are used in both models

Parts For Heavy Duty Live Centres

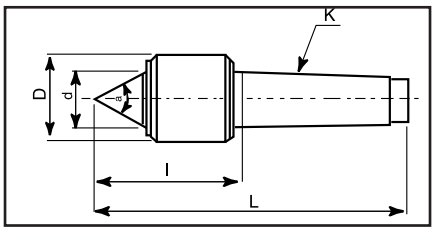
Morse Taper	2-Point Code No.	2-Point Price $	2-Point M Model Code No.	2-Point M Model Price $	3-Ring Code No.	3-Ring Price $	3-Ring M Model Code No.	3-Ring M Model Price $	4-Sleeve Code No.	4-Sleeve Price $	5-End Plug Code No.	5-End Plug Price $	6-Seal Code No.	6-Seal Price $	6-Seal M Model Code No.	6-Seal M Model Price $
2	310-205	**97.00**	310-205M	**100.00**	310-210	**12.50**	310-210M	**13.60**	310-215	**63.40**	310-220	**8.20**	310-225	**10.30**	310-225M	**18.10**
3	310-305	**100.80**	310-305M	**104.30**	310-310	**21.90**	310-310M	**22.80**	310-315	**74.20**	310-320	**11.30**	310-325	**10.30**	310-325M	**21.10**
4	310-405	**133.20**	310-405M	**136.20**	310-410	**25.80**	310-410M	**28.00**	310-415	**78.10**	310-420	**11.30**	310-425	**11.80**	310-425M	**23.90**
5	310-505	**196.30**	310-505M	**202.50**	310-510	**28.50**	310-510M	**31.70**	310-515	**109.00**	310-520	**12.50**	310-525	**11.80**	310-525M	**26.70**
6	310-605	**366.70**	310-605M	**373.50**	310-610	**90.30**	310-610M	**96.30**	310-615	**143.90**	310-620	**27.10**	310-625	**11.80**	310-625M	**31.30**

Morse Taper	7-Roller Bearing Code No.	7-Roller Bearing Price $	8-Thrust Bearing Code No.	8-Thrust Bearing Price $	9-Ball Bearing Code No.	9-Ball Bearing Price $	10-Set Screw Code No.	10-Set Screw Price $	11-Slot Screw Code No.	11-Slot Screw Price $	12-Ring Code No.	12-Ring Price $
2	310-230	**41.90**	310-235	**41.90**	310-240	**25.80**	310-245	**2.50**	310-250	**2.50**	310-255	**2.50**
3	310-330	**63.40**	310-335	**48.60**	310-340	**27.10**	310-345	**2.50**	310-350	**2.50**	310-355	**2.50**
4	310-430	**71.50**	310-435	**55.50**	310-440	**28.50**	310-445	**2.50**	310-450	**2.50**	310-455	**2.50**
5	310-530	**86.30**	310-535	**68.80**	310-540	**33.90**	310-545	**2.50**	310-550	**2.50**	310-555	**2.50**
6	310-630	**150.60**	310-635	**110.40**	310-640	**40.70**	310-645	**2.50**	310-650	**2.50**	310-655	**2.50**

Skoda Extra Heavy Duty Live Centres - CSN 243325

For clamping of heavy workpieces at lathes.

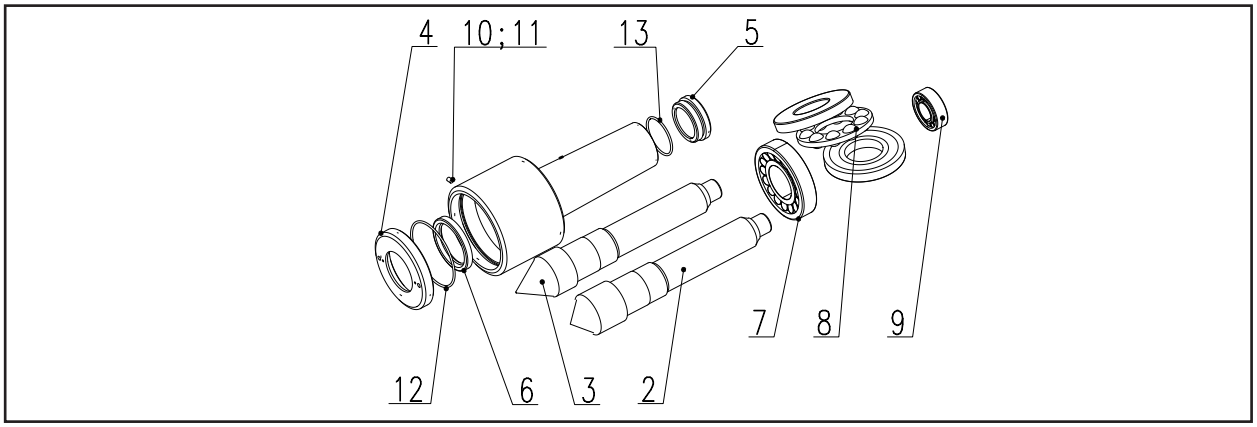
- The rigid structure and seating of the turning part is characterized by long service life
- The model EXTRA is commonly used for work at grinding machines
- Centres with the apex angle of 60° for reduction of deformations of the machine (tailstock, bed, headstock) from axial clamping forces
- The live centers 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.)	Max. RPM	Load (lb)	Weight (lb)	Code No.	Price $
4	3.14	1.58	60°	4.10	7.85	3,200	3300	5	310-920	**1,215.60**
5	3.54	1.65	60°	5.60	9.48	2,700	5500	9	310-925	**1,499.30**
6	4.92	2.16	60°	6.42	13.38	1,900	11000	27	310-930	**2,835.60**
7	5.70	2.56	60°	7.80	15.25	1,600	17600	45	310-935	**4,930.00**

SPARE PARTS FOR EXTRA HEAVY DUTY LIVE CENTRES



Spare Parts For Extra Heavy Duty Live Centres

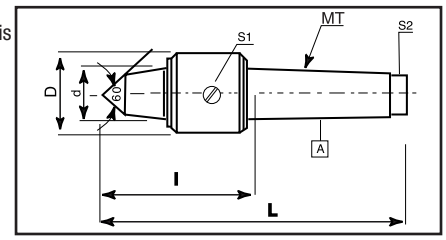
Parts No.	Description	Code No.	Price $
MT 4-02	90° Point	310-802	**449.40**
4-03	60° Point	310-803	**462.70**
4-04	Ring	310-804	**183.60**
4-05	End Plug	310-805	**6.50**
4-06	Sealing	310-806	**9.50**
4-07	Roller Bearing	310-807	**132.90**
4-08	Thrust Bearing	310-808	**187.20**
4-09	Radial Bearing	310-809	**212.30**
4-10	Lock Screw	310-810	**4.40**
4-11	Packing Piece	310-811	**60.80**
4-12	Packing Ring	310-812	**2.70**
4-13	Packing Ring	310-813	**2.20**
MT 5-02	90° Point	310-816	**559.10**
5-03	60° Point	310-817	**535.90**
5-04	Ring	310-818	**244.90**
5.05	End Plug	310-819	**16.80**
5.06	Sealing	310-820	**13.30**
5-07	Roller Bearing	310-821	**198.40**
5-08	Thrust Bearing	310-822	**222.60**
5-09	Radial Bearing	310-823	**223.20**
5-10	Lock Screw	310-824	**1.80**
5-11	Packing Piece	310-825	**130.40**
5-12	Packing Ring	310-826	**3.30**
5-13	Packing Ring	310-827	**2.20**

Spare Parts For Extra Heavy Duty Live Centres

Parts No.	Description	Code No.	Price $
MT 6-02	90° Point	310-830	**1,308.00**
6-03	60° Point	310-831	**1,356.20**
6-04	Ring	310-832	**152.40**
6-05	End Plug	310-833	**128.00**
6-06	Sealing	310-834	**16.80**
6-07	Roller Bearing	310-835	**288.70**
6-08	Thrust Bearing	310-836	**462.20**
6-09	Radial Bearing	310-837	**346.10**
6-10	Lock Screw	310-838	**3.00**
6-11	Packing Piece	310-839	**266.20**
6-12	Packing Ring	310-840	**6.40**
6-13	Packing Ring	310-841	**1.90**

Skoda Precision CNC Live Centres - CSN 243327-II

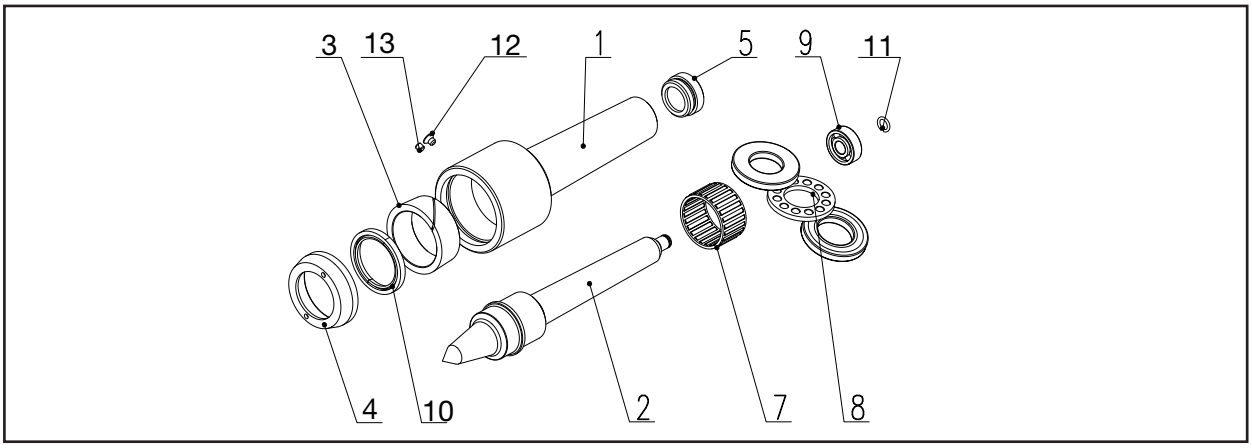
- The centers are intended for NC lathes. Their face parts are formed to allow easy access of the tool to the workpiece, which is an advantage with workpieces of complex shapes
- A special ring is used to set the radial clearance of the centre. It also prevents cutting lubricant from leaking into the centre bearing space, and so extends the operational life of the centre
- 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.)	Max. RPM	Load (lb)	Code No.	Price $
2	1.5	.695	5.25	2.65	6,000	594	310-010	**332.10**
3	1.85	.750	6.75	3.50	5,000	704	310-015	**353.40**
4	2.20	1.125	8.15	3.95	4,000	2200	310-020	**412.70**
5	3.10	1.375	10.50	4.85	3,500	3520	310-025	**517.10**

SPARE PARTS FOR CNC LIVE CENTRES



Spare Parts For CNC Live Centres

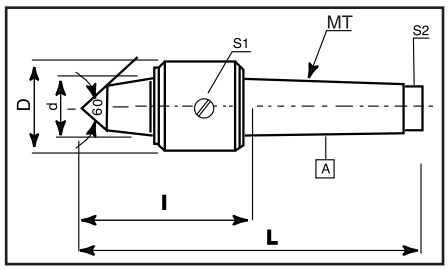
Parts No.	Description	Code No.	Price $
MT 2-02	Point	310-855	**334.10**
2-03	Ring	310-857	**126.50**
2-04	Set Ring	310-856	**41.90**
2-05	End Plug	310-858	**9.70**
2-07	Needle Bearing	310-860	**41.90**
2-08	Thrust Bearing	310-861	**48.60**
2-09	Radial Bearing	310-862	**81.00**
2-10	Packing Piece	310-859	**40.70**
2-11	Snap Ring	310-865	**8.20**
2-12	Countersink Screw	310-863	**1.60**
2-13	Lock Screw	310-864	**1.70**
MT 3-02	Point	310-869	**432.40**
3-03	Ring	310-871	**127.70**
3-04	Set Ring	310-870	**44.50**
3-05	End Plug	310-872	**11.30**
3-07	Needle Bearing	310-874	**63.40**
3-08	Thrust Bearing	310-875	**56.70**
3-09	Radial Bearing	310-876	**83.60**
3-10	Packing Piece	310-873	**41.90**
3-11	Snap Ring	310-879	**8.20**
3-12	Countersink Screw	310-877	**2.10**
3-13	Lock Screw	310-878	**1.70**

Spare Parts For CNC Live Centres

Parts No.	Description	Code No.	Price $
MT 4-02	Point	310-882	**475.50**
4-03	Ring	310-884	**162.80**
4-04	Set Ring	310-883	**47.50**
4-05	End Plug	310-885	**11.30**
4-07	Needle Bearing	310-887	**71.50**
4-08	Thrust Bearing	310-888	**63.40**
4-09	Radial Bearing	310-889	**90.30**
4-10	Packing Piece	310-886	**43.30**
4-11	Snap Ring	310-892	**9.70**
4-12	Countersink Screw	310-890	**2.10**
4-13	Lock Screw	310-891	**1.70**
MT 5-02	Point	310-895	**517.70**
5-03	Ring	310-897	**156.40**
5-04	Set Ring	310-896	**54.00**
5-05	End Plug	310-898	**12.50**
5-07	Needle Bearing	310-900	**87.60**
5-08	Thrust Bearing	310-901	**76.80**
5-09	Radial Bearing	310-902	**133.20**
5-10	Packing Piece	310-899	**46.00**
5-11	Snap Ring	310-905	**12.50**
5-12	Countersink Screw	310-903	**2.10**
5-13	Lock Screw	310-904	**1.70**

Skoda Extended Point 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 .0002"



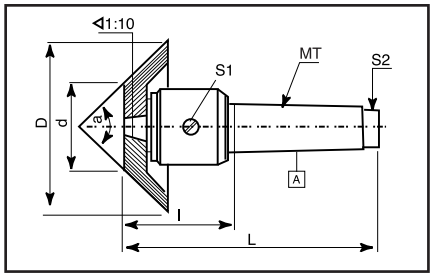


Morse Taper	D (in.)	d (in)	L (in.)	l (in.)	Max. RPM	Load (lb)	Weight (lb)	Point Angle	Code No.	Price $
2	1.417	.866	5.059	2.560	6,000	594	.79	60°	310-160	**184.10**
3	1.850	1.181	6.575	3.386	5,000	704	1.85	60°	310-165	**218.90**
4	2.165	1.378	8.169	4.094	4,000	2200	3.19	60°	310-170	**274.90**
5	2.736	1.772	10.197	5.078	3,500	3960	7.04	60°	310-175	**379.10**
6	3.504	2.362	13.425	6.319	2,500	7040	17.05	60°	310-180	**666.30**

Skoda Heavy Duty Bull Nose 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.)	Max. RPM	Load (lb)	Weight (lb)	Code No.	Price $
3	60°	3.150	1.378	6.380	3.189	5,000	880	4.62	310-140	**796.00**
4	60°	4.527	1.732	7.637	3.622	4,000	2860	9.68	310-145	**1,283.50**
5	60°	5.314	1.811	9.449	4.331	3,500	4400	17.60	310-150	**1,670.80**
6	60°	6.693	2.520	12.125	4.961	2,500	8800	51.70	310-155	**4,001.50**

Skoda Live Centre Sets - CSN 243326

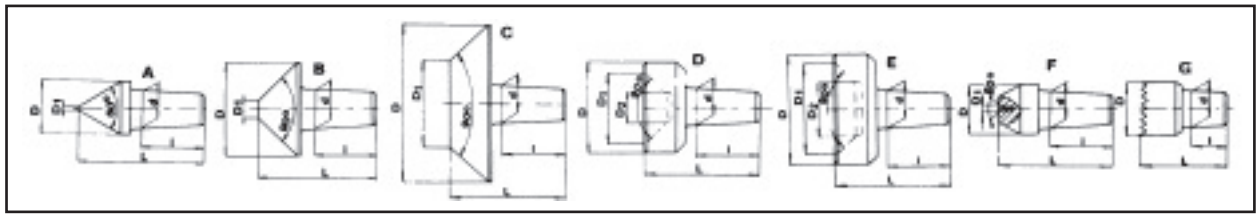
Features

- 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 d	All l	A L	B-G L	A D	A D1	B D	B D1	C D	C D1	D D	D D1	D D2	E D	E D1	E D2	F D	F D1	G D	Code No.	Price $
3	.590	.984	1.968	1.771	.787	.019	1.417	.236	2.480	1.299	1.417	1.102	.472	1.771	1.496	.866	.787	.098	.984	310-705	**757.10**
4	.784	1.181	2.362	2.086	.984	.019	1.771	.393	2.755	1.378	1.771	1.456	.669	2.480	2.086	1.181	.984	.196	1.259	310-710	**895.00**
5	.984	1.496	2.874	2.559	1.259	.039	2.204	.551	3.149	1.496	2.204	1.732	.787	2.775	2.362	1.417	1.259	.196	1.771	310-715	**1,306.50**
6	1.181	1.811	3.543	3.149	1.417	.039	2.755	.708	3.937	1.968	2.755	2.283	.950	3.937	3.464	2.126	1.417	.315	2.204	310-720	**1,881.50**



Parts For Skoda Live Centre Sets

Morse Taper	Part A Code No.	Part A Price $	Part B Code No.	Part B Price $	Part C Code No.	Part C Price $	Part D Code No.	Part D Price $	Part E Code No.	Part E Price $	Part F Code No.	Part F Price $	Part G Code No.	Part G Price $
3	310-724	**156.00**	310-726	**225.90**	310-728	**276.80**	310-730	**236.50**	310-732	**235.10**	310-734	**212.40**	310-736	**178.80**
4	310-744	**180.00**	310-746	**258.00**	310-748	**337.20**	310-750	**245.90**	310-752	**255.40**	310-754	**190.80**	310-756	**193.60**
5	310-764	**193.60**	310-766	**274.30**	310-768	**419.10**	310-770	**282.20**	310-772	**409.70**	310-774	**221.80**	310-776	**219.10**
6	310-784	**212.40**	310-786	**350.40**	310-788	**556.00**	310-790	**364.00**	310-792	**529.00**	310-794	**250.00**	310-796	**294.30**

Additional Items For Skoda Live Centre Sets

Morse Taper	Live Center Only Code No.	Live Center Only Price $	Internal Point Code No.	Internal Point Price $	Wooden Case Code No.	Wooden Case Price $	Drift Key Code No.	Drift Key Price $
3	310-722	**382.00**	310-723	**124.80**	310-738	**164.10**	310-740	**161.40**
4	310-742	**494.00**	310-743	**142.50**	310-758	**188.20**	310-760	**170.80**
5	310-762	**601.50**	310-763	**172.90**	310-778	**214.10**	310-780	**183.00**
6	310-782	**978.30**	310-783	**251.10**	310-798	**241.50**	310-800	**223.10**

STM Carbide Tipped Dead Lathe Centre

With Morse Taper. Included Angle is 60°. They are precision made, hardened and ground to closest tolerances.

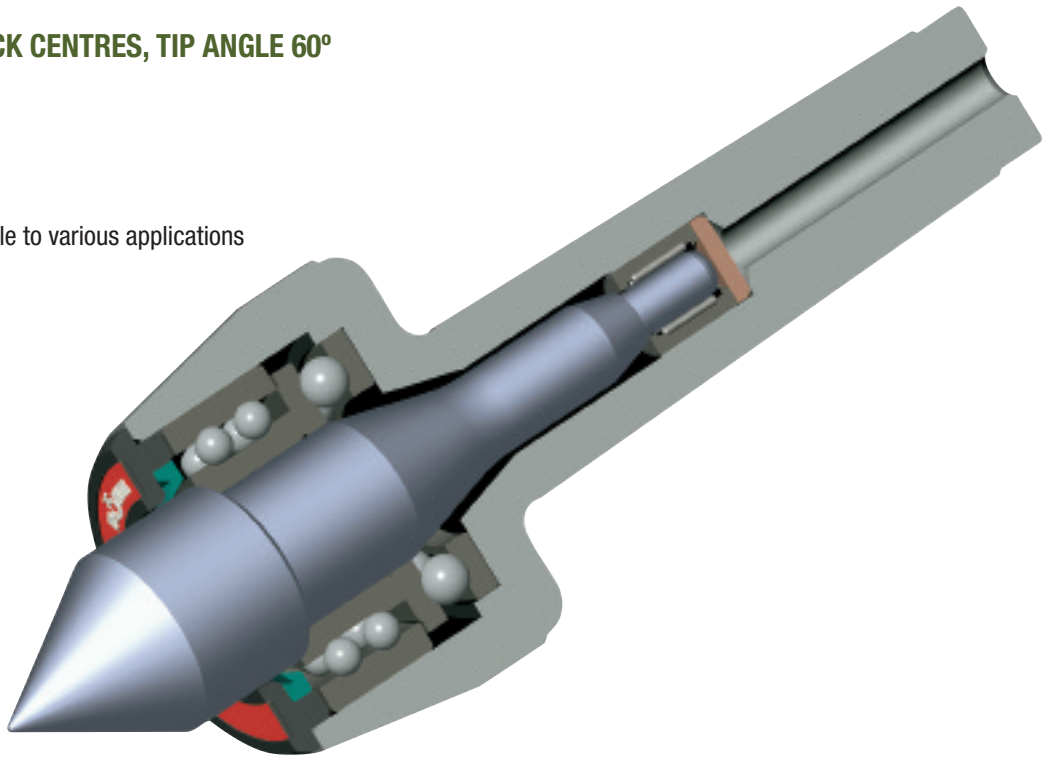


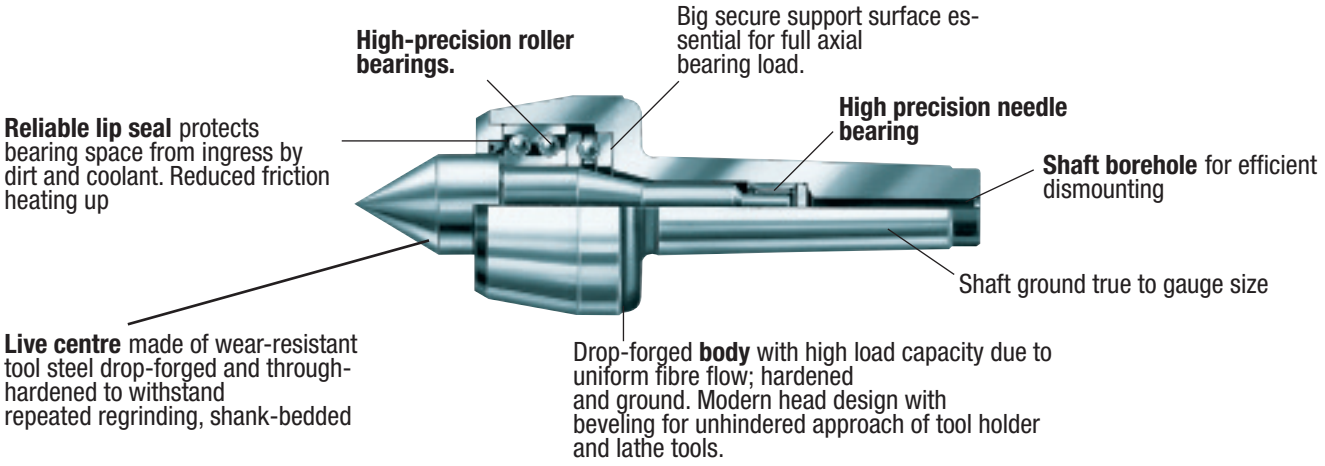
Morse Taper	Length	Code No.	Price $
1	3-3/16	420-905	**80.20**
2	3-15/16	420-910	**76.80**
3	4-15/16	420-915	**120.70**
4	6-5/16	420-920	**172.80**
5	7-7/8	420-925	**231.80**
6	11	420-930	**354.40**

REVOLVING TAILSTOCK CENTRES, TIP ANGLE 60°

Features

- Triple bearing method
- High runout accuracy
- Life-time lubricated
- Different models suitable to various applications
- High speeds
- Heavy duty
- Long life

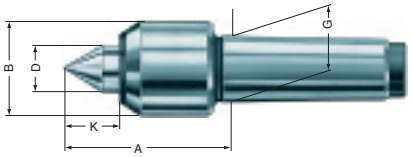




ROHM

Standard Live Centres 60º Type 600

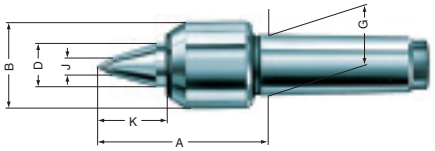
Features
- With small casing diameter



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	D (mm)	G (mm)	K (mm)	Code No.	Price $
2	005336	200	0.005	7000	62	32	15	17.780	18	392-410	**481.00**
3	005429	400	0.005	7000	62	34	15	23.825	18	392-415	**507.00**
4	005469	800	0.005	6300	75.5	42	20	31.267	25	392-425	**614.60**
5	005490	1600	0.01	4300	104	58	30	44.399	34	392-430	**885.40**
6	005547	3500	0.02	3000	143	80	42	63.348	49	392-435	**2,078.90**

Extended Live Centres 60º Type 600-20

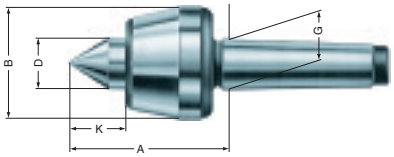
Features
- With extended live center



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	D (mm)	G (mm)	J (mm)	K (mm)	Code No.	Price $
2	362080	170	0.008	7000	73	32	15	17.780	10	29	392-440	**566.20**
3	362081	340	0.008	7000	74	34	15	23.825	11	30	392-445	**626.10**
4	362082	700	0.008	6300	88.5	42	20	31.237	13	38	392-450	**764.80**
5	362083	1400	0.01	4300	119	58	30	44.399	14	49	392-455	**1,268.90**
6	362084	3000	0.02	3000	164	80	42	63.348	18	70	392-460	**2,404.50**

Hardened And Ground Live Centres 60º Type 604 H

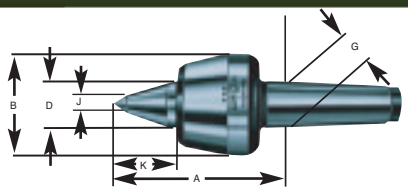
Features
- Body hardened and ground



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	D (mm)	G (mm)	K (mm)	Code No.	Price $
1	043400	100	0.005	7000	60.5	36	15	12.065	17	392-465	**492.20**
2	043115	200	0.005	7000	65	45	20	17.780	24	392-470	**618.00**
3	042315	400	0.005	6300	70.05	50	22	23.825	27.5	392-475	**725.10**
3	042776	500	0.005	5000	79.5	60	25	23.825	31	392-485	**784.40**
4	042175	800	0.005	3800	102.5	70	32	31.267	41	392-490	**925.00**
5	042843	2000	0.005	3000	129	90	40	44.399	50.5	392-500	**1,145.70**
6	043532	3500	0.01	2600	152	105	50	63.348	57.5	392-515	**2,530.20**
6	093439	4500	0.01	1500	196	140	60	63.348	67	392-520	**4,497.90**
m80	093440	7500	0.015	1500	196	140	60	80.000	68	392-525	**5,589.00**

Extended Live Centres 60º Type 604 HVL

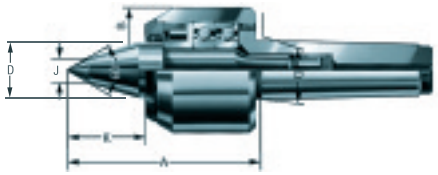
Features
- With extended live center



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	D (mm)	G (mm)	J (mm)	K (mm)	Code No.	Price $
1	058668	80	0.01	7000	70.5	36	15	12.065	9	27	392-565	**518.10**
2	058669	140	0.005	7000	75	45	20	17.780	10	34	392-570	**699.30**
3	058670	400	0.005	5000	95.5	60	25	23.825	12	47	392-575	**939.90**
4	058671	500	0.005	3800	114.5	70	32	31.267	14	53	392-580	**951.10**
5	058672	1200	0.005	3000	143.5	90	40	44.399	16	65	392-585	**2,716.90**
6	058673	2500	0.01	2600	172.5	105	50	63.348	18	78	392-590	**2,781.90**

High Load High Speed Live Centres 60º Type 640-20

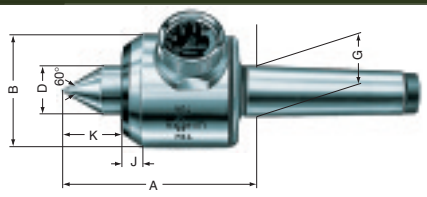
Features
- For high load and high speeds



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	D (mm)	G (mm)	J (mm)	K (mm)	Code No.	Price $
4	303598	1000	0.005	7000	122	70	32	31.267	16	44	392-900	**2,611.60**
5	303599	2000	0.005	6000	150	95	42	44.399	20	59	392-930	**3,314.40**
6	301696	3000	0.005	4800	180	120	58	63.348	26	77	392-935	**5,851.70**

Revolving Tailstock Centres 60º Type 652-AC

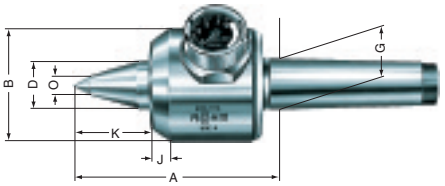
Features
- With pressure display and length compensation, as counter centre for Constant face drivers



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max Axial Load (kg)	Spring Way (mm)	A (mm)	B (mm)	D (mm)	G (mm)	J (mm)	K (mm)	Code No.	Price $
3	060798	400	0.01	550	1.6	105	64	25	23.825	12	31.5	392-945	**2,238.10**
4	060874	800	0.01	900	2	123.5	72	32	31.267	15	39	392-965	**2,430.40**
5	060906	1600	0.01	1500	1.8	160.5	95	40	44.399	16	49	392-985	**3,266.20**
6	060915	3200	0.015	2000	2.7	202	120	52	63.348	23	59	393-005	**5,185.90**

Revolving Tailstock Extended Point Centres 60º Type 652-AC-VL

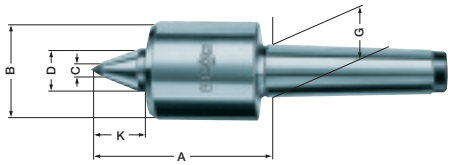
Features
- Extended point with pressure display and length compensation, as counter centre for Constant face drivers



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max Axial Load (kg)	Spring Way (mm)	A (mm)	B (mm)	D (mm)	G (mm)	J (mm)	K (mm)	O (mm)	Code No.	Price $
3	079920	260	0.01	550	1.6	120	64	25	23.825	12	46.5	11	393-025	**2,352.60**
4	079921	550	0.01	900	2	137.5	72	32	31.267	15	53	14	393-030	**2,559.90**
5	079922	1100	0.01	1500	1.8	177.5	95	40	44.399	16	66	15	393-035	**3,451.20**
6	079923	2500	0.015	2000	2.7	223	120	52	63.348	23	80	24	393-040	**5,419.00**

Revolving Tailstock Extended NC Centres 60º Type 664

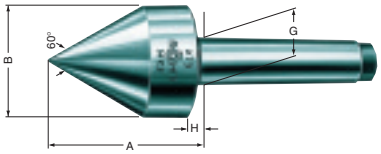
Features
- Extended NC-centre with carbide insert, for high speed, powerful, for small and medium components.



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	Max RPM	A (mm)	B (mm)	C (mm)	D (mm)	G (mm)	K (mm)	Code No.	Price $
2	772389	100	0.01	12000	99	45	7	20	17.780	40	393-048	**1,465.10**
3	772390	100	0.01	12000	99	45	7	20	23.825	40	393-049	**1,631.40**
4	772391	250	0.01	9000	141	66	11	32	31.267	63	393-051	**1,886.60**
5	772392	250	0.01	9000	141	66	11	32	44.399	63	393-052	**2,130.70**

Revolving Centre Tapers 60º Type 627

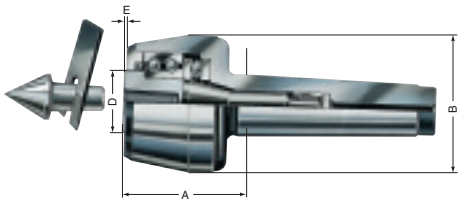
Features
- Revolving centering taper, pointed. As centering taper for tubular workpieces and as a revolving tailstock centre to machine normal workpieces



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	A (mm)	B (mm)	G (mm)	Code No.	Price $
2	010613	200	0.01	61	42	17.780	393-335	**728.90**
3	010635	400	0.008	79	46	23.825	393-340	**873.20**
4	010638	800	0.008	100	64	31.267	393-345	**1,135.70**
5	010642	1600	0.008	115.5	78	44.399	393-355	**1,908.70**

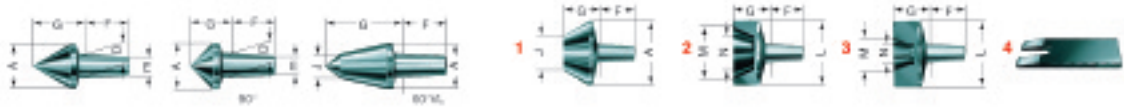
Live Centres Sets Type 614

Features
- Revolving tailstock centres for interchangeable inserts.





Morse Taper	Max Workpiece Weight (kg)	Max Concentricity Error (mm)	A (mm)	B (mm)	D (mm)	E (mm)	Centre Without Inserts Rohm Id No.	Code No.	Price $	Complete Set In Wooden Case Rohm Id No.	Code No.	Price $
2 -Size 102	40	0.01	45	45	20	4	061030	392-610	**725.10**	061702	392-640	**1,738.80**
3 -Size 104	130	0.01	48	50	22	4.5	061031	392-615	**806.60**	061703	392-645	**2,060.60**
3 -Size 106	150	0.01	55	60	25	5	061032	392-620	**936.00**	061704	392-650	**2,282.40**
4 -Size 108	250	0.01	67	70	32	5	061038	392-625	**1,143.30**	061705	392-655	**2,729.80**
5 -Size 110	650	0.01	85	90	40	6	061039	392-630	**1,668.40**	061706	392-660	**3,773.00**
6 -Size 114	900	0.015	101	105	50	6	061040	392-635	**2,963.10**			



Interchangeable Inserts 60º

Size	Rohm Id No.	A (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Code No.	Price $
102	070725	16	7	5.2	18	20	392-665	**80.40**
104	070728	20	12	9.6	24	24	392-670	**89.70**
106	070731	24	12	9.6	24	27.5	392-675	**100.20**
108	070734	28	15	12	30	31.5	392-680	**116.40**
110	070737	38	22	18.5	35	43	392-685	**152.00**
114	070740	50	28	24	40	54	392-690	**207.70**

Interchangeable Inserts 90º

Size	Rohm Id No.	A (mm)	D (mm)	E (mm)	F (mm)	G (mm)	Code No.	Price $
102	070727	16	7	5.2	18	14.5	392-725	**80.40**
104	070730	20	12	9.6	24	16.5	392-730	**89.70**
106	070733	24	12	9.6	24	19	392-735	**100.20**
108	070736	28	15	12	30	21.5	392-740	**116.40**
110	070739	38	22	18.5	35	29	392-745	**152.00**
114	070742	50	28	24	40	36	392-750	**207.70**

Interchangeable Inserts 60º VL

Size	Rohm Id No.	A (mm)	D (mm)	E (mm)	F (mm)	G (mm)	J (mm)	Code No.	Price $
102	070719	14	7	5.2	18	25	6	392-755	**95.80**
104	070720	18	12	9.6	24	30	8	392-760	**118.50**
106	070720	18	12	9.6	24	30	8	392-765	**108.70**
108	070721	26	15	12	30	43	12	392-770	**141.40**
110	070722	32	22	18.5	35	55	13	392-775	**185.90**
114	070723	42	28	24	40	70	18.5	392-780	**335.80**

Interchangeable Inserts #1

Size	Rohm Id No.	A (mm)	D (mm)	E (mm)	F (mm)	G (mm)	J (mm)	Code No.	Price $
102	070700	25	7	5.2	18	21	10	392-785	**118.50**
104	070701	35	12	9.6	24	26	15	392-790	**144.60**
106	070702	45	12	9.6	24	27	25	392-795	**174.90**
108	070703	55	15	12	30	31.5	30	392-800	**221.20**
110	070704	70	22	18.5	35	39	40	392-805	**295.80**
114	070705	100	28	24	40	52	55	392-810	**588.40**

Interchangeable Inserts #2

Size	Rohm Id No.	D (mm)	E (mm)	F (mm)	G (mm)	L (mm)	M (mm)	N (mm)	Code No.	Price $
102	070707	7	5.2	18	18	25	20	10	392-815	**231.80**
104	070708	12	9.6	24	24	35	30	15	392-825	**295.80**
106	070709	12	9.6	24	25	45	40	25	392-835	**343.40**
108	070710	15	12	30	30	55	48	30	392-845	**414.60**
110	070711	22	18.5	35	39	70	63	40	392-855	**566.20**
114	070712	28	24	40	42	100	90	55	392-865	**880.60**

Interchangeable Inserts #3

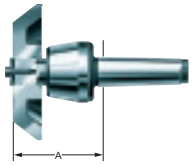
Size	Rohm Id No.	D (mm)	E (mm)	F (mm)	G (mm)	L (mm)	M (mm)	N (mm)	Code No.	Price $
102	228620	7	5.2	18	12	16	12	6	392-820	**209.30**
104	228621	12	9.6	24	16	22	18	10	392-830	**229.30**
106	228621	12	9.6	24	16	22	18	10	392-840	**209.80**
108	228622	15	12	30	25	40	35	20	392-850	**298.60**
110	308632	22	18.5	35	30	52	45	30	392-860	**403.40**

Extractor #4

Size	Rohm Id No.	Code No.	Price $
102	061707	392-870	**48.40**
104	061708	392-875	**80.40**
106	061708	392-875	**80.40**
108	061708	392-875	**80.40**
110	061709	392-880	**88.30**
114	061709	392-880	**88.30**

Revolving Centering Tapers Type 608-00

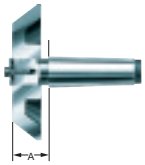
Features
- Revolving tailstock centre
- See below for insert attachments (AZ-75º & AZR-75º)



Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	A (mm)	Code No.	Price $
4	304562	800	103	393-045	**1,379.80**
5	304563	1600	128	393-050	**2,060.60**
6	304564	3000	159	393-055	**3,547.40**

Fixed Shaft Centering Tapers Type 698-00

Features
- Fixed shaft
- See below for insert attachments (AZ-75º & AZR-75º)

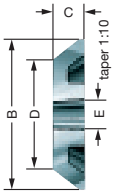


* Including fixing screw and washer, without insert

Morse Taper	Rohm Id No.	Max Workpiece Weight (kg)	A (mm)	Code No.	Price $
4	*304580	2000	45	393-060	**394.50**
5	*304581	4800	60	393-070	**510.40**
6	*304582	12000	70	393-080	**763.20**

Insert Attachments Type AZ-75º



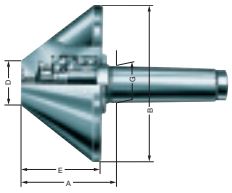


Size of Insert	For M.T.	Rohm Id No.	B (mm)	C (mm)	D (mm)	E (mm)	Code No.	Price $
1	4	*304565	60	68	5	32	393-090	**451.50**
2	4	304566	100	45	45	32	393-095	**669.70**
3	4	304567	150	45	95	32	393-100	**895.40**
4	4	304568	200	45	145	32	393-105	**1,542.60**
5	4	304569	250	45	195	32	393-110	**2,478.50**
1	5	304570	100	43	45	40	393-135	**673.40**
2	5	304571	150	43	95	40	393-140	**998.90**
3	5	304572	200	43	145	40	393-145	**1,583.30**
4	5	304573	250	43	195	40	393-150	**2,337.90**
5	5	304574	300	43	245	40	393-155	**3,506.70**
1	6	304575	150	54	95	50	393-185	**1,220.80**
2	6	304576	200	54	145	50	393-190	**1,886.60**
3	6	304577	250	54	195	50	393-195	**3,099.90**
4	6	304578	300	54	245	50	393-200	**4,313.10**
5	6	304579	350	54	295	50	393-205	**5,655.60**

* Without fixing screw and washer

Revolving Tailstock Centres 60º Type 617

Features
- Revolving tailstock centre

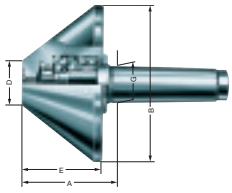


Morse Taper	Rohm Id No.	Max Workpiece Weight kg	Max Concentricity Error (mm)	A (mm)	B (mm)	D (mm)	E (mm)	Code No.	Price $
1	301615	100	0.008	64	50	20	52	393-235•	**810.40**
2	301616	200	0.008	65	50	20	52	393-240	**825.20**
2	301556	300	0.008	77	80	30	64	393-245	**991.60**
3	301557	400	0.008	77	80	30	64	393-250	**1,076.60**
4	301558	400	0.008	78.5	80	30	64	393-255	**1,143.30**
3	221605	600	0.008	96.5	120	30	83	393-260	**1,431.70**
4	044023	800	0.008	98	120	30	83	393-265	**1,476.20**
5	090483	800	0.008	99	120	30	83	393-270	**1,583.30**

• Available only while quantities last.

Revolving Tailstock Centres 75º Type 618

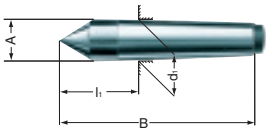
Features
- Revolving tailstock centre



Morse Taper	Rohm Id No.	Max Workpiece Weight kg	Max Concentricity Error (mm)	A (mm)	B (mm)	D (mm)	E (mm)	Code No.	Price $
2	301559	300	0.008	80	80	20	67	393-275	**991.60**
3	301560	400	0.008	80	80	20	67	393-280	**1,076.60**
4	301561	400	0.008	81.5	80	20	67	393-285	**1,143.30**
3	062211	600	0.008	85.5	120	30	72	393-290	**1,379.80**
4	062224	800	0.008	87	120	30	72	393-295	**1,439.10**
5	062232	800	0.008	88	120	30	72	393-300	**1,542.60**
4	062299	1200	0.01	107	170	50	90	393-305	**2,696.70**
5	063614	1600	0.01	106	170	50	90	393-310	**2,877.90**
6	063633	1600	0.01	107.5	170	50	90	393-315	**3,184.90**
5	063662	2000	0.01	146.5	250	75	130	393-320	**6,451.00**
6	063656	2000	0.01	148	250	75	130	393-325	**6,702.40**
6	063680	4000	0.015	184	350	120	168	393-330	**13,008.70**

Dead Centres Type 665

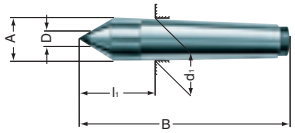
Features
- Full Point
- Completely hardened and ground
- Material: Tool Steel



Morse Taper	Rohm Id No.	A (mm)	B (mm)	d1 (mm)	l1 (mm)	Code No.	Price $
0	013706	9.2	70	9.045	20	394-045	**69.00**
1	013707	12.2	80	12.065	26.5	394-050	**53.40**
2	013709	18	100	17.780	36	394-055	**68.20**
3	013711	24.1	125	23.825	44	394-060	**85.70**
4	013712	31.6	160	31.267	57.5	394-065	**141.70**
5	013715	44.7	200	44.399	70.5	394-070	**269.60**
6	013718	63.8	270	63.348	88	394-075	**640.80**

Dead Centres Type 667

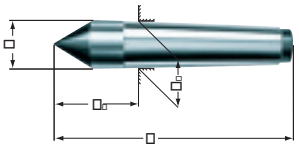
Features
- Full Point , Carbide tipped
- Completely hardened and ground



Morse Taper	Rohm Id No.	A (mm)	B (mm)	D (mm)	d1 (mm)	L1 (mm)	Code No.	Price $
3	017172	24.1	125	11	23.825	44	394-130	**331.10**
4	017173	31.6	160	14	31.267	57.5	394-135	**447.00**
5	017174	44.7	200	18	44.399	70.5	394-140	**783.20**

Dead Centres Type 677

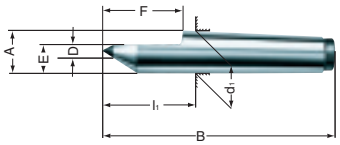
Features
- Full Point , Carbide tipped
- Completely hardened and ground



Morse Taper	Rohm Id No.	A (mm)	B (mm)	d1 (mm)	l1 (mm)	Code No.	Price $
2	326786	18	100	17.780	36	394-150	**640.80**
3	306402	24.1	125	23.825	44	394-155	**901.80**
4	221398	31.6	160	31.267	57.5	394-160	**1,637.20**
5	326816	44.7	200	44.399	70.5	394-165	**2,843.20**

Dead Centres Type 670

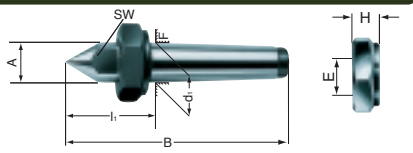
Features
- Half Point , Carbide tipped
- Completely hardened and ground



M.T.	Rohm Id No.	A (mm)	B (mm)	D (mm)	E (mm)	F (mm)	d1 (mm)	l1 (mm)	Code No.	Price $
2	027439	18	100	7	11	30	17.780	36	394-210	**311.70**
3	027440	24.1	125	11	15	38	23.825	44	394-215	**403.50**
4	026571	31.6	160	14	21	50	31.267	57.5	394-220	**522.20**
5	027441	44.7	200	18	29.4	63	44.399	70.5	394-225	**925.50**

Dead Centres Type 671

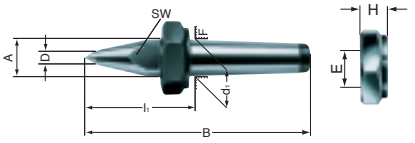
Features
- Full point with Draw-off nut
- Completely hardened and ground



M.T.	Rohm Id No.	A (mm)	B (mm)	SW (mm)	E (mm)	F (mm)	d1 (mm)	l1 (mm)	Code No.	Price $
3	005654	24.1	138	19	M27 x 1.5	41	23.825	57	394-240	**188.40**
4	005357	31.6	175	27	M36 x 1.5	55	31.267	72.5	394-245	**285.70**
5	005381	44.7	217	36	M48 x 1.5	75	44.399	87.5	394-250	**470.80**
6	005426	63.8	290	55	M68 x 1.5	100	63.348	108	394-255	**1,186.50**

Dead Centres Type 672

Features
- Extended full point with Draw-off nut
- Completely hardened and ground



M.T.	Rohm Id No.	A (mm)	B (mm)	SW (mm)	D (mm)	E (mm)	Nut Dia. (mm)	d1 (mm)	l1 (mm)	Code No.	Price $
3	249576	24.1	148	19	10	M27 x 1.5	41	23.825	67	394-265	**289.70**
4	249577	31.6	186.5	27	14	M36 x 1.5	55	31.267	84	394-270	**407.50**
5	249578	44.7	242	36	16	M48 x 1.5	75	44.399	112	394-275	**585.40**
6	249579	63.8	330	55	20	M68 x 1.5	100	63.348	148	394-280	**1,328.80**

CONSTANT FACE DRIVERS



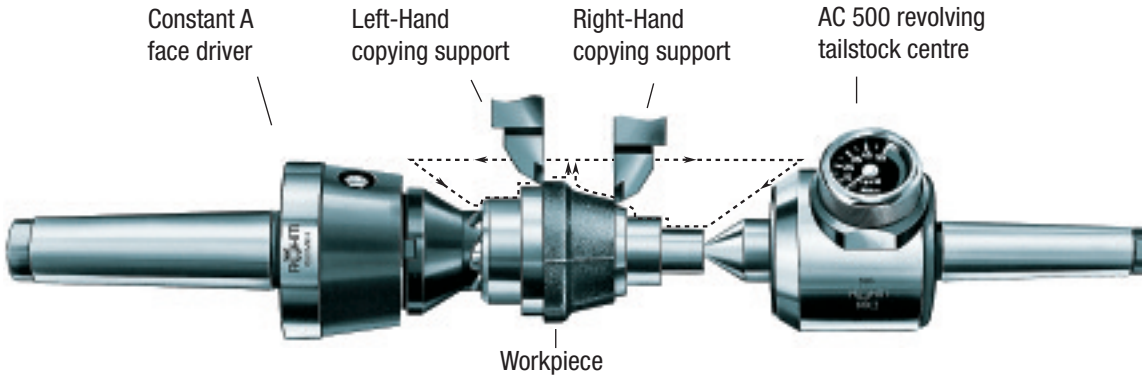


CONSTANT FACE DRIVERS

For rational turning of workpieces on their entire length without reclamping with high precision.

Developed according to the modular-design principle, therefore a universal exchange of driving discs and centres. Hydraulic respectively mechanic pressure compensation provides a uniform clamping force also on uneven faces of workpieces.

The spring loaded centre provides a longitudinal workpiece stop on the front side.



CONSTANT FACE DRIVERS CoA

One set consists of a basic body, one driving disc and suitable centre

Basic Body CoA Type 680-50

Features
• Basic body with Morse taper (all basic bodies without centre)



Morse Taper	Rohm Id No.	Code No.	Price $
3	088173	394-390	**1,964.50**
4	088174	394-395	**2,049.10**
5	088175	394-400	**2,165.30**
6	088176	394-405	**2,710.00**

Basic Body CoA Type 680-65

Features
• Basic body for clamping in lathe chuck, with spring set.



Shank	Rohm Id No.	Code No.	Price $
25mm	088074	394-410	**3,410.70**

Basic Body CoA Type 681-85

Features
• Basic body with short taper DIN 55026 mechanical compensation, with spring set



Short Taper	Rohm Id No.	Code No.	Price $
6	313906	394-425	**6,642.60**
8	313907	394-420	**7,968.30**

Basic Body CoA Type 680-60

Features
• Basic body flange type with cylindrical centre mount dia. 100mm with spring set



Flange Mount	Rohm Id No.	Code No.	Price $
ZD 100	088046	394-415	**4,375.10**

ROHM

Adapter Plates For CoA - Type 688-87

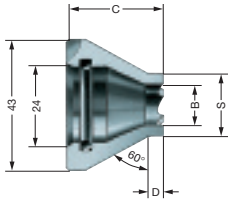
Features
- Adapter plates without spring set (for CoA, type 680-60 and CoK)



Short Taper	Rohm Id No.	DIN 55026 Code No.	DIN 55026 Price $	Rohm Id No.	DIN 55027 Code No.	DIN 55027 Price $
6	088486	394-430	**2,576.10**		-	-
8	088487	394-435	**3,178.60**	088482	394-450	**4,303.70**
11	088488	394-440	**5,210.40**		-	-

Slip On Driving Discs Toothed

- Slip on driving discs and centres suitable for all basic bodies, clamping diameter 8-80mm



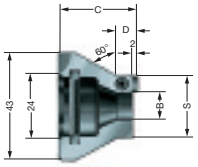


Right hand rotation

Clamping Dia. S (mm)	Approx Turning Range (mm)	B (mm)	C (mm)	D (mm)	Matching Centre	Type 680-10 Right hand rotation Rohm Id No.	Code No.	Price $	Type 680-20 Left hand rotation Rohm Id No.	Code No.	Price $	Type 680-30 Right and left hand Rohm Id No.	Code No.	Price $
8	9-16	4.5	38	4	4	088061	394-535	**279.70**	088081	394-610	**279.70**	088541	394-710	**375.70**
10	11-20	4.5	38	4	4	088062	394-540	**279.70**	088082	394-615	**279.70**	088542	394-715	**375.70**
12	13-24	7	36	4	6	088063	394-545	**279.70**	088083	394-620	**279.70**	088543	394-720	**375.70**
16	17-32	11	33	4	10	088064	394-550	**279.70**	088084	394-625	**279.70**	088544	394-725	**375.70**
20	21-40	13	30	4	12	088065	394-555	**279.70**	088085	394-630	**279.70**			
25	26-50	17	30	8	16	088066	394-560	**279.70**	088086	394-635	**279.70**			
32	33-64	22	30	10	16	088067	394-565	**279.70**	088087	394-640	**279.70**			

Slip On Driving Discs Toothed

- Slip on driving discs and centres suitable for all basic bodies, clamping diameter 8-80mm
- With Interchangeable hard metal driving plates 6mm x 3.2mm

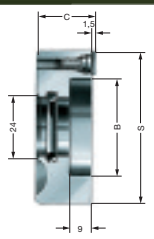




Clamping Dia. S (mm)	Approx Turning Range (mm)	B (mm)	C (mm)	D (mm)	Matching Centre	Type 680-11 Right hand rotation Rohm Id No.	Code No.	Price $	Type 680-21 Left hand rotation Rohm Id No.	Code No.	Price $	Type 680-31 Right and left hand Rohm Id No.	Code No.	Price $
20	21-40	7	30	5	6	089065	394-570	**589.50**	089085	394-645	**589.50**	088545	394-730	**710.00**
25	26-50	11	30	8	10	089066	394-575	**482.30**	089086	394-650	**482.30**	088546	394-735	**589.50**
32	33-64	17.5	30	10	16	089067	394-580	**482.30**	089087	394-655	**482.30**	088547	394-740	**589.50**

Slip On Driving Discs Toothed

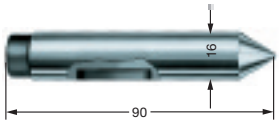
- Slip on driving discs and centres suitable for all basic bodies, clamping diameter 8-80mm
- With interchangeable hard metal driving plates 9.5mm x 3.2mm which can be used on 4 sides.





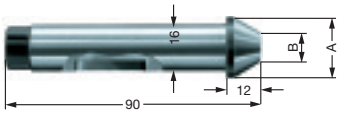
Clamping Dia. S (mm)	Approx Turning Range (mm)	B (mm)	C (mm)	D (mm)	Matching Centre	Type 680-12 Right hand rotation Rohm Id No.	Code No.	Price $	Type 680-22 Left hand rotation Rohm Id No.	Code No.	Price $	Type 680-32 Right and left hand Rohm Id No.	Code No.	Price $
40	41-80	20	24	10	16	088068	394-585	**473.50**	088088	394-660	**473.50**	088548	394-685	**540.40**
50	51-100	28	24	-	16	088069	394-590	**473.50**	088089	394-665	**473.50**	088549	394-695	**540.40**
63	64-126	41	24	-	16	088070	394-595	**509.30**	088090	394-675	**509.30**	088550	394-700	**598.50**
80	81-160	58	24	-	16	088071	394-600	**549.40**	088091	394-680	**457.80**	088551	394-705	**647.60**

Centre Points For COA Face Driver - Type 680-40



Centre Dia. A (mm)	For Clamping Dia. (mm)	Rohm Id No.	Code No.	Price $
4	8-10	088351	394-755	**127.00**
6	12	088352	394-760	**127.00**
10	16	088353	394-765	**127.00**
12	20	088354	394-770	**127.00**
16	25-80	088355	394-775	**127.00**

Centre Points With Head For COA Face Driver - Type 680-45



B (mm)	A (mm)	Rohm Id No.	Code No.	Price $
10	21	086619	394-790	**234.60**
16	27	086620	394-795	**260.40**
23	34	688878	394-815	**357.00**
29	40	086621	394-800	**367.30**
45	56	086622	394-810	**478.00**

Hard Metal Driving Plates For CoA



Size (mm)	Rohm Id No.	Code No.	Price $
6 x 3.2	088810	394-825	**24.40**
9.5 x 3.2	088209	394-830	**24.40**

Face Driving Kits CoA Type 680

- In wooden box, clamping range: 10-80mm, turning range: 11-160mm

Contents

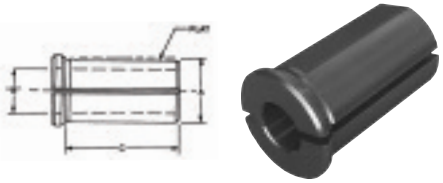
- 1 basic body
- 10 driving discs, Clamping dia.: 10-12-16-20-25-32-40-50-63-80 mm
- 5 centres dia: 4-6-10-12-16 mm
- 1 extractor
- slide rule to calculate axial tailstock loading
- O-ring, 3 hard metal driving plates
- 3 locking bolts



Morse Taper	Rohm Id No.	Right Hand Code No.	Price $	Rohm Id No.	Left Hand Code No.	Price $
3	088218	394-485	**7,031.10**	088223	394-515	**7,031.10**
4	088219	394-495	**7,098.00**	088224	394-520	**7,098.00**
5	088220	394-500	**7,174.00**	088225	394-525	**7,174.00**
6	088221	394-510	**7,669.40**	088226	394-530	**7,669.40**

Type B CNC Toolholder Bushings

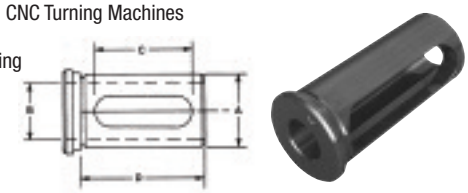
- Split style
- Shorter length
- Clamp on flat
- Bushing collapses to hold tool.
- Used for Drills, Boring Bars, and other tools



Bushing Type	Dia. (A)	Bore (B)	Length Under Head (C)	Code No.	Price $
B	1-1/2"	1/2"	2-1/2"	470-510	**76.30**
B	1-1/2"	5/8"	2-1/2"	470-511	**76.30**
B	1-1/2"	3/4"	2-1/2"	470-512	**76.30**
B	1-1/2"	1"	2-1/2"	470-513	**76.30**
B	1-1/2"	1-1/4"	2-1/2"	470-514	**76.30**
B	2"	5/8"	3-1/2"	470-515	**124.00**
B	2"	3/4"	3-1/2"	470-516	**124.00**
B	2"	1"	3-1/2"	470-517	**124.00**
B	2"	1-1/4"	3-1/2"	470-518	**124.00**
B	2"	1-1/2"	3-1/2"	470-519	**124.00**
B	2"	1-3/4"	3-1/2"	470-520	**124.00**

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"	470-500	**82.90**
C	1-1/2"	5/8"	3"	3-3/8"	470-501	**82.90**
C	1-1/2"	3/4"	3"	3-3/8"	470-502	**82.90**
C	1-1/2"	1"	3"	3-3/8"	470-503	**82.90**
C	1-1/2"	1-1/4"	3"	3-3/8"	470-504	**82.90**
C	2"	3/4"	3-5/8"	4"	470-505	**126.20**
C	2"	1"	3-5/8"	4"	470-506	**126.20**
C	2"	1-1/4"	3-5/8"	4"	470-507	**126.20**
C	2"	1-1/2"	3-5/8"	4"	470-508	**126.20**
C	2"	1-3/4"	3-5/8"	4"	470-509	**126.20**

40 POSITION QUICK CHANGE TOOL POSTS AND 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 or traverse slides. Bore with longitudinal feed by using toolholder with inner taper. Eliminates complicated boring with the tailstock.

- Repeatability Accuracy: ≤0.01mm



Toolholder 'B'



Toolholder 'D'



Toolholder 'S'



Toolpost

Mounting on Lathe:

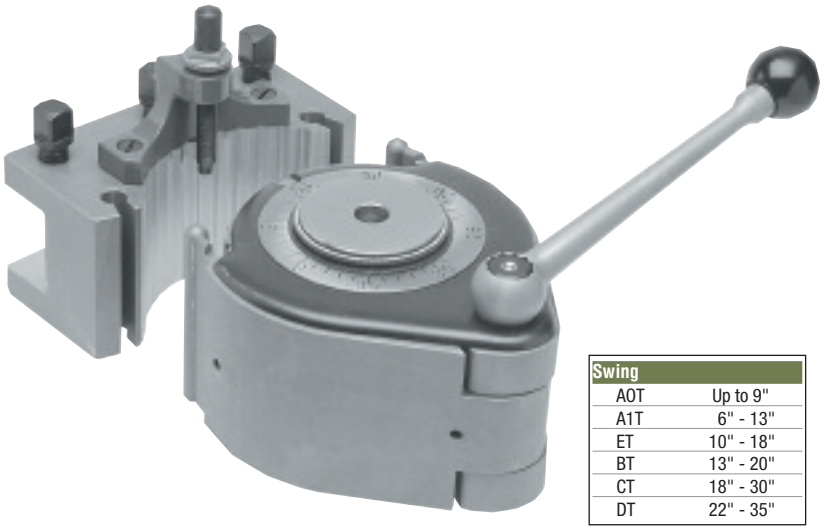
Profile-ground serrated toolpost to be mounted with support clamping bolt. The centering disk should be bored to the dimension of the clamping bolt (snug fit not necessary).
It is recommended that the toolpost with clamped toolholder and boring bar be aligned at a right angle to the face plate. The toolpost 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.

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.	.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 AND HOLDERS



Sets Include:

- 1 piece toolpost
- 3 piece “D” holder
- 1 piece “B” holder

Swing	
A0T	Up to 9"
A1T	6" - 13"
ET	10" - 18"
BT	13" - 20"
CT	18" - 30"
DT	22" - 35"

Tool Post Sets

Sets (5 piece)	Code No.	Price $
A1T	388-405	**1,000.50**
E5T	388-410	**1,240.60**
B2T	388-415	**1,427.00**
C3T	388-420	**2,439.70**
D4T	388-425	**4,300.10**





“D”



“B”



“S”

‡ Denotes items found in the sets listed above

Quick Change Tool Posts & Holders

	Toolpost		Toolholder “D” Flat				Toolholder “B”				Toolholder “S”				Toolholder “A”	
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 $	Part Off Code No.	Part Off Price $
A0T	388-005	**420.30**	12	50	388-010	**127.20**	12	50	388-015	**135.50**	15	50	388-020	**204.40**		
A1T	388-035 ‡	**527.40**	20	80	388-040 ‡	**130.50**	18	80	388-045 ‡	**138.70**	30	80	388-050	**224.20**	388-055	**317.70**
E5T	388-100 ‡	**671.30**	20	100	388-105	**175.50**	30	100	388-115 ‡	**218.00**	30	100	388-120	**276.30**	388-130	**361.20**
			25	100	388-110 ‡	**225.30**					40	100	388-125	**289.90**		
			25	120	388-185 ‡	**218.00**										
			25	140	388-190	**242.70**										
B2T	388-180 ‡	**716.80**	32	120	388-195	**207.90**	32	130	388-205 ‡	**232.50**	40	120	388-210	**319.70**	388-215	**406.10**
			32	140	388-200	**266.40**										
			32	150	388-270	**317.70**										
			32	170	388-275	**361.60**										
C3T	388-265 ‡	**1,343.80**	40	150	388-280 ‡	**346.30**	32	160	388-295	**370.70**	40	150	388-305	**566.20**	388-315	**479.90**
			40	170	388-285	**393.30**	40	170	388-300 ‡	**384.60**	50	150	388-310	**555.70**		
			45	170	388-290	**441.60**										
D4T	388-375 ‡	**2,385.80**	40	180	388-380 ‡	**629.20**	50	180	388-395 ‡	**911.40**	63	180	388-400	**964.20**		
			50	180	388-385	**671.50**										
			63	180	388-390	**732.20**										

*Notch height

*Diameter

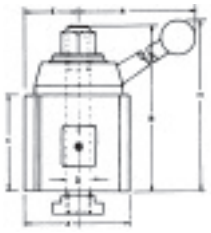
Quick Change Tool Posts Parts

Toolholder Size	Square Head Screw		Cheese Head Screw		Adjusting Top		Height Adj. Nut		Height Adj. Screw	
A0T	388-501	**4.60**	388-502	**2.10**	388-503	**8.70**	388-504	**8.40**	388-505	**4.70**
A1T	388-506	**4.60**	388-507	**2.10**	388-508	**8.90**	388-509	**8.40**	388-510	**4.70**
B2T	388-511	**4.60**	388-512	**2.70**	388-513	**13.60**	388-514	**8.40**	388-515	**5.90**
C3T	388-516	**8.50**	388-517	**2.70**	388-518	**14.20**	388-519	**10.30**	388-520	**6.60**
D4T	388-521	**9.90**	388-522	**5.20**	388-523	**15.70**	388-524	**11.50**	388-525	**7.00**
E5T	388-526	**13.70**	388-527	**7.10**	388-528	**22.10**	388-529	**15.90**	388-530	**10.60**

PISTON TYPE QUICK CHANGE TOOLING SYSTEM

Piston Type Tool Post

Features:
- 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



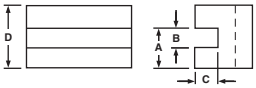


470 Series

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"	470-100	**171.50**
3	4 5/8	2 3/4	5/8	1 5/8	5 9/16	7 5/16	10-15"	470-200	**200.90**
3 1/2	5 1/8	3	3/4	1 7/8	6 1/8	7 7/8	13-18"	470-300	**288.70**
4	6 1/4	3 5/8	7/8	2 1/8	7	9	14-20"	470-400	**550.20**

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.

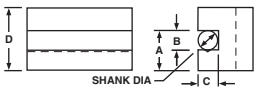




A	B	C	D	Tool Bit	Code No.	Price $
15/16	1/2	7/16	1 1/2	3/16 - 1/2	470-101	**40.90**
1 1/8	5/8	1/2	1 3/4	1/4 - 5/8	470-201	**44.40**
1 7/16	3/4	5/8	2 1/8	1/2 - 3/4	470-301	**72.80**
1 11/16	1"	3/4	2 1/2	1/2 - 1"	470-401	**91.20**

Boring, Turning & Facing Holder (#2)

"V" groove holds round shank boring bars and tools as well as square tool bits.

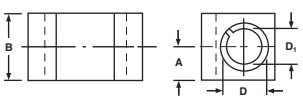




A	B	C	D	Tool Bit	Shank	Code No.	Price $
15/16	1/2	7/16	1 1/2	3/16 - 1/2	7/16	470-102	**42.90**
1 1/8	5/8	1/2	1 3/4	1/4 - 5/8	1/2	470-202	**48.60**
1 7/16	3/4	5/8	2 1/8	1/2 - 3/4	3/4	470-302	**75.70**
1 11/16	1"	3/4	2 1/2	1/2 - 1"	13/16	470-402	**95.40**

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.



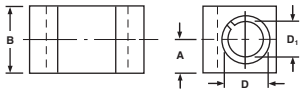


A	B	D	D1	Code No.	Price $
3/4	1 1/2	3/4	5/8	470-104	**63.90**
1"	2	1"	3/4	470-204	**71.60**
1"	2	1"	3/4	470-304	**113.50**
1 3/8	2 3/4	1 1/4	1"	470-404	**125.10**

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.

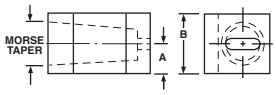




A	B	D	D1	Code No.	Price $
7/8	1 3/4	1"	3/4	470-141	**64.80**
1"	2	1 1/4	1"	470-241	**91.20**
1 1/8	2 1/4	1 1/4	1"	470-341	**99.20**
1 3/8	2 3/4	1 1/2	1 1/4	470-441	**124.40**

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.	470-105	**77.50**
7/8	1 3/4	#2 M.T.	470-205	**82.10**
1"	1 1/2	#3 M.T.	470-305	**85.60**
1 1/4	2 1/2	#3 M.T.	470-405	**113.00**

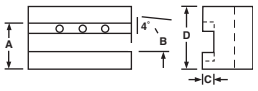
Morse Taper Holder For Drilling (#53)

- Refer to diagram above (#5)

A	B	Taper Hole Size	Code No.	Price $
3/4	1 1/2	#3 M.T.	470-153	**96.70**
7/8	1 3/4	#3 M.T.	470-253	**101.20**
1 1/16	2 1/8	#4 M.T.	470-354	**108.00**
1 1/4	2 1/2	#4 M.T.	470-454	**119.20**

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.

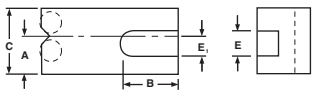




A	B	C	D	Blade Height	Code No.	Price $
13/16	1/2	3/16	1 1/2	1/2	470-107	**63.10**
1"	11/16	3/16	1 3/4	11/16	470-207	**72.90**
1 7/16	3/4	3/16	2	3/4	470-307	**109.30**
1 7/16	7/8	1/4	2 1/2	7/8	470-407	**126.50**

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	470-110	**79.50**
1"	2 5/8	1 3/4	5/8	1/2	1/4 - 5/8	470-210	**82.60**
1 3/16	3 1/8	2	3/4	5/8	1/2 - 3/4	470-310	**134.50**
1 7/16	3 3/4	2 1/2	1"	3/4	1/2 - 1	470-410	**143.10**

TURRET TYPE QUICK CHANGE TOOL POST

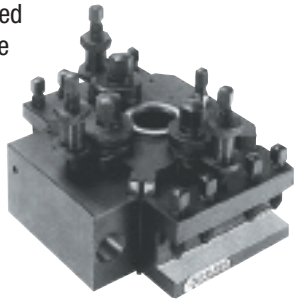
Production of a lathe machine, even of high capacity, is conditioned to the speed and time required for changing tools. Fast tool changing and simplicity increase machine production. Our turrets are designed and constructed to achieve these essential requirements.

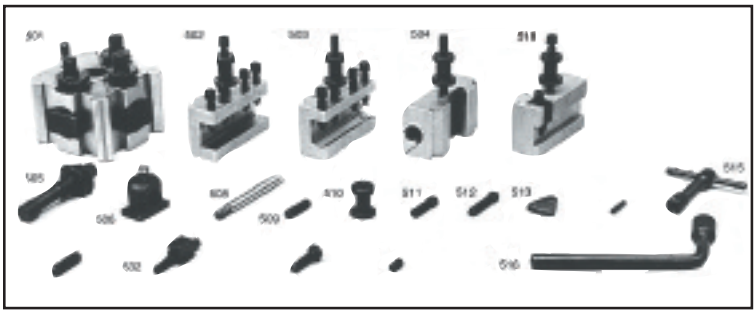
Our Turrets offers these advantages:

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	385-105	**851.50**
A	10 - 14	3-7/8 x 3-7/8 x 2-3/8	3/4	5/8	2	9/16	385-110	**914.70**
B	14 - 18	4-5 x 5 x 3-3/8	1-1/8	13/16	3	15/16	385-115	**1,176.00**
C	18 - 24	5-5/8 x 5-5/8 x 3-3/4	1-1/4	15/16	4	1	385-120	**1,503.00**
D	over	6-7/8 x 6-7/8 x 4-3/4	1-1/2	1-1/4	4	1-1/2	385-125	**3,797.50**

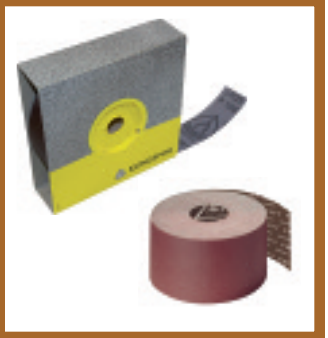
Fig.	Size Description	MK Code No.	MK Price $	M Code No.	M Price $	A Code No.	A Price $	B Code No.	B Price $	C Code No.	C Price $	D Code No.	D Price $	E Code No.	E Price $	F Code No.	F Price $
STANDARD HOLDERS																	
502	Flat tool holder	385-200•	**234.30**	385-205	**83.80**	385-210	**93.20**	385-215	**122.20**	385-220	**157.90**	385-225	**569.80**			385-235•	**2,574.50**
503	V tool holder					385-310	**99.70**	385-315	**138.70**	385-320	**166.20**	385-325•	**545.30**			385-335•	**2,574.50**
504	Morse taper holder					385-410•	**384.00**	385-415•	**525.90**			385-425•	**986.20**	385-430•	**2,056.60**		

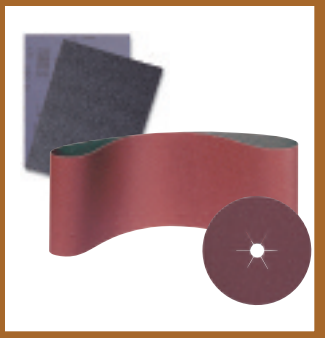
Fig.	Size Description	MK Code No.	MK Price $	M Code No.	M Price $	A Code No.	A Price $	B Code No.	B Price $	C Code No.	C Price $	D Code No.	D Price $	E Code No.	E Price $	F Code No.	F Price $
501	Master blocks							386-103	**800.80**	386-104	**1,014.30**	386-105	**2,056.90**				
505	Eccentric clamp pivot	386-110•	**134.50**	386-111	**50.90**	386-112	**61.70**	386-113	**83.80**	386-114	**88.80**			386-116•	**499.00**	386-117•	**667.80**
506	Clamping block	386-120•	**146.10**			386-122	**49.50**	386-123	**63.10**	386-124	**72.90**					386-127•	**594.90**
508	Dowel pin	386-140•	**50.10**	386-141•	**42.50**	386-142•	**46.20**	386-143•	**61.70**	386-144	**45.90**	386-145	**80.10**	386-146•	**138.40**	386-147•	**138.40**
509	Tool holder height adjusting screw	386-150•	**11.80**	386-151•	**11.80**	386-152	**2.80**	386-153	**5.10**	386-154	**5.10**	386-155	**8.90**				
510	Bobbin for height adjusting screw	386-160•	**38.70**	386-161	**14.90**	386-162	**16.90**	386-163	**20.40**	386-164	**24.90**	386-165	**43.30**	386-166•	**215.20**	386-167•	**215.20**
511	Set screw for tool holder height adjust.	386-170•	**15.60**	386-171•	**15.60**	386-172	**2.80**	386-173	**4.30**	386-174	**4.30**	386-175	**5.80**			386-177•	**61.70**
512	Set screw/tool holder	386-180•	**6.10**	386-181	**3.20**	386-182	**3.20**	386-183	**4.80**	386-184	**4.80**	386-185	**7.10**				
513	Drift for drill holder	-				386-192	**24.90**	386-193	**30.60**	386-194	**30.60**	386-195	**54.00**	386-196•	**249.50**		
514	Pivot screw for drift	-		386-201•	**3.00**	386-202•	**3.00**	386-203•	**3.00**	386-204•	**3.00**	386-205•	**3.00**	386-206•	**3.00**		
515	T-key for set screws	386-210•	**61.70**			386-212	**38.20**	386-213	**45.00**	386-214	**56.20**	386-215	**98.10**				
516	Hex. wrench for tool	386-220•	**90.00**			386-222	**36.00**	386-223	**38.20**	386-224	**63.00**	386-225	**109.80**				

• Available only while supplies last.













ABRASIVES

Grinding Wheels

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SOWA
METALWORKING SOLUTIONS

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GENERAL INFORMATION ON GRINDING WHEELS

How to Order

When ordering Kinik standard grinding wheels, specify your selection in this order:

- Wheel Shape and Face
- Dimensions
  - (1) Diameter (D)
  - (2) Thickness (T)
  - (3) Hole size (H)
- ✓ Wheel Specifications
  - (1) Abrasive
  - (2) Grit Size
  - (3) Grade
  - (4) Bond
  - (5) Quantity

Note:
Wheels are available in both metric and Imperial dimensions.

Standard Wheel Markings

For clarity as well as to avoid mistakes in wheel selection, a standard designation of wheel specifications was developed and was inscribed by ISO in 1995. Standards such as CNS of the R.O.C., JIS of Japan, ANSI of U.S.A. and DIN of Germany all employ this uniform standard.
Wheel marking includes the following information:

WA	46	K	8	V	7N
Abrasive	Grit	Grade	Structure	Bond	KINIK
				Type	Symbol

Abrasives

Symbols	Characteristics
A	Regular aluminum oxide, hard and tough. Suitable for mild steel, case-iron etc in rough grinding
10A	The prime regular aluminum oxide, hard and tough. It is suited for cylindrical grinding of unhardened steels.
WA, 38A	White aluminum oxide, hard and brittle. Suitable for all kinds of steel grinding.
32A	Strong sharp monocrystaline aluminum oxide. Suitable for all kinds of tool precision grounding.
FA, 57A	Semi-friable, with a grinding action intermediate A and WA. Suitable for cylindrical grinding of steel parts.
PA	Pink aluminum oxide is suitable for tool grinding and surface grinding.
RA	Ruby aluminum oxide, hard and less brittle than PA. Suitable for high alloy steel etc. in precision grinding.
PSA	Special pink abrasive similar to 32A. Suitable for all kinds of hard steels in precision grinding.
AZ	A modified high zirconia aluminum oxide. Used in foundries snagging cast iron and steels for heavy duty work.
C	Black silicone carbide. Used for grinding gray iron, non-ferrous metals, and non-metallic materials such as glass, rubber, stones etc.
CSKG	Blue Ceramic Fast stock removal excellent cutting 5X more life than aluminum oxide wheels.
GC	Green silicone carbide is well suited for special alloy grinding such as tungsten carbide, cold rolled steels, sapphire, glass and granite.

Bond Type

Symbols	Characteristics
V (Vitrified)	Most common bond for precision grinding porosity and strength. Wheels made with this bond give high stock removal and their rigidity helps attain high precision. Not affected by water, acid oils or ordinary temperature
B (Resinoid)	Used for wheels in fabrication shops, foundries, billet shops, sharpening and gumming saws, and in many precision applications. These wheels excel in rapid stock removal as well as in applications requiring better finishes. This bond is also restricted to reinforced resinoid products, cut-off wheels or specialty formulated products.
R (Rubber)	Used for most centreless feed wheels, precision ball race grinding wheels and for snagging with portable grinders. Used where finish is important and for cut-off wheels where burr and burn must be kept to a minimum.
Mg (Magnesium Oxychloride)	A notable bond used for cutlery or particularly thin workpieces, marble surface grinding and superfinishing.

GRADES: Grades indicate the relative strength of the bond which holds the abrasive grains in place

Very Soft	Soft	Medium	Hard	Very Hard
D, E, F, G	H, I, J, K	L, M, N, O	P, Q, R, S	T, U, V, W, X, Y, Z

GRIT (CNS and JIS STANDARD)

Coarse			Medium			Fine				Very Fine				Ultra Fine			
10	12	14	30	36	46	70	80	90	100	240	280	320	400	1000	1200	1500	2000
16	20	24	54	60		120	150	180	220	500	600	700	800	2500	3000	4000	

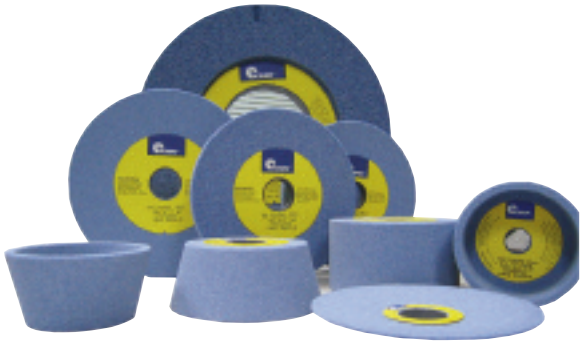
STRUCTURES:

Symbol No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Abrasive Ratio %	62	60	58	56	54	52	50	48	46	44	42	40	38	36	34

KINIK CERAMIC GRINDING WHEELS

- *HIGH PERFORMANCE CERAMIC ALUMINUM OXIDE*
- *UP TO 5X LONGER LIFE THAN WHITE ALUMINUM OXIDE WHEELS*
- *SUPERIOR STOCK REMOVAL RATES, LONG WHEEL LIFE REDUCING GRINDING COSTS*
- *MAXIMUM RESULTS FOR:*
  -TOOL SHARPENING
  HSS & TOOL STEEL <68 HRC

  -SURFACE GRINDING
  HSS & TOOL STEEL <68 HRC, 300 & 400 SERIES STAINLESS STEEL, CAST IRON: DUCTILE & GRAY, NONFERROUS ALLOYS



Kinik Ceramic Surface Grinding Wheels

Peripheral Surface Grinding

Surface grinding with straight or recessed wheels on machines with a rotating or reciprocating table results in a larger contact area than in cylindrical grinding. Therefore it is necessary to use softer grade wheels, particularly when large diameter and/or wide wheels are used. When grinding a large number of components, the grinding is not continuous. In this case the components tend to dress the wheel, so a harder grade wheel should be used.

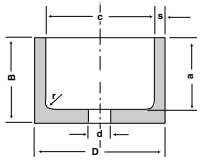


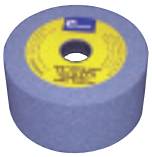
Dimensions	Structure CSKG 46H	Price $	Structure CSKG 46K	Price $	Structure CSKG 60K	Price $	Structure CSKG 80K	Price $	Structure CSKG 100K	Price $
6x1/4x1-1/4			635-040	**25.00**	635-041	**25.00**	635-042	**25.00**		
6x1/2x1-1/4			635-044	**28.40**	635-046	**28.40**	635-052	**28.40**		
6x5/8x1-1/4			635-112	**68.40**						
7x1/4x1-1/4			635-047	**32.00**	635-048	**34.00**	635-049	**34.00**		
7x1/2x1-1/4			635-055	**37.00**	635-050	**37.00**	635-053	**37.00**	635-056	**37.00**
8x1/4x1-1/4			635-057	**40.10**	635-061	**40.10**	635-062	**40.10**		
8x1/2x1-1/4			635-064	**48.70**	635-065	**48.70**	635-066	**48.70**		
8x3/4x1-1/4			635-067	**60.90**	635-068	**60.90**	635-091	**60.90**		
8x3/4x2			635-093	**60.90**	635-094	**60.90**	635-096	**60.90**		
8x1x1-1/4			635-069	**69.50**	635-071	**69.50**	635-092	**69.50**		
8x1x2			635-097	**69.50**	635-098	**69.50**				
10x3/4x3			635-101	**89.50**	635-102	**89.50**	635-103	**84.80**		
10x1x3			635-072	**100.60**	635-073	**100.60**	635-104	**100.60**		
12x3/4x3					635-074	**136.60**				
12x1x3			635-076	**145.80**	635-077	**145.80**	635-078	**131.80**		
12x1x5			635-079	**144.90**	635-081	**131.80**				
12x1-1/2x5			635-082	**182.40**	635-105	**182.40**				
14x1x5			635-083	**182.40**	635-084	**182.40**	635-109	**182.40**		
14x1-1/2x5			635-086	**232.80**	635-087	**232.80**				
14x2x5			635-110	**300.80**	635-111	**300.80**				
RECESSED 2A BOTH SIDES										
12x2x3 2A 6x3/8			635-106	**249.20**	635-107	**249.20**				
12x2x5 2A 7-1/4x1/2			635-108	**232.80**						
14x2x5 2A 8x3/8			635-088	**315.00**	635-089	**315.00**				
14x2x5 2A 8x3/8 H	635-070	**326.80**								

KINIK

Kinik Ceramic Straight Cup Wheels

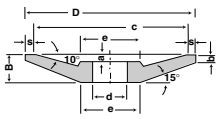
Shape D Straight Cup

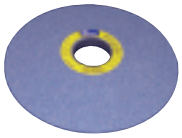




D	B	d	a	c	r	s	CSKG60J Code No.	Price $	CSKG60K Code No.	Price $
4	2	20mm	1-9/16	3-1/2	3/16	1/4	635-075	**50.90**		
5	2-1/2	1-1/4	2	4-5/16	1/4	5/16			635-080	**63.60**

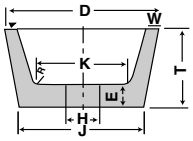
Kinik Ceramic Shape B Saucer Type Grinding Wheels





D	B	d	a	b	c	e	s	CSKG60K Code No.	Price $
6	5/8	1-1/4	1/4	1/8	5-3/8	2	5/16	635-095	**68.40**

Kinik Ceramic Shape E Flaring Cup Grinding Wheels





D	T	H	W	E	J	K	CSKG60K Code No.	Price $
4	2	1-1/4	6 mm	1/2	3	2-1/2	635-085	**50.90**
5	2	1-1/4	8 mm	1/2	4	3	635-090	**68.40**

Kinik Aluminum Oxide Surface Grinding Wheels

Peripheral Surface Grinding

Surface grinding with straight or recessed wheels on machines with a rotating or reciprocating table results in a larger contact area than in cylindrical grinding. Therefore it is necessary to use softer grade wheels, particularly when large diameter and/or wide wheels are used. When grinding a large number of components, the grinding is not continuous. In this case the components tend to dress the wheel, so a harder grade wheel should be used.



WA
White Aluminum Oxide



PA
Pink Aluminum Oxide

Dimensions	Structure WA46J	Price $	WA60J	Price $	WA80J	Price $	PA46J	Price $	PA60J	Price $
6x1/4x1-1/4	635-280	**23.80**	635-282	**23.80**	635-284	**23.80**				
6x1/2x1-1/4	635-288	**27.30**	635-290	**27.30**	635-292	**27.30**				
7x1/4x1-1/4	635-296	**33.20**	635-298	**33.20**	635-300	**33.20**				
7x1/2x1-1/4	635-306	**32.20**	635-308	**35.40**	635-310	**35.40**	635-812	**37.80**		
8x1/4x1-1/4	635-314	**40.10**	635-316	**40.10**	635-318	**40.10**				
8x1/2x1-1/4	635-324	**40.10**	635-326	**40.10**	635-328	**43.90**	635-820	**48.50**	635-822	**48.50**
8x3/4x1-1/4	635-334	**52.10**	635-336	**52.10**	635-338	**55.60**	635-824	**60.30**		
8x1x1-1/4	635-344	**62.70**	635-346	**62.70**	635-348	**62.70**				
8x3/4x2	635-352	**55.60**	635-354	**55.60**	635-356	**55.60**				
8x1x2	635-360	**62.70**	635-362	**62.70**			635-836	**67.30**	635-838	**67.30**
10x1/2x3	635-364	**77.70**	635-366	**77.70**						
10x3/4x3	635-368	**84.80**	635-370	**84.80**	635-372	**84.80**				
10x1x3	635-376	**89.50**	635-378	**89.50**	635-379	**89.50**	635-848	**97.90**		
12x3/4x3	635-380	**122.40**	635-382	**111.30**	635-384	**122.40**			635-854	**133.70**
12x1x3	635-386	**141.10**	635-388	**141.10**						
12x1x5	635-390	**141.10**	635-392	**141.10**						
12x1-1/2x5	635-394	**161.20**	635-396	**166.00**						
14x1x5	635-402	**166.00**	635-404	**166.00**	635-406	**166.00**				
14x1-1/2x5	635-408	**211.60**	635-410	**211.60**						
14x2x5	635-411	**281.90**	635-414	**281.90**						
Recessed 2A Both Sides										
12x2x3 2A 6x3/8	635-398	**211.60**	635-399	**211.60**			635-872	**231.60**		
12x2x5 2A 7-1/4x1/2	635-400	**211.60**	635-401	**211.60**						
14x2x5 2A 8x3/8	635-412	**286.80**	635-418	**286.80**			635-880	**322.00**		

KINIK

Kinik 32A Open Bond White Aluminum Oxide Grinding Wheels



Dimensions	Specifications 32A46J	Price $		32A60J	Price $
7x1/2x1-1/4	635-420	**42.60**		635-422	**42.60**
8x1/2x1-1/4	635-424	**52.10**			
8x3/4x1-1/4	635-428	**64.90**		635-430	**64.90**
8x1x1-1/4	635-432	**77.70**		635-434	**77.70**
10x1x3	635-436	**115.30**		635-438	**115.30**
12x1x3	635-440	**166.00**		635-442	**166.00**
14x1x5	635-443	**222.20**		635-444	**222.20**
14x1-1/2x5	635-445	**289.10**		635-446	**289.10**
Recessed 2A Both Sides					
12x2x3 2A 6x3/8	635-447	**235.10**		635-448	**235.10**
12x2x5 2A 7-1/4x1/2	635-449	**235.10**		635-439	**235.10**
14x2x5 2A 8x3/8	635-441	**376.10**		635-437	**376.10**

Kinik General Purpose Grinding Wheels

Used on bench, pedestal, wagon and swing frame Grinders
- Dia: 125 ~ 760 mm
- Dia: 5" ~ 30"





	A: Dark Regular Aluminum Oxide						GC: Green Silicone Carbide							
Dimensions	A30P	Price $	A54N	Price $	A80N	Price $	GC60KV	Price $	GC80JV	Price $	GC100J	Price $	GC120JV	Price $
6x1/2x1	635-200*	**18.00**												
6x3/4x1	635-202*	**20.50**	635-204	**20.50**	635-206	**20.50**	635-450	**32.20**	635-452	**32.20**	635-454	**32.20**		
6x1x1	635-208	**22.80**	635-210	**22.80**	635-212	**22.80**	635-458	**35.40**	635-460	**35.40**	635-462	**35.40**		
7x3/4x1			635-218	**29.90**			635-474	**45.40**	635-476	**45.40**				
7x1x1	635-220	**33.50**	635-222	**33.50**			635-480	**53.60**	635-482	**53.60**				
7x1/2x1-1/4							635-466	**37.50**	635-468	**37.50**			635-472	**37.50**
8x3/4x1	635-226	**33.20**	635-228	**33.20**					635-490	**52.10**			635-492	**52.10**
8x1x1	635-232	**37.80**	635-234	**37.80**			635-494	**62.80**	635-496	**62.80**	635-498	**62.80**	635-500	**60.90**
10x1x1	635-238	**58.90**	635-240	**58.90**			635-502	**104.00**						
10x1-1/2x1-1/4	635-250	**84.80**	635-252	**84.80**					635-510	**150.50**				
10x2x1-1/4	635-256	**98.90**	635-258	**98.90**					635-516	**195.90**				
12x1-1/2x1-1/4	635-262*	**113.10**	635-264	**113.10**			635-518	**230.30**						
12x2x1-1/4	635-268	**150.50**	635-270	**150.50**										
14x2x1-1/4	635-274*	**195.20**												

* A36P

Nested Wheel Bushings

- Used to reduce the size of grinding wheel bores
- Can reduce 1-1/4" down to 1/2"
- 4 bushings with 10 possible combinations

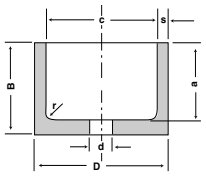


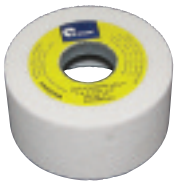
O.D.	I.D.	Code No.	Price $
Nested Wheel Bushings		635-999	**2.50**
Contains:			
1-1/4"	1"		
1"	3/4"		
3/4"	5/8"		
5/8"	1/2"		

KINIK

Kinik Aluminum Oxide Straight Cup Grinding Wheels

Shape D Straight Cup

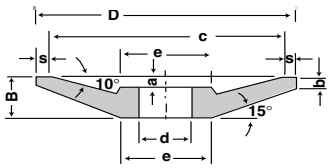






WA WHITE ALUMINUM OXIDE														
D	B	d	a	c	r	s	WA46J	Price $	WA60J	Price $	WA80J	Price $	WA100J	Price $
4	2	1-1/4	1-9/16	3-1/2	3/16	1/4	635-530	**40.10**	635-532	**40.10**	635-534	**40.10**		
4	2	20mm	1-9/16	3-1/2	3/16	1/4	635-538	**40.10**	635-540	**40.10**	635-542	**40.10**	635-544	**40.10**
5	2-1/2	1-1/4	2	4-5/16	1/4	5/16	635-546	**56.70**	635-548	**56.70**	635-550	**56.70**		
6	3-1/8	1-1/4	2-1/2	5-1/8	1/4	3/8	635-554	**100.40**	635-556	**100.40**	635-558	**100.40**		
PA PINK ALUMINUM OXIDE							**PA46J**		**PA60J**		**PA80J**		**PA100J**	
4	2	1-1/4	1-9/16	3-1/2	3/16	1/4	635-900	**43.00**	635-902	**43.00**	635-904	**43.00**	635-906	**43.00**
4	2	20mm	1-9/16	3-1/2	3/16	1/4	635-908	**43.00**	635-910	**43.00**	635-912	**43.00**		
5	2-1/2	1-1/4	2	4-5/16	1/4	5/16	635-916	**61.30**						
6	3-1/8	1-1/4	2-1/2	5-1/8	1/4	3/8			635-926	**108.30**				

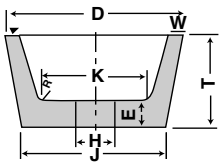
Kinik Aluminum Oxide Shape B Saucer Type Grinding Wheels





WA White Aluminum Oxide											
D	B	d	a	b	c	e	s	WA46J	Price $	WA60J	Price $
6	5/8	1-1/4	1/4	1/8	5-3/8	2	5/16	635-970	**58.90**	635-972	**58.90**
7	11/16	1-1/4	5/16	1/8	6-1/4	2-3/8	5/16	635-978	**55.80**	635-980	**68.40**

Kinik Aluminum Oxide Shape E Flaring Cup Grinding Wheels







WA WHITE ALUMINUM OXIDE														
D	T	H	W	E	J	K	WA46J	Price $	WA60J	Price $	WA80J	Price $	WA100J	Price $
4	2	1-1/4	6 mm	1/2	3	2-1/2	635-562	**47.30**	635-564	**42.60**	635-566	**47.30**	635-568	**47.30**
5	2	1-1/4	8 mm	1/2	4	3	635-570	**61.30**	635-572	**61.30**	635-574	**61.30**		
6	2	1-1/4	10 mm	1/2	4-1/2	4	635-578	**68.40**	635-580	**68.40**				
PA Pink Aluminum Oxide							**PA46J**		**PA60J**					
4	2	1-1/4	6 mm	1/2	3	2-1/2	635-940	**48.70**						
5	2	1-1/4	8 mm	1/2	4	3	635-948	**65.40**	635-950	**65.40**				

Shop Rolls



Size	Grit	Code No.	Price $
1 x 50	40	520-002•	**68.20**
1 x 50	50	520-004•	**65.50**
1 x 50	60	520-006•	**58.90**
1 x 50	80	520-008•	**54.80**
1 x 50	100	520-010•	**51.40**
1 x 50	120	520-012•	**49.70**
1 x 50	180	520-014•	**49.70**
1 x 50	220	520-016•	**51.40**
1 x 50	320	520-018•	**51.40**
1-1/2 x 50	40	520-020•	**95.20**
1-1/2 x 50	50	520-022•	**91.60**
1-1/2 x 50	60	520-024•	**82.40**
1-1/2 x 50	80	520-026•	**79.10**
1-1/2 x 50	100	520-028•	**71.80**
1-1/2 x 50	120	520-030•	**71.80**
1-1/2 x 50	180	520-040•	**71.80**
1-1/2 x 50	220	520-042•	**71.80**
1-1/2 x 50	320	520-044•	**71.80**
2 x 50	40	520-046•	**122.80**
2 x 50	50	520-048•	**118.00**
2 x 50	60	520-050•	**106.90**
2 x 50	80	520-052•	**102.80**
2 x 50	100	520-054•	**92.40**
2 x 50	120	520-056•	**89.20**
2 x 50	180	520-058•	**92.40**
2 x 50	220	520-060•	**92.40**
2 x 50	320	520-062•	**92.40**

• Available only while quantities last

Abrasive Cloths, Antistatic CS 311 Y ACT

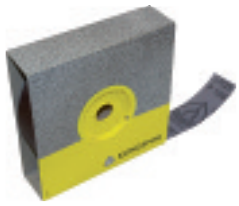
- Bonding agent: Resin
- Aluminium Oxide
- Coating: Open
- Backing: "Y" - Polyester
- Applications: Drum Sander, Wood



Width x Length	Grit	Code No.	Price $
3" x 50m	80	920-016	**190.50**
3" x 50m	100	920-017	**181.36**

Abrasive Cloths, Brown KL 361 JF

- Bonding agent, Resin
- Aluminium Oxide
- Coating, Close
- Backing, "JF" - cotton cloth, light, highly flexible
- Applications, Stainless Steel, Steel, Metal, Wood



Width x Length	Grit	Code No.	Price $
1" x 50m	80	920-030	**45.58**
1" x 50m	320	920-037	**43.95**
2" x 50m	120	920-058	**83.46**
2" x 50m	400	920-065	**84.26**

Abrasive Cloths, Brown KL 385 JF

- Bonding agent, Resin
- Aluminium Oxide
- Coating, Close
- Backing, "JF" - cotton cloth, light, highly flexible
- Applications, Metal, Non Ferrous Metals, Wood



Width x Length	Grit	Code No.	Price $
1" x 50m	60	920-067	**36.18**
1" x 50m	80	920-068	**33.90**
2" x 50m	60	920-089	**68.59**
2" x 50m	240	920-096	**61.81**
2" x 50m	320	920-097	**61.81**

Resin Fibre Discs



Size	Grit	Code No.	Price $
4 x 5/8	16	520-100•	**2.70**
4 x 5/8	24	520-102•	**2.10**
4 x 5/8	36	520-104•	**2.00**
4 x 5/8	50	520-106•	**2.00**
4 x 5/8	80	520-108•	**1.80**
4 x 5/8	100	520-110•	**1.80**
4 x 5/8	120	520-112•	**1.80**
4-1/2 x 7/8	16	520-114•	**2.80**
4-1/2 x 7/8	24	520-116•	**2.20**
4-1/2 x 7/8	36	520-118•	**2.20**
4-1/2 x 7/8	50	520-120•	**2.10**
4-1/2 x 7/8	80	520-122•	**1.90**
4-1/2 x 7/8	100	520-124•	**1.90**
4-1/2 x 7/8	120	520-126•	**1.90**
5 x 7/8	16	520-128•	**3.00**
5 x 7/8	24	520-130•	**2.40**
5 x 7/8	36	520-132•	**2.20**
5 x 7/8	50	520-134•	**2.20**
5 x 7/8	80	520-136•	**2.00**
5 x 7/8	100	520-138•	**2.00**
5 x 7/8	120	520-140•	**2.00**
7 x 7/8	16	520-142•	**4.90**
7 x 7/8	24	520-144•	**3.90**
7 x 7/8	36	520-146•	**3.70**
7 x 7/8	50	520-148•	**3.50**
7 x 7/8	80	520-150•	**3.30**
7 x 7/8	100	520-152•	**3.30**
7 x 7/8	120	520-154•	**3.30**

• Available only while quantities last

Abrasive Fiber Discs CS 565

- Bonding agent: Resin
- Alumina Zirconia
- Coating: Close
- Applications: Metal,Stainless Steel
- Hole Pattern: 30 = Star shaped hole



Diameter Hole	Grit	Code No.	Price $
5" x 7/8"	36	921-103	**1.52**
5" x 7/8"	50	921-104	**1.33**
5" x 7/8"	60	921-105	**1.20**
5" x 7/8"	80	921-106	**1.17**

Abrasive Fiber Discs CS 561

- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal
- Hole Pattern: 30= Star shaped hole



Diameter Hole	Grit	Code No.	Price $
5" x 7/8"	36	921-080	**1.15**
5" x 7/8"	40	921-081	**1.02**
5" x 7/8"	60	921-083	**0.88**
5" x 7/8"	120	921-086	**0.86**
7" x 7/8"	24	921-089	**2.24**
7" x 7/8"	80	921-093	**1.57**

Abrasive Fiber Discs, Multibond CS 570

- Bonding agent: Resin
- Alumina Zirconia
- Coating: Close
- Applications: Stainless Steel
- Hole Pattern, 30 = Star shaped hole



Diameter Hole	Grit	Code No.	Price $
5" x 7/8"	36	921-120	**1.65**
5" x 7/8"	50	921-121	**1.39**
5" x 7/8"	60	921-122	**1.26**
5" x 7/8"	80	921-123	**1.23**
5" x 7/8"	120	921-125	**1.23**

Back-Up Pad ST 358 C

Back-up pads for fibre abrasive discs and paper abrasive discs.



Dimensions	Density	Max. Operating Speed	Max. RPM	Code No.	Price $
5" x 5/8"-11	Med.	80 m/s	12,000 rpm	921-145	**16.50**

Pressure Sensitive Adhesive Discs

- No holes



Size	Grit	Code No.	Price $
6	24	520-350•	2.70
6	36	520-352•	2.40
6	40	520-354•	2.20
6	60	520-356•	2.10
6	80	520-358•	1.90
6	100	520-360•	1.90
6	120	520-362•	1.90
6	150	520-364•	1.90
6	180	520-366•	1.90
8	24	520-368•	4.40
8	36	520-370•	4.00
8	40	520-372•	3.70
8	60	520-374•	3.60
8	80	520-376•	3.40
8	100	520-378•	3.20
8	120	520-380•	3.20
8	150	520-382•	3.10
8	180	520-384•	3.10
9	24	520-386•	5.50
9	36	520-388•	4.90
9	40	520-390•	4.70
9	60	520-392•	4.60
9	80	520-394•	4.30
9	100	520-396•	3.90
9	120	520-398•	3.90
9	150	520-400•	3.70
9	180	520-402•	3.70
10	24	520-404•	6.70
10	36	520-406•	6.00
10	40	520-408•	5.80
10	60	520-410•	5.40
10	80	520-412•	5.20
10	100	520-414•	4.80
10	120	520-416•	4.80
10	150	520-418•	4.70
10	180	520-420•	4.70
12	24	520-422•	9.50
12	36	520-424•	8.50
12	40	520-426•	8.10
12	60	520-428•	7.50
12	80	520-430•	7.50
12	100	520-432•	6.80
12	120	520-434•	6.80
12	150	520-436•	6.50
12	180	520-438•	6.50

• Available only while quantities last

9 X 11 Paper & Cloth Sheets







Grit	Code No.	Price $
Alumide Production Paper		
D36	520-500•	0.90
D40	520-502•	1.80
D50	520-504•	1.60
D60	520-506•	1.30
D80	520-508•	1.10
C100	520-510•	0.90
C120	520-512•	0.90
A100	520-516•	0.90
A120	520-518•	0.90
A150	520-520•	0.90
A180	520-522•	0.90
A220	520-524•	0.90
A240	520-526•	0.90
A280	520-528•	0.90
SIC Lube Finishing Paper		
A080	520-530•	1.30
A100	520-532•	1.20
A120	520-534•	1.20
A150	520-536•	1.20
A180	520-538•	1.10
A220	520-540•	1.20
A240	520-542•	1.10
A320	520-544•	1.10
Emery Cloth		
J050	520-604•	2.50
J080	520-606•	2.20
J120	520-608•	2.10
SIC Latex Wet/Dry Paper		
C080	520-546•	1.90
C100	520-548•	1.80
C120	520-550•	1.20
C150	520-552•	1.20
C180	520-554•	1.30
A220	520-556•	1.30
A240	520-558•	1.30
A280	520-560•	1.30
A320	520-562•	1.30
A400	520-564•	1.30
A500	520-566•	1.30
A600	520-568•	1.30
B1200	520-570•	2.00
B1500	520-572•	2.10
Alumide Metal Cloth		
X050	520-578•	3.30
Alumide Metal Cloth		
J080	520-582•	2.80
J100	520-584•	2.50
J120	520-586•	2.50
J150	520-588•	2.50
J180	520-590•	2.40
J220	520-592•	2.40
J240	520-594•	2.40
J280	520-596•	2.40
J320	520-598•	2.40
J400	520-600•	2.40

• Available only while quantities last

Abrasive Paper, Waterproof PS 11 A

- Bonding agent: Resin
- SiC
- Coating: Close
- Backing: "A" - 95 g/m^2
- Applications: Paint/Varnish/Filler



Width x Length	Grit	Code No.	Price $
9" x 11"	240	920-417	**1.02**
9" x 11"	320	920-419	**1.02**
9" x 11"	400	920-421	**1.02**
9" x 11"	1000	920-425	**1.10**

Abrasive Cloths, Brown KL 361 JF

- Bonding agent, Resin
- Aluminium Oxide
- Coating, Close
- Backing, "JF"- cotton cloth, light, highly flexible
- Applications, Steel, Metal, Wood



Width x Length	Grit	Code No.	Price $
9" x 11"	120	920-488	**2.38**
9" x 11"	600	920-497	**2.42**

Abrasive Cloths, Brown KL 385 JF

- Bonding agent, Resin
- Aluminium Oxide
- Coating, Close
- Backing, "JF"- cotton cloth, light, highly flexible
- Applications, Metal, Wood



Width x Length	Grit	Code No.	Price $
9" x 11"	80	920-502	**1.84**
9" x 11"	150	920-505	**1.76**
9" x 11"	180	920-506	**1.76**
9" x 11"	240	920-508	**1.78**

Non-Woven Web Hand Pads NPA 400

- Bonding agent: Resin
- Applications Al Oxide: Stainless steel, Metal/Wood
- Application SiC: Paint/Varnish, Plastic, Metal/Wood



Width Length	Grade	Colour	Grain	Code No.	Price $
6" x 9"	General Purpose	Green	Aluminium Oxide	920-519	**1.28**
6" x 9"	Very Fine	Maroon	Aluminium Oxide	920-520	**1.34**
6" x 9"	Ultra Fine	Gray	Silicon Carbide	920-521	**1.64**
6" x 9"	Coarse	Brown	Aluminium Oxide	920-522	**3.08**
6" x 9"	Medium	Green HD	Aluminium Oxide	920-523	**1.32**
6" x 9"	Medium	Black	Silicon Carbide	921-348	**1.78**

Aluminum Oxide Resin Cloth Belts



Size	Grit	Code No.	Price $
3 x 21	24	520-200•	**4.60**
3 x 21	36	520-202•	**4.40**
3 x 21	40	520-204•	**4.30**
3 x 21	50	520-206•	**4.10**
3 x 21	60	520-208•	**3.90**
3 x 21	80	520-210•	**3.70**
3 x 21	100	520-212•	**3.60**
3 x 21	120	520-214•	**3.60**
3 x 21	150	520-216•	**3.60**
3 x 21	180	520-218•	**3.60**
3 x 24	24	520-224•	**5.30**
3 x 24	36	520-226•	**4.90**
3 x 24	40	520-228•	**4.70**
3 x 24	50	520-230•	**4.60**
3 x 24	60	520-232•	**4.40**
3 x 24	80	520-234•	**4.30**
3 x 24	100	520-236•	**4.10**
3 x 24	120	520-238•	**4.10**
3 x 24	150	520-240•	**3.90**
3 x 24	180	520-242•	**3.90**
3 x 24	220	520-244•	**3.90**
4 x 21	24	520-248•	**6.00**
4 x 21	36	520-250•	**5.80**
4 x 21	40	520-252•	**5.50**
4 x 21	50	520-254•	**5.20**
4 x 21	60	520-256•	**5.20**
4 x 21	80	520-258•	**4.90**
4 x 21	100	520-260•	**4.60**
4 x 21	120	520-262•	**4.60**
4 x 24	24	520-272•	**6.80**
4 x 24	36	520-274•	**6.40**
4 x 24	40	520-276•	**6.00**
4 x 24	50	520-278•	**5.90**
4 x 24	60	520-280•	**5.80**
4 x 24	80	520-282•	**5.50**
4 x 24	100	520-284•	**5.30**
4 x 24	120	520-286•	**5.30**
4 x 24	150	520-288•	**5.20**
4 x 36	24	520-296•	**8.40**
4 x 36	36	520-298•	**8.90**
4 x 36	40	520-300•	**7.90**
4 x 36	50	520-302•	**8.00**
4 x 36	60	520-304•	**7.80**
4 x 36	80	520-306•	**7.50**
4 x 36	100	520-308•	**7.20**
4 x 36	120	520-310•	**7.20**
4 x 36	150	520-312•	**7.20**
4 x 36	180	520-314•	**7.00**
6 x 48	24	520-320•	**18.40**
6 x 48	36	520-322•	**17.40**
6 x 48	40	520-324•	**16.60**
6 x 48	50	520-326•	**15.50**
6 x 48	60	520-328•	**15.40**
6 x 48	80	520-330•	**14.70**
6 x 48	100	520-332•	**14.00**
6 x 48	120	520-334•	**13.50**
6 x 48	150	520-336•	**13.50**
6 x 48	180	520-338•	**14.00**
6 x 48	220	520-340•	**13.50**
6 x 48	320	520-342•	**13.50**

• Available only while quantities last

Abrasive Cloths LS 309 XH

- Bonding agent: Resin
- Aluminium Oxide
- Coating: Close
- Backing: "X" - cotton cloth, Heavy
- Applications: Metal, Non Ferrous Metals, Wood



Width x Length	Grit	Code No.	Price $
3" x 24	80	920-133	**2.30**
3" x 24	120	920-135	**2.72**

Abrasive Cloths CS 310 X

- Bonding agent: Resin
- Aluminium Oxide
- Coating: Close
- Backing: "X"- cotton cloth, Heavy
- Applications: Metal



Width x Length	Grit	Code No.	Price $
2" x 48	220	920-186	**4.16**
6" x 48	40	920-216	**12.96**
6" X 48	220	920-223	**10.61**

TAILIN

Flap Discs - Type 27





Dimensions (in.)	Grit	Code No.	Price $
4-1/2 x 7/8	60	635-656	**12.70**
4-1/2 x 7/8	80	635-657	**12.70**
5 x 7/8	60	635-658	**15.20**
5 x 7/8	80	635-659	**15.20**
7 x 7/8	60	635-661	**25.80**
7 x 7/8	80	635-663	**25.80**

Abrasive Mop Discs, Multibond SMT 636

- Design: Convex 6º
- Quality class: Special
- Alumina Zirconia multibond
- Backing plate: Glass fibre
- Application: Stainless Steel



Diameter Bore	Grit	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 7/8"	40	80 m/s	13,300 rpm	921-200	**11.55**
4-1/2" x 7/8"	60	80 m/s	13,300 rpm	921-201	**11.55**
4-1/2" x 7/8"	80	80 m/s	13,300 rpm	921-202	**11.55**
5" x 7/8"	40	80 m/s	12,200 rpm	921-203	**13.63**
5" x 7/8"	60	80 m/s	12,200 rpm	921-204	**13.63**
5" x 7/8"	80	80 m/s	12,200 rpm	921-205	**13.63**

Abrasive Mop Discs SMT 624

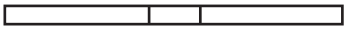
- Design: Convex 12º
- Quality class: Supra
- Alumina Zirconia
- Backing plate: Glass fibre
- Application: Stainless Steel, Steel



Diameter Bore	Grit	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 7/8"	40	80 m/s	13,300 rpm	921-158	**7.86**
4-1/2" x 7/8"	60	80 m/s	13,300 rpm	921-160	**7.86**
4-1/2" x 7/8"	80	80 m/s	13,300 rpm	921-161	**8.09**
4-1/2" x 7/8"	120	80 m/s	13,300 rpm	921-162	**7.86**
5" x 7/8"	36	80 m/s	12,200 rpm	921-163	**9.28**
5" x 7/8"	40	80 m/s	12,200 rpm	921-164	**9.28**
5" x 7/8"	60	80 m/s	12,200 rpm	921-166	**9.28**
5" x 7/8"	80	80 m/s	12,200 rpm	921-167	**9.28**
5" x 7/8"	120	80 m/s	12,200 rpm	921-168	**9.28**

TAILIN

Cut-Off Wheels For Steel





Dimensions	Specification	RPM	Code No.	Price $
12 x1/8 x1	A30RBF2G	5000	635-694	**11.90**
12 x1/8 x1	A30RBF1G	4500	635-696	**9.90**
12 x1/8 x1	A30RBF2G	6300	635-697	**11.90**
12 x1/8 x20mm	A30RBF2.5G	6300	635-700	**11.90**
14 x1/8 x1	A30RBF2G	4300	635-702	**14.90**
14 x1/8 x1	A30RBF1G	3900	635-704	**11.90**
14 x7/64 x1	A30RBF2G	5400	635-705	**15.90**
16 x1/8 x1	A24SBF2G	3800	635-708	**20.50**

Cut-Off Wheels INOX A 46 TZ Special

- Bond: Hard
- Quality class: Special
- Application: Stainless Steel



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-305	**3.24**
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-306	**3.24**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-307	**3.88**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-308	**3.88**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-311	**6.15**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-312	**6.15**

Cut-Off Wheel A 30 N Fast Cut

- Bond: Soft
- Quality class: Special
- Application: Steel



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
14" x 1/8" x 1"		80 m/s	4,400 rpm	921-340	**13.35**

Grinding Disc & Cut-Off Wheel TS 30 AP Special

- Bond: Hard
- Quality class: Special
- Application: Steel, Stainless Steel

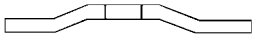


Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-275	**4.40**

TAILIN

Reinforced Depressed Center Discs For Steel

A. (Type 27)
- Approved by CNS standard No. 2551
- German DSA standard No. 2335





Dimensions	Specification	RPM	Code No.	Price $
4 x1/8 x5/8	A24R2G	15300	635-600	**2.20**
4 x1/8 x5/8	A24S2G	15300	635-602	**2.20**
4 x1/4 x5/8	A24R2G	15300	635-604	**2.50**
4 x1/4 x5/8	A24S2G	15300	635-606	**2.50**
4-1/2 x1/8 x7/8	A24R2G	13300	635-608	**3.20**
4-1/2 x1/8 x7/8	A24S2G	13300	635-610	**3.20**
4-1/2 x1/4 x7/8	A24R2G	13300	635-616	**3.40**
4-1/2 x1/4 x7/8	A24S2G	13300	635-612	**3.40**
5 x1/8 x7/8	A24R2G	12200	635-618	**3.60**
5 x1/4 x7/8	A24R2G	12200	635-620	**4.30**
5 x1/4 x7/8	A24S2G	12200	635-621	**4.30**
7 x1/8 x7/8	A24R2G	8500	635-622	**5.10**
7 x1/8 x7/8	A24S2G	8500	635-624	**5.10**
7 x1/4 x7/8	A24R2.5G	8500	635-628	**5.90**
7 x1/4 x7/8	A24S2.5G	8500	635-629	**5.90**
9 x1/8 x7/8	A24R2G	6500	635-634	**7.10**
9 x1/4 x7/8	A24R2.5G	6500	635-640	**9.90**
9 x1/4 x7/8	A24S2.5G	6500	635-642	**9.90**

Grinding Discs A 24 R Supra

- Bond: Medium
- Quality class: Supra
- Application: Steel



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-247	**4.05**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-248	**4.67**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-250	**7.28**

Grinding Discs A 46 N Supra

- Bond: Soft
- Quality class: Supra
- Application: Aluminum



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-255	**4.53**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-256	**5.20**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-257	**8.17**

Grinding Discs A 30 M Special

- Bond: Medium
- Quality class: Special
- Application: Steel, Stainless Steel



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-271	**4.53**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-272	**5.20**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-274	**8.17**

Grinding Discs A 24 N Supra

- Bond: Soft
- Quality class: Supra
- Application: Stainless Steel



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
4-1/2" x 1/4" x 7/8"		80 m/s	13,300 rpm	921-252	**4.19**
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-253	**4.83**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-254	**7.40**

Grinding Discs A 24 TX Special

- Bond: Hard
- Quality class: Special
- Application: Castings



Diameter x Width Bore	Form	Max. Operating Speed	Max. RPM	Code No.	Price $
5" x 1/4" x 7/8"		80 m/s	12,200 rpm	921-266	**5.95**
7" x 1/4" x 7/8"		80 m/s	8,500 rpm	921-268	**9.32**

Hand Block SFK 655

- Bond Agent: Plastic
- SiC
- Application: Paint/Varnish, Glass/Stone, Wood Plastic, Leather, Metal



Width x Length Height	Grit	Code No.	Price $
3" x 2" x 3/4"	240	921-345	**7.48**

Small Abrasive Mops KM 613

- Bonding agent: Resin
- Aluminum Oxide
- Applications: Metal



Diameter Height x Shaft	Grit	Max. RPM	Code No.	Price $
5/8" x 5/8 "x 1/8"	80	37,000 rpm	920-944	**6.61**
5/8" x 5/8" x 1/8"	120	37,000 rpm	920-945	**6.66**
3/4" x 3/4" x 1/4"	80	35,000 rpm	920-949	**7.13**
1" x 1" x 1/4"	60	30,000 rpm	920-961	**5.14**
1" x 1" x 1/4"	80	30,000 rpm	920-962	**5.14**
1" x 1" x 1/4"	120	30,000 rpm	920-964	**5.16**
1" x 1" x 1/4"	180	30,000 rpm	920-965	**5.16**
1" x 1" x 1/4"	240	30,000 rpm	920-966	**5.18**
1" x 1" x 1/4"	320	30,000 rpm	920-967	**5.18**
1-1/2" x 1" x 1/4"	60	25,000 rpm	920-978	**5.59**
1-1/2" x 1-1/2" x 1/4	80	25,000 rpm	920-985	**6.43**
2" x 1" x 1/4"	40	25,000 rpm	921-002	**6.45**
2" x 1" x 1/4"	60	25,000 rpm	921-003	**6.45**
2" x 1" x 1/4"	80	25,000 rpm	921-004	**6.45**
2" x 1" x 1/4"	120	25,000 rpm	921-006	**6.49**
2" x 1" x 1/4"	240	25,000 rpm	921-008	**6.82**
2" x 2" x 1/4"	40	25,000 rpm	921-014	**8.39**
2" x 2" x 1/4"	60	25,000 rpm	921-015	**8.39**
2" x 2" x 1/4"	80	25,000 rpm	921-016	**8.39**
2" x 2" x 1/4"	120	25,000 rpm	921-017	**9.29**
3" x 1" x 1/4"	40	9,500 rpm	921-035	**9.80**
3" x 1" x 1/4"	60	9,500 rpm	921-036	**9.80**
3" x 1" x 1/4"	80	9,500 rpm	921-037	**9.80**
3" x 1" x 1/4"	120	9,500 rpm	921-038	**9.86**

Abrasive Mops NCS 600

- Bonding agent: Resin
- Aluminum Oxide
- Applications: Metal, Stainless Steel



Diameter Height x Shaft	Grit	Grade	Max. RPM	Code No.	Price $
1-1/2" x 1" x 1/4"	100	Medium	17,000 rpm	921-047	**13.44**
2" x 1" x 1/4"	150	Medium	13,700 rpm	921-050	**16.80**

Small Finishing Mops NFS 600

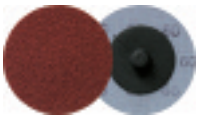
- Bonding agent: Resin
- Aluminum Oxide
- Applications: Metal, Stainless Steel



Diameter Height x Shaft	Grade	Max. RPM	Code No.	Price $
1-1/2" x 1" x 1/4	Fine	17,100 rpm	921-054	**13.26**
1-1/2" x 1" x 1/4	Very Fine	17,100 rpm	921-055	**13.26**

Quick Change Discs QRC 412

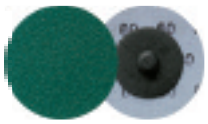
- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal, Non Ferrous Metals



Diameter	Grit	Code No.	Price $
2”	36	920-860	**1.06**
2”	50	920-861	**0.99**
2”	80	920-863	**0.94**
3”	36	920-866	**1.58**
3”	50	920-868	**1.42**

Quick Change Disc, Multibond QRC 409

- Bonding agent: Resin
- Alumina Zirconia
- Coating: Close
- Applications: Metal, Stainless Steel



Diameter	Grit	Code No.	Price $
2”	80	920-879	**1.14**

Back-Up Pads QRC 555



Size Shank	Density	Max. RPM	Code No.	Price $
2” x 1/4”	Medium	30,000	920-886	**16.73**
3” x 1/4”	Medium	30,000	920-887	**21.15**

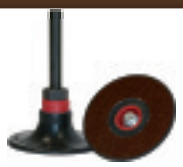
Quick Change Discs QMC 411

- Bonding agent: Resin
- Alumina Zirconia
- Coating: Close
- Applications: Metal, Stainless Steel



Diameter	Grit	Code No.	Price $
2”	36	920-903	**1.12**
2”	80	920-905	**1.01**
3”	36	920-906	**1.68**
3”	60	920-907	**1.58**
3”	80	920-908	**1.52**

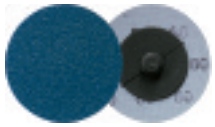
Back-Up Pads QMC 555



Size Shank	Density	Max. RPM	Code No.	Price $
2” x 1/4”	Medium	30,000	920-925	**12.10**
3” x 1/4”	Medium	30,000	920-926	**14.30**

Quick Change Discs QRC 411

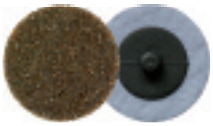
- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal, Non Ferrous Metals



Diameter	Grit	Code No.	Price $
2”	36	920-870	**1.12**
2”	60	920-871	**1.06**
2”	80	920-872	**1.01**
3”	36	920-873	**1.68**
3”	60	920-874	**1.58**
3”	80	920-875	**1.52**

Quick Change Discs QRC 800

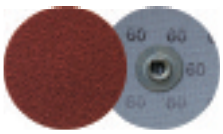
- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal, Stainless Steel



Diameter	Grade	Code No.	Price $
2”	Coarse	920-880	**2.05**
2”	Medium	920-881	**1.95**
2”	Very Fine	920-882	**1.79**
3”	Coarse	920-883	**3.07**
3”	Medium	920-884	**2.93**
3”	Very Fine	920-885	**2.70**

Quick Change Discs QMC 412

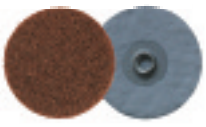
- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal, Non Ferrous Metals



Diameter	Grit	Code No.	Price $
2”	36	920-892	**1.06**
2”	60	920-894	**0.99**
2”	120	920-897	**0.94**
3”	50	920-899	**1.46**
3”	80	920-901	**1.42**
3”	120	920-902	**1.41**

Quick Change Discs QMC 800

- Bonding agent: Resin
- Aluminum Oxide
- Coating: Close
- Applications: Metal, Stainless Steel



Diameter	Grade	Code No.	Price $
2”	Coarse	920-918	**2.05**
2”	Medium	920-919	**1.95**
2”	Very Fine	920-920	**1.79**
3”	Coarse	920-921	**3.07**
3”	Medium	920-922	**2.93**
3”	Very Fine	920-923	**2.70**

STANDARD DUTY PRECISION AIR TOOLS

1/4" Mini Die Grinder - TP-1006

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	4-3/4	0.68	174-012	**63.00**

1/4" Mini Die Grinder - TP-1008

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	6-5/16	0.79	174-010	**63.00**

1/4" Medium Die Grinder - TP-1001

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	22,000	1/4"(6mm)	90	6-7/8	1.36	174-008	**63.60**

1" Extended Die Grinder - TP-1010

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	7-1/2	1.25	174-018	**152.30**

3" Extended Die Grinder - TP-1011

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	9-1/4	1.45	174-020	**176.40**

STANDARD DUTY PRECISION AIR TOOLS

5" Extended Die Grinder - TP-1012

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	11-1/4	1.45	174-022	**200.30**

1/4" Mini Angle Die Grinder - TP-1007

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"(6mm)	90	4-7/8	0.99	174-016	**126.80**

1/4" Right Angle Die Grinder - TP-1014

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"(6mm)	90	6-5/16	1.10	174-014	**126.80**

HEAVY DUTY PRECISION AIR TOOLS

1/4" H.D. Die Grinder - TP-1101 / TP-1101F

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
TP-1101	0.3	25,000	1/4"(6mm)	90	6-5/16	0.81	174-024	**108.10**
TP-1101F	0.3	25,000	1/4"(6mm)	90	6-5/16	0.81	174-026	**105.70**

1" Extended H.D. Die Grinder - TP-1102

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	7-1/2	1.07	174-028	**190.10**

3" Extended H.D. Die Grinder - TP-1103

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	9-1/4	1.21	174-030	**214.00**

5" Extended H.D. Die Grinder - TP-1104

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	25,000	1/4"(6mm)	90	11-1/4	1.45	174-032	**238.10**

1/4" Right Angle H.D. Die Grinder - TP-1106 / TP-1106F

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
TP-1106	0.3	20,000	1/4"(6mm)	90	6-5/16	1.07	174-034	**178.00**
TP-1106F	0.3	20,000	1/4"(6mm)	90	6-5/16	1.07	174-036	**178.00**

PROFESSIONAL DUTY PRECISION AIR TOOLS

1/4" Die Grinder - TP-1101H

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	6-5/16	0.81	174-038	**127.60**

1" Extended Die Grinder - TP-1102H

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	7-1/2	1.07	174-040	**211.70**

3" Extended Die Grinder - TP-1103H

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	9-1/4	1.21	174-042	**235.70**

5" Extended Die Grinder - TP-1104H

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	28,000	1/4"(6mm)	90	11-1/4	1.45	174-044	**264.50**

1/4" Right Angle Die Grinder - TP-1106H

Specifications
- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	15,000	1/4"(6mm)	90	6-5/16	1.07	174-046	**202.20**

1/4" Die Grinder - TP-1109H

Specifications

- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.3	20,000	1/4"(6mm)	90	7-1/2	1.32	174-048	**174.30**

1/4" Die Grinder - TP-6001

Specifications

- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.6	20,000	1/4"(6mm)	90	6-11/16	1.43	174-050	**170.80**

1/4" Die Grinder - TP-9001

Specifications

- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.9	18,000	1/4"(6mm)	90	7-5/16	1.56	174-052	**204.50**

Angle Die Grinder - TP-6059

Specifications

- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.6	10,000	1/4"(6mm)	90	7-1/2	2.20	174-054	**264.50**

105º Die Grinder - TP-9059

Specifications

- 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)	O.A.L. (in.)	Net Weight (lb)	Code No.	Price $
0.9	9,000	1/4"(6mm)	90	9-1/4	2.28	174-056	**305.90**

1/4" Die Grinder Kit (with Throttle Lever)

Contains:
- 1 pc. TP-1008 Grinder
- 1 pc. 1/8" (3 mm) collet
- 1 pc. 1/4" (6 mm) collet
- 2 pcs. spanners
- 5 pcs. 1/4" (6 mm) shank grinding
- 5 pcs. 1/8" (3 mm) shank grinding



Description	Code No.	Price $
1/4" straight die grinder kit	174-004	**92.80**

1/4" 90º Die Grinder Kit (with Throttle Lever)

Contains:
- 1 pc. TP-1014 Grinder
- 1 pc. 1/8" (3 mm) collet
- 1 pc. 1/4" (6 mm) collet
- 2 pcs. spanners
- 5 pcs. 1/4" (6 mm) shank grinding
- 5 pcs. 1/8" (3 mm) shank grinding



Description	Code No.	Price $
1/4" 90° die grinder kit	174-006	**155.90**

Air Micro Die Grinder

Contains:
- 1 pc. TP-501-1 Grinder
- 1 pc. 3 mm collet
- 10 pcs. 1/8" (3 mm) grinding stones
- 2 pcs. spanners
- 1 pc. blow case



Description	Code No.	Price $
1/8" die grinder kit	174-002	**221.30**

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	174-160	**404.00**
VAG-320	20x520	16,000	360	1.10	174-162	**577.30**

Sanding Belts

- For use with Air Belt Sanders
- Aluminum Oxide
- For use on metal



Size	Grit	For Model	Code No.	Price $
3/8" x 13"	80	VAG-310	174-165	**2.50**
3/8" x 13"	100	VAG-310	174-166	**2.50**
3/8" x 13"	120	VAG-310	174-167	**2.50**
3/4" x 20-1/2"	80	VAG-320	174-168	**3.40**
3/4" x 20-1/2"	100	VAG-320	174-169	**3.40**

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 30psi if tip becomes blocked
- Impact & 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	231-474	**51.40**

10 Piece Needle File Set



Description	Code No.	Price $
10 Piece Needle File Set	200-761	**8.80**

10 Piece Diamond File Set



Description	Code No.	Price $
10 Piece Diamond File Set	200-763	**33.50**













HAND TOOLS

Punches	M2-4
Stamps	M4
Chisels	M4
Hammers	M5
Hacksaw & Holesaw	M6
Utility Knives	M6
Pin Chucks & Pin Vises	M6
Pot Magnets	M6
Grease Guns & Oil Cans	M7
Barrel Pumps & Wrenches	M7
Ball End, Hex End, Torx® Wrenches	M8-13
ClickSet™ Torque Limiting Device	M14
Screwdrivers & Bits	M15-17
1/4” Drive Sockets & Attachments	M17
3/8” Drive Sockets & Attachments	M18-21
1/2” Drive Sockets & Attachments	M22-26
3/4” Drive Sockets & Attachments	M27
Combination Wrenches & Sets	M27-28
Adjustable & Pipe Wrenches	M29
Torque Wrench	M29
Torque Multipliers	M29
Pliers & Wire Strippers	M29-30

SOWA
METALWORKING SOLUTIONS

www.sowatool.com

Centre Punches

- Made of tool steel
- Black oxide finish for rust prevention
- Knurled body for better grip
- Hardened both ends, RC 45 to 52
- Points precision ground
- 4" length, 1/16" diameter, punch 3" long
- Set supplied in fitted case with clear size markings



Model No.	Style	Description	Code No.	Price $
6200-005	5 pc. set	1/16, 5/64, 3/32, 9/64, 5/32	606-286	**25.50**
6200-1/16	Individual	1/16	606-288	**4.60**
6200-5/64	Individual	5/64	606-290	**4.60**
6200-3/32	Individual	3/32	606-292	**4.60**
6200-9/64	Individual	9/64	606-294	**4.60**
6200-5/32	Individual	5/32	606-296	**4.60**

Heavy Duty Centre Punch Set

- Single piece construction with hexagonal shank, these are one of the strongest and most durable of Center 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	606-640	**45.30**

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.



Description	Code No.	Price $
8pc 1/16 - 7/32	606-635	**58.50**

Centre Punches

- Meets ANSI standards



Pin Dia.	Body Dia.	Length	Dynamic EDP	Code No.	Price $
5/64”	1/4”	3-1/2”	D058018	866-410	**7.47**
1/8”	5/16”	4-1/2”	D058019	866-411	**8.39**
5/32”	5/16”	5-1/2”	D058020	866-412	**8.39**
1/4”	3/8”	6”	D058021	866-413	**10.43**

Combination Punch Set

- Made of tool steel
- Black oxide finish for rust prevention
- Knurled body for better grip
- Hardened both ends, RC 45 to 52
- 4" length
- Supplied in fitted case
- Set contains: 5/32" drive pin punch, 5/32" centre punch and scriber



Model No.	Description	Code No.	Price $
6304-003	3 pc. set	606-298	**16.80**

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, Rc 45 to 52
- 4" length
- Set supplied in fitted pouch with clear size markings



Model No.	Description	Code No.	Price $
6300-008	8 pc. Drive Pin Punch Set	606-250	**39.70**
6300-1/16	1/16" Drive Pin Punch	606-252	**4.70**
6300-3/32	3/32" Drive Pin Punch	606-254	**4.70**
6300-1/8	1/8" Drive Pin Punch	606-256	**4.70**
6300-5/32	5/32" Drive Pin Punch	606-258	**4.70**
6300-3/16	3/16" Drive Pin Punch	606-260	**4.70**
6300-7/32	7/32" Drive Pin Punch	606-262	**4.70**
6300-1/4	1/4" Drive Pin Punch	606-264	**4.70**
6300-5/16	5/16" Drive Pin Punch	606-266	**5.70**

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, Rc 45 to 52
- 8" length, drive pin section 3-1/2" long
- Set supplied in fitted pouch with clear size markings



Model No.	Description	Code No.	Price $
6301-058	5 pc. X-Long Drive Pin Punch Set	606-238	**47.10**
6301-1/8	1/8" X-Long Drive Pin Punch	606-240	**7.50**
6301-3/16	3/16" X-Long Drive Pin Punch	606-242	**8.20**
6301-1/4	1/4" X-Long Drive Pin Punch	606-244	**8.80**
6301-5/16	5/16" X-Long Drive Pin Punch	606-246	**9.20**
6301-3/8	3/8" X-Long Drive Pin Punch	606-248	**9.50**

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	606-650	**64.40**

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	606-645	**61.10**

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	8 pc. Brass Drive Pin Punch Set	606-268	**52.20**
6300-1/16B	1/16" Brass Drive Pin Punch	606-270	**7.50**
6300-3/32B	3/32" Brass Drive Pin Punch	606-272	**7.50**
6300-1/88	1/8" Brass Drive Pin Punch	606-274	**7.50**
6300-5/32B	5/32" Brass Drive Pin Punch	606-276	**7.50**
6300-3/16B	3/16" Brass Drive Pin Punch	606-278	**7.50**
6300-7/32B	7/32" Brass Drive Pin Punch	606-280	**7.50**
6300-1/4B	1/4" Brass Drive Pin Punch	606-282	**7.50**
6300-5/16B	5/16" Brass Drive Pin Punch	606-284	**7.50**

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.



Description	Code No.	Price $
1/16, 3/32, 1/8, 5/32, 3/16, 1/4, 5/16, 3/8	606-630	**64.10**

Pin Punches

• Meets ANSI standards



Pin Dia.	Body Dia.	Length	Dynamic EDP	Code No.	Price $
1/16"	1/4"	4"	D058001	866-393	**6.85**
3/32"	1/4"	4-1/4"	D058002	866-394	**7.59**
1/8"	5/16"	4-3/4"	D058003	866-395	**8.39**
5/32"	5/16"	5"	D058004	866-396	**8.39**
3/16"	5/16"	5-1/4"	D058005	866-397	**8.39**
1/4"	3/8"	5-3/4"	D058006	866-398	**9.18**
5/16"	7/16"	6"	D058007	866-399	**12.61**

Drift Punches

• Meets ANSI standards



Pin Dia.	Body Dia.	Length	Dynamic EDP	Code No.	Price $
1/8"	5/16"	8"	D058008	866-400	**11.30**
5/32"	3/8"	9"	D058009	866-401	**12.54**
3/16"	5/16"	10"	D058010	866-402	**16.02**
1/4"	3/8"	10"	D058011	866-403	**22.64**

Solid Punches

• Meets ANSI standards



Pin Dia.	Body Dia.	Length	Dynamic EDP	Code No.	Price $
1/16"	3/8"	5"	D058012	866-404	**9.93**
1/8"	5/16"	5"	D058013	866-405	**10.84**
5/32"	3/8"	5"	D058014	866-406	**10.78**
3/16"	3/8"	5"	D058015	866-407	**11.30**
1/4"	1/2"	5"	D058016	866-408	**12.26**
5/16"	1/2"	6"	D058017	866-409	**13.68**

S565WB Pin Punch Set

• 4" long
• Hardened & tempered
• Well proportioned knurled grip
• Each punch has the size stamped on the head
• Set of 8 in round box



Diameters	Starrett No.	Code No.	Price $
1/16", 3/32", 1/8", 5/32", 3/16", 7/32", 1/4", 5/16"	S565WB	629-395	**73.70**

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	606-300	**17.40**
P171	Heavy duty	606-302	**43.10**
P171-P	Replacement point	606-304	**7.90**

Automatic Centre Punch

- Automatic, spring operated action
- Used for marking, punching, stalking, and riveting
- 120mm length



Model	Code No.	Price $
VACP-1	326-290	**26.70**

Automatic Centre Punch

- Meets ANSI standards



Length	Dynamic EDP	Code No.	Price $
4.90”	D058030	865-978	**13.93**

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 Code No.	Price $	9pc #0-9 Code No.	Price $
1/8	606-615	**46.30**	606-600	**15.60**
3/16	606-620	**66.00**	606-605	**22.30**
1/4	606-625	**82.80**	606-610	**27.90**

Cold Chisels

- Meets ANSI standards



Width of Cut	Body	Length	Dynamic EDP	Code No.	Price $
1/4”	1/4”	5”	D058101	866-415	**7.47**
5/16”	1/4”	5”	D058102	866-416	**9.12**
3/8”	5/16”	5-1/2”	D058103	866-417	**12.31**
1/2”	7/16”	6”	D058104	866-418	**12.26**
5/8”	1/2”	6-1/2”	D058105	866-419	**13.12**
3/4”	5/8”	7”	D058106	866-420	**22.12**
7/8”	5/8”	8”	D058107	866-421	**27.14**
1”	3/4”	8-1/2”	D058108	866-422	**28.45**
1”	3/4”	10”	D058109	866-423	**41.97**
1”	3/4”	12”	D058110	866-424	**46.19**

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	606-655	**134.10**

Transfer Punch Set

28 Punches
- Heat treated tempered steel
- Consists of one each of punch sizes 3/32 thru 1/2 x 64th plus 17/32



Description	Code No.	Price $
3/32 thru 1/2 x 64th plus 17/32	200-750	**31.40**

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	231-460	**34.90**
VHM-46	46	100	306	0.69	231-462	**39.20**
VHM-50	50	110	340	0.93	231-464	**48.60**
VHM-56	56	120	353	1.16	231-466	**55.80**

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 & 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	231-468	**130.70**
Sledge	8 lb	30”	SHID/8/30	231-470	**262.80**
Ball Pein	32 oz	14”	BPID/32/14	231-472	**114.30**

Dead Blow Hammers

- Fiberglass handle



Head Weight (lb.)	Head Dia.	Head Length	Overall Length	Dynamic EDP	Code No.	Price $
1	1.50”	3.95”	11.40”	D041065	865-726	**40.36**
2	2.00”	4.33”	13.40”	D041067	865-813	**52.71**
3	2.36”	5.11”	14.56”	D041069	865-727	**55.15**

Claw Hammers

- Meets ANSI standard



Head Weight	Head Dia.	Head Length	O.A.L.	Handle	Dynamic EDP	Code No.	Price $
16 oz	1.09”	5.07”	12.83”	Hickory	D041010	866-372	**26.51**
16 oz	1.09”	5.07”	12.95”	Fiberglass	D041011	861-664	**26.51**

Ball Pein Hammers - Hickory Handle

- Meets ANSI standard



Head Weight	Head Dia.	Head Length	Overall Length	Dynamic EDP	Code No.	Price $
8 oz	0.92”	3.22”	11.70”	D041025	866-373	**23.23**
16 oz	1.19”	3.94”	13.65”	D041027	866-032	**26.51**
24 oz	1.38”	4.64”	15.44”	D041028	866-375	**33.13**
32 oz	1.50”	4.91”	15.60”	D041029	866-376	**36.48**

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	O.A.L.	Bow Depth	Code No.	Price $
HF/12/BC	17-5/16"	4"	231-370	**27.30**

13pc Bi-Metal Journeyman Hole Saw Set

- 3/4", 7/8", 1-1/8", 1-3/8", 1-1/2", 1-3/4", 2", 2-1/4", 2-1/2"
- HSS
- Comes with 2 arbors, 1 pilot drill and 1 adapter



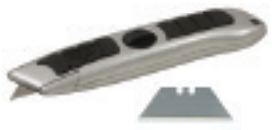
Description	Code No.	Price $
Journeyman Hole Saw Set	505-020•	**125.90**

• Available only while quantities last

GRAY TOOLS

Screw-Lock Utility Knife

- Heavy duty utility knife
- Handle stores extra blades
- Easy to remove and install blades
- Comfort grip handle
- Includes 3 blades



Description	Gray EDP	Code No.	Price $
Screw-Lock Utility Knife	206	865-638	**11.76**
Replacement Blades (pkg. 5)	206-KBL	865-692	**8.61**

Pin Chuck Sets

- Designed for holding small drills in drilling machine
- Overall length 2-1/2"
- Set includes three interchangeable collets and knurled chuck with 1/4" shank
- Range: 0-1/32, 1/32-1/16, 1/16-3/32



Model No.	Description	Code No.	Price $
6000-003	4 pc. Pin Chuck Set	606-226	**30.00**

Pin Vises & Set

- Made of alloy steel, black oxide finish
- Collets grip firmly when chuck is tightened
- Knurled finger grip
- Range of set 0 - .188"
- Supplied in plastic pouch
- Ideal for holding small tools, rods, wires, taps, etc.



Model No.	Description	Code No.	Price $
6000-004	4 pc. Pin Vise Set	606-228	**26.70**
6000-004A	.000-.040 Pin Vise	606-230	**7.50**
6000-004B	.032-.059 Pin Vise	606-232	**7.50**
6000-004C	.052-.122 Pin Vise	606-234	**7.50**
6000-004D	.118-.188 Pin Vise	606-236	**7.50**

Pot Magnets

Unique combination of a strong magnet with nickel chrome plated insulating ring givess 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	231-420	**8.50**
PMG/13-16	13/16"	3/4"	4.5	231-422	**10.90**
PMG/1-1-16	1-1/16"	1"	6.0	231-424	**17.10**
PMG/1-3-8	1-3/8"	1-3/16"	13	231-426	**24.80**

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	231-382	**38.00**

Pistol Grease Gun

One hand operated grease gun designed for use in confined spaces.
- Capacity: 14oz cartridge
- Heavy duty aluminum die cast head
- 5,000 psi
- 12” flexible hose



Model	Code No.	Price $
G5F/N	231-384	**58.60**

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	231-380	**58.60**

80pc SAE Grease Fitting Assortment

Contents:
- 1/8”-27 PTF - 25pcs straight, 10pcs 45º, 10pcs 90º
- 1/4”-28 SAE-LT - 15pcs straight, 10pcs 45º, 10pcs 90º



Model	Code No.	Price $
GFT/KIT/SAE-80	231-386	**84.50**

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” & 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	231-388	**79.10**

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	231-390	**158.00**

Aluminum Drum Wrench

An easy & 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	231-398	**34.70**

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”	231-392	**14.10**
MP22F	300 ml	6”	231-394	**14.70**
MP23F	500 ml	7”	231-396	**16.10**

Ball End L-Wrench Sets - Long

- Insert into a screw at 25º
- Ball end saves time by quickly funnelling tool into screw
- ProGuard™ finish delivers superior corrosion protection
- Works in hard to reach places



Inch

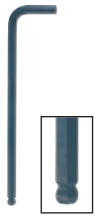
Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
BLX12	12	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16"	10936	619-005	**22.20**
BLX13	13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	10937	619-007	**27.77**
BLX15	15	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8, 7/16, 1/2" (in vinyl roll up pouch)	10935	619-584	**53.22**

Metric

Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
BLX6M	6	1.5, 2, 2.5, 3, 4, 5mm	10946	619-020	**10.50**
BLX9M	9	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	10999	619-015	**23.15**
BLX15M	15	1.27, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10mm	10995	619-016	**37.80**
MBLX13	13	1.27, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12, 14, 17mm (in metal box)	10989	619-585	**102.53**

Ball End L-Wrenches - Long

- Insert into a screw at 25º
- Ball end saves time by quickly funnelling tool into screw
- ProGuard™ finish delivers superior corrosion protection
- Works in hard to reach places



Inch

Size	Length (in.)	Arm Length (in.)	Bondhus EDP	Code No.	Price $
.050"	2.8"	0.53"	10902	619-255	**1.47**
1/16"	3.0"	0.56"	10903	619-260	**1.47**
5/64"	3.2"	0.61"	10904	619-265	**1.47**
3/32"	3.4"	0.65"	10905	619-270	**1.53**
7/64"	3.6"	0.70"	10906	619-275	**1.73**
1/8"	3.8"	0.75"	10907	619-280	**1.80**
9/64"	4.0"	0.80"	10908	619-285	**1.80**
5/32"	4.2"	0.84"	10909	619-290	**1.89**
3/16"	4.5"	0.94	10910	619-295	**2.18**
7/32"	4.9"	1.03"	10911	619-300	**2.62**
1/4"	5.6"	1.13"	10912	619-305	**3.00**
5/16"	6.0"	1.25"	10913	619-310	**5.26**
3/8"	6.8"	1.38"	10914	619-315	**7.38**
7/16"	7.5"	1.50"	10915	619-320	**13.88**
1/2"	8.3"	1.63	10916	619-325	**17.76**
9/16"	9.0"	1.75"	10917	619-330	**21.83**
5/8"	9.8"	1.88"	10918	619-335	**24.26**
3/4"	11.3"	2.13"	10919	619-340	**40.16**
7/8"	12.8"	2.37"	10920	619-586	**97.71**
1"	14.2"	2.62"	10921	619-587	**130.22**

Metric

Size (mm)	Length (mm)	Arm Length (mm)	Bondhus EDP	Code No.	Price $
1.27	72	13	10949	619-588	**1.64**
1.5	77	14	10950	619-350	**1.47**
2.0	82	16	10952	619-355	**1.47**
2.5	88	17	10954	619-360	**1.55**
3.0	98	19	10956	619-365	**1.75**
4.0	110	22	10960	619-375	**1.89**
5.0	119	27	10964	619-385	**2.40**
6.0	139	31	10968	619-395	**3.17**
8.0	152	35	10972	619-405	**5.11**
10.0	171	39	10976	619-415	**7.46**
12.0	220	44	10980	619-425	**16.47**
14.0	260	55	10984	619-430	**22.70**
17.0	280	61	10986	619-589	**35.98**
19.0	295	69	10988	619-590	**42.71**
22.0	330	78	10991	619-591	**102.73**
24.0	370	88	10993	619-592	**130.16**

Ball End L-Wrench Sets - Long & Extra Long



865-312

865-346



865-013

Pcs	Contents	Bondhus EDP	Code No.	Price $
13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8	68913	865-346	**29.33**
13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8	68913XL	865-257	**36.55**
9	1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm	68909	865-312	**24.99**
9	1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm	68909XL	865-258	**30.40**
22	All pieces contained in 68913 & 68909	68722	865-013	**54.32**

BONDHUS

Hex End L-Wrench Sets - Long - Inch

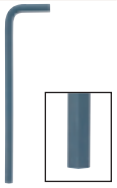
- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
HLX7	7	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16"	12145	619-030	**6.30**
HLX12	12	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16"	12136	619-025	**12.54**
HLX13	13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	12137	619-892	**15.78**

Hex End L-Wrenches - Long

- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Size	Length (in.)	Arm Length (in.)	Bondhus EDP	Code No.	Price $
.028"	2.6"	.22"	12100	619-045	**0.78**
.035"	2.7"	.34"	12101	619-050	**0.78**
.050"	2.8"	.53"	12102	619-055	**0.47**
1/16"	3.0"	.56"	12103	619-060	**0.49**
5/64"	3.2"	.61"	12104	619-065	**0.49**
3/32"	3.4"	.65"	12105	619-070	**0.49**
7/64	3.6"	.70"	12106	619-075	**0.60**
1/8"	3.8"	.75"	12107	619-080	**0.62**
9/64"	4.0"	.80"	12108	619-085	**0.62**
5/32"	4.2"	.84"	12109	619-090	**0.71**
3/16"	4.5"	.94"	12110	619-095	**0.78**
7/32"	4.9"	1.03"	12111	619-100	**1.13**
1/4"	5.3"	1.13"	12112	619-105	**1.53**
5/16"	6.0"	1.25"	12113	619-110	**2.33**
3/8"	6.8"	1.38"	12114	619-115	**3.35**
7/16	7.5"	1.50"	12115	619-120	**7.13**
1/2"	8.3"	1.63"	12116	619-125	**8.06**
9/16"	9.0"	1.75"	12117	619-130	**11.58**
5/8"	9.8"	1.88"	12118	619-135	**16.58**
3/4"	11.3"	2.13"	12119	619-140	**24.09**
7/8"	12.7"	2.37"	12120	619-593	**42.44**
1"	14.1"	2.62"	12121	619-594	**58.27**
1-1/4"	17.0"	3.00"	12125	619-595	**215.20**
1-1/2"	20.3	3.50"	12129	619-596	**344.24**

Hex End L-Wrench Sets - Long - Metric

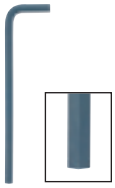
- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
HLX6M	6	1.5, 2, 2.5, 3, 4, 5mm	12146	619-035	**7.46**
HLX9M	9	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	12199	619-040	**15.05**
HLX15M	15	1.27, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10mm	12195	619-597	**25.24**
MHLX10M	10	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12mm (in metal box)	12396	619-598	**42.00**
PHLX15M	15	.89, 1.27, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10, 12, 14, 17, 19mm (in vinyl pouch)	12349	619-599	**76.56**

Hex End L-Wrenches - Long - Metric

- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Size (mm)	Length (mm)	Arm Length (mm)	Bondhus EDP	Code No.	Price $
0.71	66	6	12147	619-145	**0.78**
0.89	68	9	12148	619-150	**0.78**
1.27	72	13	12149	619-155	**0.47**
1.5	77	14	12150	619-160	**0.49**
2.0	82	16	12152	619-165	**0.49**
2.5	88	17	12154	619-170	**0.62**
3.0	98	19	12156	619-175	**0.62**
3.5	100	21	12158	619-180	**0.71**
4.0	110	22	12160	619-185	**0.75**
4.5	114	25	12162	619-190	**1.04**
5.0	119	27	12164	619-195	**1.04**
5.5	124	29	12166	619-200	**1.51**
6	139	31	12168	619-205	**1.67**
7	140	33	12170	619-210	**2.46**
8	152	35	12172	619-215	**2.46**
9	159	37	12174	619-220	**3.89**
10	171	39	12176	619-225	**3.89**
11	200	42	12178	619-230	**8.41**
12	220	44	12180	619-235	**8.41**
13	240	48	12182	619-600	**9.33**
14	260	55	12184	619-240	**11.19**
17	280	61	12186	619-245	**15.96**
19	295	69	12188	619-601	**24.42**
22	325	78	12191	619-602	**39.82**
24	364	88	12193	619-603	**59.80**
32	432	122	12196	619-604	**221.78**
36	516	137	12198	619-605	**361.56**

ProGuard DST

Corrosion resistant finish. Environmentally safe, provides better tool grip, resists solvents and is 5 times more corrosion resistant than competitor finishes.

ProTanium HIGH TORQUE STEEL

Up to 20% stronger, with more torque and twice the wear resistance of standard grades of steel.

BONDHUS

Hex End L-Wrench Sets - Short - Inch

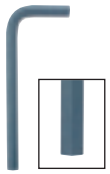
- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
HLX7S	7	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16"	12245	619-606	**8.20**
HLX12S	12	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16"	12236	619-607	**9.02**
HLX13S	13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	12237	619-608	**10.87**
MHLX15S	15	.028, .035, .050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8" (in metal box)	12344	619-609	**46.07**
MHLX18S	18	.028, .035, .050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8, 1/2, 9/16, 5/8" (in metal box)	12339	619-610	**54.84**
PHLX7S	7	5/64, 3/32, 1/8, 5/32, 3/16, 7/32, 1/4"	12345	619-611	**5.62**

Hex End L-Wrenches - Short

- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Size	Length (in.)	Arm Length (in.)	Bondhus EDP	Code No.	Price $
.028	1.2	0.22	12200	619-612	**0.58**
.035	1.2	0.34	12201	619-613	**0.58**
.050	1.6	0.53	12202	619-614	**0.44**
1/16	1.8	0.56	12203	619-615	**0.44**
5/64	1.9	0.61	12204	619-616	**0.47**
3/32	2.0	0.65	12205	619-617	**0.47**
7/64	2.1	0.70	12206	619-618	**0.51**
1/8	2.3	0.75	12207	619-619	**0.51**
9/64	2.4	0.80	12208	619-620	**0.53**
5/32	2.5	0.84	12209	619-621	**0.53**
3/16	2.8	0.94	12210	619-622	**0.67**
7/32	3.0	1.03	12211	619-623	**0.91**
1/4	3.3	1.13	12212	619-624	**1.04**
5/16	3.8	1.25	12213	619-625	**1.62**
3/8	4.3	1.38	12214	619-626	**2.33**
7/16	4.8	1.50	12215	619-627	**5.51**
1/2	5.3	1.63	12216	619-628	**6.51**
9/16	5.8	1.75	12217	619-629	**8.98**
5/8	6.3	1.88	12218	619-630	**11.56**
3/4	7.3	2.13	12219	619-631	**18.40**
7/8	8.2	2.37	12220	619-632	**29.33**
1	9.2	2.62	12221	619-633	**43.00**
1-1/4	11.0	3.00	12225	619-634	**108.60**
1-1/2	13.0	3.50	12229	619-635	**136.33**
1-3/4	13.3	4.00	12231	619-636	**258.76**
2	15.0	4.50	12233	619-637	**347.71**

Hex End L-Wrench Sets - Short - Metric

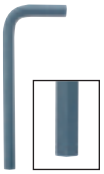
- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
HLX6MS	6	1.5, 2, 2.5, 3, 4, 5mm	12246	619-638	**6.67**
HLX9MS	9	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	12299	619-639	**10.42**
MHLX12MS	12	.71, .89, 1.27, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm (in metal box)	12393	619-640	**38.27**
PHLX11MS	11	2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 12mm (in vinyl pouch)	12391	619-641	**27.04**
PHLX14MS	14	2, 2.5, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 17, 19mm (in vinyl pouch)	12397	619-642	**40.82**

Hex End L-Wrenches - Short - Metric

- Chamfered tool tips eliminate burrs and help tools seat in screw head
- Sharp corners transfer more torque to the screw and reduce stripping
- Precision machined for ease of use and superior fit
- ProGuard™ finish delivers superior corrosion protection



Size (mm)	Length (mm)	Arm Length (mm)	Bondhus EDP	Code No.	Price $
0.71	31	6	12247	619-643	**0.58**
0.89	31	9	12248	619-644	**0.58**
1.27	42	13	12249	619-645	**0.44**
1.5	44	14	12250	619-646	**0.44**
2.0	49	16	12252	619-647	**0.47**
2.5	54	17	12254	619-648	**0.47**
3.0	61	19	12256	619-649	**0.51**
3.5	65	21	12258	619-650	**0.53**
4.0	68	22	12260	619-651	**0.53**
4.5	73	25	12262	619-652	**0.67**
5.0	78	27	12264	619-653	**0.67**
6.0	88	31	512268	619-654	**1.04**
7.0	93	33	12270	619-655	**1.67**
8.0	98	35	12272	619-656	**1.67**
9.0	102	37	12274	619-657	**2.73**
10.0	109	39	12276	619-658	**2.67**
11.0	115	42	12278	619-659	**6.93**
12.0	122	44	12280	619-660	**6.93**
13.0	129	48	12282	619-661	**4.84**
14.0	136	55	12284	619-662	**9.51**
17.0	156	61	12286	619-663	**10.36**
19.0	175	69	12288	619-664	**17.58**
22.0	190	78	12291	619-665	**39.84**
24.0	213	88	12293	619-666	**47.42**
27.0	238	98	12295	619-667	**99.36**
32.0	300	122	12296	619-668	**119.22**
36.0	338	137	12298	619-669	**149.47**

ProGuard DST

Corrosion resistant finish. Environmentally safe, provides better tool grip, resists solvents and is 5 times more corrosion resistant than competitor finishes.

ProTanium HIGH TORQUE STEEL

Up to 20% stronger, with more torque and twice the wear resistance of standard grades of steel.

GRAY TOOLS

Hex End L-Wrench Sets - Long & Extra Long


865-118

865-117


865-045

Pcs	Contents	Gray EDP	Code No.	Price $
13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8	68713	865-117	**16.87**
13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8	68713XL	865-016	**28.95**
9	1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm	68709	865-118	**16.12**
9	1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm	68709XL	865-017	**27.48**
22	All pieces contained in 68713 & 68709	68723	865-045	**32.97**

BONDHUS

TORX® L-Wrench Sets

- Fits all TORX® and Star screws
- Broad contact surface provides deep lobe engagement
- Straight, vertical sidewalls increase tool engagement and virtually eliminates camout
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
TLX8S	8	T6, T7, T8, T9, T10, T15, T20, T25	31832	619-670	**24.78**
TLX8	8	T9, T10, T15, T20, T25, T27, T30, T40	31834	619-671	**21.42**

TORX® L-Wrenches - Long

- Fits all TORX® and Star screws
- Broad contact surface provides deep lobe engagement
- Straight, vertical sidewalls increase tool engagement and virtually eliminates camout
- ProGuard™ finish delivers superior corrosion protection

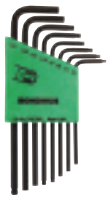


Size	Length (in.)	Arm Length (in.)	Bondhus EDP	Code No.	Price $
T6	2.1	0.65	31806	619-672	**4.84**
T7	2.4	0.65	31807	619-673	**4.40**
T8	2.6	0.65	31808	619-674	**4.40**
T9	2.9	0.65	31809	619-675	**4.40**
T10	3.2	0.73	31810	619-676	**2.42**
T15	3.3	0.78	31815	619-677	**2.53**
T20	3.6	0.78	31820	619-678	**2.67**
T25	3.8	0.88	31825	619-679	**2.76**
T27	4.2	0.95	31827	619-680	**2.82**
T30	4.6	1.03	31830	619-681	**3.18**
T40	4.9	1.11	31840	619-682	**3.47**
T45	5.4	1.2	31845	619-683	**4.67**
T50	6.2	1.25	31850	619-684	**5.91**
T55	6.7	1.36	31855	619-685	**8.78**
T60	7.2	1.75	31860	619-686	**11.56**

BONDHUS

Tamper Resistant TORX® L-Wrench Sets

- Fits all TORX® and Star screws
- Broad contact surface provides deep lobe engagement
- Straight, vertical sidewalls increase tool engagement and virtually eliminates camout
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
TR-TL8S	8	TR6, TR7, TR8, TR9, TR10, TR15, TR20, TR25	32432	619-689	**32.56**
TR-TL8	8	T9, T10, T15, T20, T25, T27, T30, T40	32434	619-690	**36.96**

Hex End GorillaGrip® Fold Ups

- Chamfered tool tips eliminate burrs and help tools seat in screws
- World's strongest handle
- Speed-Wrench feature
- Tools open from both the top and bottom
- Molded-in 90° stop
- Patented spacers between tools



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
Inch					
HF9S	9	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16"	12591	619-702	**8.98**
HF9	9	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4"	12589	619-505	**10.82**
HF5	5	3/16, 7/32, 1/4, 5/16, 3/8"	12585	619-703	**15.60**
Metric					
HF7MS	7	1.5, 2, 2.5, 3, 4, 5, 6mm	12592	619-704	**8.60**
HF7M	7	2, 2.5, 3, 4, 5, 6, 8mm	12587	619-515	**11.92**
HF6M	6	3, 4, 5, 6, 8, 10mm	12595	619-705	**16.64**

GorillaGrip® Fold Up Multi Packs

- Assembled from our most popularFold Up sets
- Multiple Fold Up sets per package
- Tip selections include Hex End and TORX® Tip
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
HF16	16	12589 (5/64-1/4") + 12587 (2-8mm)	12522	619-687	**21.73**
HF24	24	12589 (5/64-1/4") + 12587 (2-8mm) + 12634 (T9-T40)	12533	619-688	**39.84**

ProGuard DST

Corrosion resistant finish. Environmentally safe, provides better tool grip, resists solvents and is 5 times more corrosion resistant than competitor finishes.

ProTanium HIGH TORQUE STEEL

Up to 20% stronger, with more torque and twice the wear resistance of standard grades of steel.

TORX® GorillaGrip® Fold Ups

- Fits all TORX® and Star screws
- World's strongest handle
- Speed-Wrench feature
- Tools open from both the top and bottom
- Molded-in 90° stop
- Patented spacers between tools
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
TF8S	8	T6, T7, T8, T9, T10, T15, T20, T25	12632	619-520	**21.54**
TF8	8	T9, T10, T15, T20, T25, T27, T30, T40	12634	619-521	**21.51**

Ball End T-Handle Sets

- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- Handle coating extends along blade
- ProGuard™ finish delivers superior corrosion protection
- Graduated blade

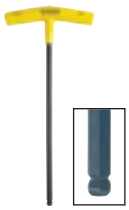


Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
Inch					
BTX60	6	5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	13146	619-706	**61.38**
BTX10/S*	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8" (with stand)	13190	619-785	**88.11**
BTX10*	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	13138	619-043	**82.79**
Metric					
BTX50M	5	4, 5, 6, 8, 10mm	13148	619-707	**52.73**
BTX80M/S*	8	2, 2.5, 3, 4, 5, 6, 8, 10mm (with stand)	13189	619-790	**73.26**
BTX80M*	8	2, 2.5, 3, 4, 5, 6, 8, 10mm	13187	619-783	**67.88**

* The 3/32, 7/64, 1/8, 9/64 & 2mm, 2.5mm, 3mm blades are straight hex blades to prevent breakage

Ball End T-Handles

- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- Handle coating extends along blade
- ProGuard™ finish delivers superior corrosion protection
- Graduated blades



Size	Length (in./mm)	Arm Length (in./mm)	Bondhus EDP	Code No.	Price $
Inch					
3/32	6.1	3.0	13205	619-708	**6.38**
7/64	6.8	3.0	13206	619-709	**6.82**
1/8	7.6	3.0	13207	619-710	**7.22**
9/64	8.3	3.0	13208	619-791	**7.62**
5/32	9.1	3.0	13109	619-792	**8.11**
3/16	9.8	4.0	13110	619-793	**8.51**
7/32	10.3	4.0	13111	619-794	**10.04**
1/4	10.8	4.0	13112	619-795	**10.31**
5/16	11.4	5.0	13113	619-796	**15.78**
3/8	11.8	5.0	13114	619-797	**17.38**
Metric					
2.0	150	76	13252	619-798	**7.22**
2.5	172	76	13254	619-799	**7.22**
3.0	196	76	13256	619-800	**7.62**
4.0	220	76	13160	619-801	**8.51**
5.0	246	102	13164	619-802	**9.76**
6	266	102	13168	619-803	**10.64**
8	285	127	13172	619-804	**15.98**
10	307	127	13176	619-805	**17.56**

Hex End T-Handle Sets

- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- Handle coating extends along blade
- ProGuard™ finish delivers superior corrosion protection

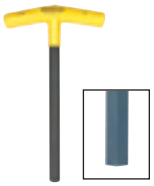


Model	Pcs	Contents	Length	Bondhus EDP	Code No.	Price $
Inch						
HTX80-6	8	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4"	6"	15232	619-806	**46.67**
HTX80-9	8	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4"	9"	15332	619-807	**67.42**
HTX10/S-6*	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	6"	15290	619-808	**75.40**
HTX10-6	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	6"	15238	619-809	**70.04**
HTX10/S-9*	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	9"	15390	619-810	**104.51**
HTX10-9	10	3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	9"	15338	619-811	**98.98**
Metric						
HTX60M-6	6	2, 2.5, 3, 4, 5, 6mm	6"	15248	619-812	**34.80**
HTX60M-9	6	2, 2.5, 3, 4, 5, 6mm	9"	15348	619-813	**53.18**
HTX80M/S-6*	8	2, 2.5, 3, 4, 5, 6, 8, 10mm	6"	15289	619-814	**65.78**
HTX80M-6	8	2, 2.5, 3, 4, 5, 6, 8, 10mm	6"	15287	619-815	**61.93**
HTX80M/S-9*	8	2, 2.5, 3, 4, 5, 6, 8, 10mm	9"	15389	619-816	**90.40**
HTX80M-9	8	2, 2.5, 3, 4, 5, 6, 8, 10mm	9"	15387	619-817	**84.84**

* Comes with stand

Hex End T-Handles - 6" & 9"

- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- Handle coating extends along blade
- ProGuard™ finish delivers superior corrosion protection



Size	Length (in.)	Handle Length (in.)	Bondhus EDP	Code No.	Price $
3/32	6.0	3.0	15205	619-818	**5.07**
7/64	6.0	3.0	15206	619-819	**5.13**
1/8	6.0	3.0	15207	619-820	**5.78**
9/64	6.0	3.0	15208	619-821	**6.16**
5/32	6.0	3.0	15209	619-822	**6.44**
3/16	6.0	4.0	15210	619-823	**7.13**
7/32	6.0	4.0	15211	619-824	**7.33**
1/4	6.0	4.0	15212	619-825	**8.27**
5/16	6.0	5.0	15213	619-826	**13.44**
3/8	6.0	5.0	15214	619-827	**15.00**
1/2	6.0	5.0	15216	619-828	**24.84**
3/32	9.0	3.0	15305	619-829	**7.71**
7/64	9.0	3.0	15306	619-830	**8.20**
1/8	9.0	3.0	15307	619-831	**8.71**
9/64	9.0	3.0	15308	619-832	**8.93**
5/32	9.0	3.0	15309	619-833	**9.22**
3/16	9.0	4.0	15310	619-834	**9.42**
7/32	9.0	4.0	15311	619-835	**11.07**
1/4	9.0	4.0	15312	619-836	**11.33**
5/16	9.0	5.0	15313	619-837	**16.58**
3/8	9.0	5.0	15314	619-838	**18.31**
1/2	9.0	5.0	15316	619-839	**30.11**

Hex End T-Handles - 6" & 9" - Metric



- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- Handle coating extends along blade
- ProGuard™ finish delivers superior corrosion protection

Size	Length (in.)	Handle Length (in.)	Bondhus EDP	Code No.	Price $
2.0	6.0	3.0	15252	619-526	**5.13**
2.5	6.0	3.0	15254	619-527	**5.13**
3.0	6.0	3.0	15256	619-528	**5.67**
4.0	6.0	3.0	15260	619-529	**6.40**
5.0	6.0	4.0	15264	619-530	**7.00**
6	6.0	4.0	15268	619-531	**8.96**
8	6.0	5.0	15272	619-532	**14.15**
10	6.0	5.0	15276	619-533	**15.76**
2.0	9.0	3.0	15352	619-534	**8.71**
2.5	9.0	3.0	15354	619-535	**8.71**
3.0	9.0	3.0	15356	619-536	**9.20**
4.0	9.0	3.0	15360	619-537	**9.36**
5.0	9.0	4.0	15364	619-538	**10.80**
6	9.0	4.0	15368	619-539	**11.73**
8	9.0	5.0	15372	619-540	**16.71**
10	9.0	5.0	15376	619-541	**18.42**

8pc SAE Loop Handle Hex Key Set



Pcs	Contents	Blade Length	Dynamic EDP	Code No.	Price $
8	5/64, 3/32, 1/8, 5/32, 3/16 1/4, 5/16, 3/8	9"	D043420	866-569	**44.77**

8pc Metric Loop Handle Hex Key Set



Pcs	Contents (mm)	Blade Length	Dynamic EDP	Code No.	Price $
8	2, 2.5, 3, 4, 5, 6, 8, 10	9"	D043320	866-633	**44.77**

TORX® T-Handle Sets



- Fits all TORX® and Star screws
- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- ProGuard™ finish delivers superior corrosion protection

Model	Pcs	Contents	Length	Bondhus EDP	Code No.	Price $
TTHX8	8	T9, T10, T15, T20, T25, T27, T30, T40	Graduated	33034	619-542	**68.24**

TORX® T-Handles

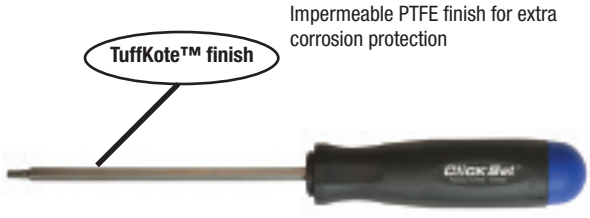


- Fits all TORX® and Star screws
- Solid steel handles
- Welded handle/blade connection
- Ergonomic handle design
- Flywheel effect saves time
- Smooth, non-porous handle coating
- ProGuard™ finish delivers superior corrosion protection

Size	Length (mm)	Handle Length (mm)	Bondhus EDP	Code No.	Price $
T9	6.1	3.0	33009	619-543	**7.16**
T10	6.4	3.0	33010	619-544	**7.51**
T15	6.6	3.0	33015	619-545	**8.04**
T20	6.9	3.0	33020	619-546	**8.36**
T25	7.1	3.0	33025	619-547	**8.73**
T27	7.4	4.0	33027	619-548	**9.20**
T30	7.6	4.0	33030	619-549	**9.71**
T40	7.9	4.0	33040	619-550	**10.84**
T45	8.1	5.0	33045	619-551	**12.13**
T50	8.4	5.0	33050	619-552	**14.16**
T55	8.6	5.0	33055	619-553	**18.38**

ClickSet™ TLD (Torque Limiting Device)

- Wide range of factory preset torque limiting handles – no adjustment needed
- When the preset torque level is reached, the mechanism slips and makes an audible "click"
- Protects from overtorquing
- Reduces fastener wear and stripping
- Reduces potential damage to carbide inserts
- Universal TORX® for TORX PLUS® and older style TORX® fasteners
- +/- 10% repeatability

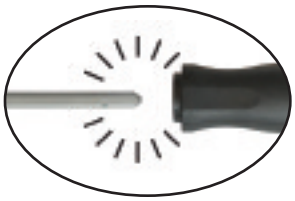


Handles

Torque	Bondhus EDP	Code No.	Price $
4.4 in-lb/0.5 Nm	50404	619-554	**38.62**
5.3 in-lb/0.6 Nm	50405	619-555	**38.62**
8.0 in-lb/0.9 Nm	50408	619-556	**38.62**
9.7 in-lb/1.1 Nm	50409	619-557	**38.62**
10.6 in-lb/1.2 Nm	50410	619-558	**38.62**
12.4 in-lb/1.4 Nm	50412	619-559	**35.13**
17.7 in-lb/2.0 Nm	50417	619-560	**35.13**
22.1 in-lb/2.5 Nm	50422	619-561	**35.13**
26.6 in-lb/3.0 Nm	50426	619-562	**35.13**
31.0 in-lb/3.5 Nm	50431	619-563	**35.13**





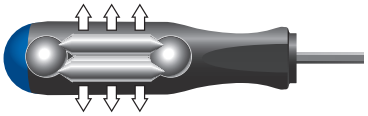


Replaceable blades snap into handle, simplifying blade replacement

Blades

Size	Bondhus EDP	Code No.	Price $
Inch Hex			
.050"	50102	619-564	**13.44**
1/16"	50103	619-565	**13.44**
5/64"	50104	619-566	**13.44**
3/32"	50105	619-567	**13.44**
7/64"	50106	619-568	**13.44**
1/8"	50107	619-569	**13.44**
Metric Hex			
1.5mm	50150	619-570	**13.44**
2.0mm	50152	619-571	**13.44**
2.5mm	50154	619-572	**13.44**
3.0mm	50156	619-573	**13.44**
TORX®			
T/IP5	50205	619-574	**13.44**
T/IP6	50206	619-575	**13.44**
T/IP7	50207	619-576	**13.44**
T/IP8	50208	619-577	**13.44**
T/IP9	50209	619-578	**13.44**
T/IP10	50210	619-579	**13.44**
T/IP15	50215	619-580	**13.44**





ClickSet™ Torque Limiting Devices distribute the torque load along the handle, redistributing force over a larger surface for greater accuracy and longer tool life.

Sets

Handle Torque	Blade Tip	Bondhus EDP	Code No.	Price $
4.4 in-lb/0.5 Nm	T/IP5	50004	619-581	**47.36**
5.3 in-lb/0.6 Nm	T/IP6	50005	619-582	**47.36**
8.0 in-lb/0.9 Nm	T/IP7	50008	619-450	**47.35**
10.6 in-lb/1.2 Nm	T/IP8	50010	619-451	**47.35**
12.4 in-lb/1.4 Nm	T/IP9	50012	619-583	**47.36**
22.1 in-lb/2.5 Nm	T/IP10	50017	619-456	**47.35**
31.0 in-lb/3.5 Nm	T/IP15	50026	619-452	**47.35**





The Bondhus ComfortGrip handle features a durable thermoplastic core wrapped in cushioned rubber for increased comfort and torque

ClickSet™ Blades made with:

ProTanium® High Torque Steel

Up to 20% stronger, with more torque and twice the wear resistance of standard grades of steel.

BONDHUS

Ball End Screwdriver Sets

- Ball End inserts into screw at a 25° angle
- Ergonomic handle design
- Non-slip grip
- Two component handle with tough inner core and cushioned rubber exterior
- Anti-roll design
- ProGuard™ finish delivers superior corrosion protection



Model	Pcs	Contents	Bondhus EDP	Code No.	Price $
Inch					
BSX8S	8	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32"	10632	619-868	**33.80**
BSX13	13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	10637	619-013	**81.38**
Metric					
BSX6M	6	1.5, 2, 2.5, 3, 4, 5mm	10686	619-869	**29.75**
BSX9M	9	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	10699	619-019	**65.36**

Ball End Screwdrivers

- Ball End inserts into screw at a 25° angle
- Ergonomic handle design
- Non-slip grip
- Two component handle with tough inner core and cushioned rubber exterior
- Anti-roll design
- ProGuard™ finish delivers superior corrosion protection



Size	Length (in.)	Handle Length (in.)	Bondhus EDP	Code No.	Price $
Inch					
.050	2.4	4.1	10602	619-870	**3.71**
1/16	2.5	4.7	10603	619-721	**3.64**
5/64	2.6	4.8	10604	619-871	**4.38**
3/32	2.8	5.2	10605	619-872	**4.60**
7/64	2.9	5.3	10606	619-873	**4.62**
1/8	3.1	6.6	10607	619-874	**4.71**
9/64	3.3	6.8	10608	619-875	**5.02**
5/32	3.6	7.9	10609	619-876	**5.47**
3/16	3.7	8.0	10610	619-877	**7.24**
7/32	4.2	9.0	10611	619-878	**7.78**
1/4	5.0	9.8	10612	619-879	**9.84**
5/16	5.6	10.4	10613	619-880	**11.71**
3/8	6.5	11.3	10614	619-881	**13.76**
Metric					
1.5	2.6	4.7	10650	619-882	**4.13**
2.0	2.8	5.0	10652	619-883	**4.64**
2.5	2.7	5.1	10654	619-884	**4.64**
3.0	3.3	6.7	10656	619-885	**4.71**
3.5	3.5	6.9	10658	619-886	**6.40**
4.0	3.7	8.1	10660	619-887	**5.71**
5.0	4.3	8.6	10664	619-888	**7.51**
6	5.4	10.2	10668	619-889	**8.58**
8	6.4	11.2	10672	619-890	**13.04**
10	7.3	12.1	10676	619-891	**15.11**

ProGuard DST

Corrosion resistant finish. Environmentally safe, provides better tool grip, resists solvents and is 5 times more corrosion resistant than competitor finishes.

Dynamic

36pc Screwdriver & Bit Set

Set contents:
- 4 Phillips®: #0, 1, 2, 3
- 1 Phillips® Stubby: #2
- 1 Offset Phillips®: #1, #2
- 5 Slotted: 5/32, 3/16, 1/4, 5/16, 3/8
- 1 Slotted Stubby: 1/4
- 1 Offset Slotted: 3/16, 1/4
- 4 Square Recess: #0, 1, 2, 3
- 2 Square Recess Stubby: #1, 2
- 1 Offset Square Recess: #1, 2
- Circuit Tester (110V only)
- Magnetic Bit Holder
- Torx Bits: T10, T15, T20, T25, T27, T30, T40
- Hex Bits: 2, 2.5, 3, 4, 5, 6, 8mm
- Blow mold case



Description	Dynamic EDP	Code No.	Price $
36pc Screwdriver & Bit Set	D062505	865-764	**124.17**

9pc Screwdriver Set - Comfort Handle

Set contents:
- 5 Slotted: 1/8, 5/32, 1/4, 5/16, 3/8
- 2 Phillips®: #1, #2
- 2 Square Recess: #1, #2
- Plastic tray



Description	Dynamic EDP	Code No.	Price $
9pc Screwdriver Set	D062500	865-729	**77.05**

13pc Ratcheting Screwdriver Set

Set contents:
- Ratcheting Screwdriver Handle
- Phillips® bits: #0, 1, 2, 3
- Square bits: #0, 1, 2, 3
- Slotted bits: 3.5, 4.5, 5.5, 6.5mm



Description	Dynamic EDP	Code No.	Price $
13pc Ratcheting Screwdriver Set	D062508	866-634	**29.33**

21pc Screwdriver Set - Removable Bits

Set contents:
- Comfort Grip handle (1/4" hex)

3" Screwdriver Bits
- Torx®: T10, T15, T20, T25, T30
- Square Recess: #0, 1, 2, 3
- Slotted: 1/8, 5/32, 3/16
- Phillips®: #0, 1, 2, 3

2" Screwdriver Bits
- Phillips®: #1, #2 (2), #3





Description	Dynamic EDP	Code No.	Price $
21pc Screwdriver & Bit Set	D062506	866-103	**45.61**

Dynamic

Phillips® Screwdrivers - Acetate Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#1	3.00"	6.50"	0.20"	D062106	866-635	**7.41**
#2	4.00"	7.75"	0.24"	D062107	866-636	**10.03**
#3	6.00"	10.00"	0.31"	D062108	866-637	**15.46**

Phillips® Stubby Screwdrivers - Acetate Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#1	1.50	3.50	0.24	D062109	866-638	**5.81**
#2	1.50	3.50	0.24	D062110	866-639	**5.93**

Phillips® Stubby Screwdrivers - Comfort Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#1	1.50	3.80	0.20	D062104	866-428	**6.96**
#2	1.50	3.80	0.24	D062105	866-429	**7.02**

Square Recess Screwdrivers - Comfort Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#0	2.95	7.40	0.24	D062201	866-430	**6.73**
#1	3.94	8.39	0.24	D062202	866-431	**7.02**
#2	3.94	8.39	0.24	D062203	866-432	**8.39**
#3	4.92	9.37	0.24	D062204	866-433	**14.03**

Square Recess Stubby Screwdrivers - Comfort Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#1	1.50	3.80	0.24	D062205	866-434	**6.73**
#2	1.50	3.80	0.24	D062206	866-435	**7.02**

Dynamic

Slotted Screwdrivers - Comfort Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
1/8"	2.95	6.02	0.12	D062001	866-617	**7.02**
5/32"	2.95	6.02	0.12	D062002	866-618	**8.09**
3/16"	3.94	7.87	0.16	D062003	866-619	**9.58**
1/4"	4.92	9.37	0.24	D062004	866-620	**11.64**
5/16"	5.91	10.67	0.31	D062005	866-621	**15.40**
3/8"	7.87	12.64	0.39	D062006	866-640	**17.68**

Slotted Stubby Screwdrivers - Comfort Handle

- Meets ANSI standards



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
1/4"	1.50	3.80	0.24	D062007	866-641	**7.02**

SAE Nut Drivers - Acetate Handle

- Meets ANSI standards



Inch

Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
3/16"	3"	6.75	0.24	D062401	866-436	**11.18**
1/4"	3"	6.75	0.24	D062402	866-437	**11.18**
5/16"	3"	6.75	0.31	D062403	866-438	**11.18**
11/32"	3"	6.75	0.31	D062404	866-439	**11.18**
3/8"	3"	6.75	0.31	D062405	866-440	**11.69**
7/16"	3"	6.75	0.43	D062406	866-441	**11.80**
1/2"	3"	6.75	0.43	D062407	866-442	**12.83**

Metric

Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
5mm	3"	6.75	0.24	D062408	866-443	**10.54**
6mm	3"	6.75	0.24	D062409	866-444	**10.54**
7mm	3"	6.75	0.31	D062410	866-445	**10.54**
8mm	3"	6.75	0.31	D062411	866-446	**10.54**
9mm	3"	6.75	0.31	D062412	866-447	**10.54**
10mm	3"	6.75	0.43	D062413	866-448	**10.54**
11mm	3"	6.75	0.43	D062414	866-449	**10.54**

Dynamic

Slotted Insulated Screwdrivers

- Meets ANSI standards

1000V



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
1/8"	3.93	7.50	1.00	D062701	866-450	**11.41**
5/32"	3.93	8.00	1.18	D062702	866-451	**11.41**
7/32"	4.98	9.00	1.18	D062703	866-452	**15.20**
1/4"	5.93	10.50	1.37	D062704	866-453	**17.72**

Phillips® Insulated Screwdrivers

- Meets ANSI standards

1000V



Tip Size	Blade Length	O.A.L.	Shank Size	Dynamic EDP	Code No.	Price $
#1	3.20	7.25	1.17	D062705	866-454	**14.54**
#2	4.00	8.50	1.39	D062706	866-455	**19.95**

6pc Insulated Screwdriver Set

- Meets ANSI standards

1000V



Description	Dynamic EDP	Code No.	Price $
6pc Insulated Screwdriver Set	D062720	866-456	**105.86**

Contents

- 2 Phillips®: #1, #2
- 4 Slotted: 1/8, 5/32, 7/32, 1/4
- Plastic Tray

Dynamic

Sockets & Attachments 1/4" Drive

Quick Release Ratchet - Chrome Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
5"	45	D001301	866-642	**38.49**

Quick Release Ratchet - Comfort Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
5"	72	D001302	866-643	**54.97**

Stubby Ratchet



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
3.5"	48	D001307	866-644	**38.01**

Sockets & Attachments 3/8" Drive

Quick Release Ratchet - Chrome Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
7.6"	45	D005301	866-130	**50.01**

Quick Release Ratchet - Comfort Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
7.6"	72	D005302	865-904	**67.39**

Quick Release Ratchet - Comfort Handle - Long



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
9"	72	D005306	866-087	**63.33**

Chrome Extensions



Length	Dynamic EDP	Code No.	Price $
3.00"	D005003	866-124	**8.90**
6.00"	D005006	866-125	**12.88**
10.00"	D005010	866-126	**18.59**

Chrome Extensions With Quick Release



Length	Dynamic EDP	Code No.	Price $
3.00"	D005023	866-127	**14.63**
6.00"	D005026	866-128	**16.72**
10.00"	D005030	866-129	**23.04**

Stubby Ratchet



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
4.75"	48	D005307	866-131	**43.09**

Flex Head Ratchet



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
11.75"	48	D005308	866-003	**60.82**

Sliding T-Handle



Length	Dynamic EDP	Code No.	Price $
6.46"	D005500	866-132	**19.96**

Universal Joint



Length	Dynamic EDP	Code No.	Price $
1.81"	D005601	866-133	**17.44**

Adapters



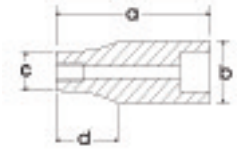
Length	Female	Male	Dynamic EDP	Code No.	Price $
1.38"	3/8"	1/4"	D005701	866-134	**5.81**
1.81"	3/8"	1/2"	D005702	866-135	**5.67**

Dynamic

Sockets & Attachments 3/8" Drive, cont'd

SAE Standard Chrome Sockets

- Meets ANSI standards

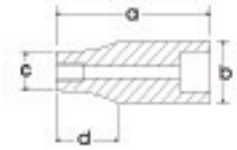




Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
1/4"	1.10"	0.66"	0.39"	0.47"	D008308	866-174	**5.81**	D009408	866-645	**5.81**
5/16"	1.10"	0.66"	0.47"	0.47"	D008310	866-175	**5.81**	D009410	866-646	**5.81**
3/8"	1.10"	0.66"	0.54"	0.47"	D008312	866-176	**5.81**	D009412	866-647	**5.81**
7/16"	1.10"	0.66"	0.63"	0.47"	D008314	866-177	**5.81**	D009414	866-648	**5.81**
1/2"	1.10"	0.70"	0.70"	-	D008316	866-178	**5.93**	D009416	866-649	**5.93**
9/16"	1.10"	0.78"	0.78"	-	D008318	866-179	**6.05**	D009418	866-650	**6.05**
5/8"	1.10"	0.86"	0.86"	-	D008320	866-180	**6.17**	D009420	866-651	**6.17**
11/16"	1.18"	0.94"	0.94"	-	D008322	866-181	**6.27**	D009422	866-652	**6.27**
3/4"	1.18"	1.02"	1.02"	-	D008324	866-182	**6.39**	D009424	866-653	**6.39**
13/16"	1.18"	1.09"	1.09"	-	D008326	866-183	**6.51**	D009426	866-654	**6.47**
7/8"	1.18"	1.17"	1.17"	-	D008328	866-184	**6.62**	D009428	866-655	**6.59**
15/16"	1.18"	1.25"	1.25"	-	D008330	866-185	**7.08**	D009430	866-656	**6.70**
1"	1.18"	1.33"	1.33"	-	D008332	866-186	**7.66**	D009432	866-657	**6.81**

Metric Standard Chrome Sockets

- Meets ANSI standards





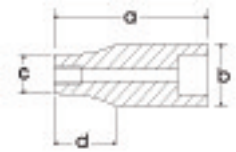
Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
6mm	1.10"	0.66"	0.39"	0.47"	D008006	866-137	**5.81**	D009106	866-658	**5.41**
7mm	1.10"	0.66"	0.43"	0.47"	D008007	866-138	**5.81**	D009107	866-659	**5.63**
8mm	1.10"	0.66"	0.47"	0.47"	D008008	866-139	**5.81**	D009108	866-660	**5.81**
9mm	1.10"	0.66"	0.52"	0.47"	D008009	866-140	**5.81**	D009109	866-661	**5.81**
10mm	1.10"	0.66"	0.58"	0.47"	D008010	866-141	**5.81**	D009110	866-662	**5.81**
11mm	1.10"	0.66"	0.62"	0.47"	D008011	866-142	**5.81**	D009111	866-663	**5.81**
12mm	1.10"	0.66"	0.66"	-	D008012	866-143	**5.93**	D009112	866-664	**5.93**
13mm	1.10"	0.70"	0.70"	-	D008013	866-144	**5.93**	D009113	866-665	**5.93**
14mm	1.10"	0.78"	0.78"	-	D008014	866-145	**6.05**	D009114	866-666	**6.05**
15mm	1.10"	0.86"	0.86"	-	D008015	866-146	**6.17**	D009115	866-667	**6.17**
16mm	1.10"	0.86"	0.86"	-	D008016	866-147	**6.27**	D009116	866-668	**6.27**
17mm	1.18"	0.94"	0.94"	-	D008017	866-148	**6.27**	D009117	866-669	**6.27**
18mm	1.18"	1.02"	1.02"	-	D008018	866-149	**6.39**	D009118	866-670	**6.39**
19mm	1.18"	1.02"	1.02"	-	D008019	866-150	**6.39**	D009119	866-671	**6.39**
20mm	1.18"	1.09"	1.09"	-	D008020	866-151	**7.02**	D009120	866-672	**6.51**
21mm	1.18"	1.09"	1.09"	-	D008021	866-152	**7.02**	D009121	866-673	**6.61**
22mm	1.18"	1.17"	1.17"	-	D008022	866-153	**7.41**	D009122	866-674	**6.71**
23mm	1.18"	1.25"	1.25"	-	D008023	866-154	**7.63**	D009123	866-675	**6.82**
24mm	1.18"	1.25"	1.25"	-	D008024	866-155	**7.98**	-		

Dynamic

Sockets & Attachments 3/8" Drive, cont'd

SAE Deep Chrome Sockets

• Meets ANSI standards

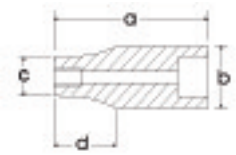




Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
1/4"	2.48	0.66	0.39	1.5	D008508	866-187	**8.46**	D009608	866-676	**8.66**
5/16"	2.48	0.66	0.47	1.5	D008510	866-188	**8.53**	D009610	866-677	**8.66**
3/8"	2.48	0.66	0.54	1.5	D008512	866-189	**8.84**	D009612	866-678	**8.84**
7/16"	2.48	0.66	0.63	1.5	D008514	866-190	**8.84**	D009614	866-679	**8.84**
1/2"	2.48	0.74	0.74	-	D008516	866-191	**8.90**	D009616	866-680	**8.90**
9/16"	2.48	0.78	0.78	-	D008518	866-192	**8.90**	D009618	866-681	**8.90**
5/8"	2.48	0.86	0.86	-	D008520	866-193	**9.24**	D009620	866-682	**9.24**
11/16"	2.48	0.94	0.94	-	D008522	866-194	**9.81**	D009622	866-683	**9.24**
3/4"	2.48	1.02	1.02	-	D008524	866-195	**10.39**	D009624	866-684	**9.81**
13/16"	2.48	1.09	1.09	-	D008526	866-196	**10.73**	D009626	866-685	**10.80**
7/8"	2.48	1.17	1.17	-	D008528	866-197	**11.34**	D009628	866-686	**11.07**
15/16"	2.48	1.25	1.25	-	D008530	866-198	**11.58**	D009630	866-687	**11.42**
1"	2.48	1.33	1.33	-	D008532	866-199	**12.15**	D009632	866-688	**12.29**

Metric Deep Chrome Sockets

• Meets ANSI standards





Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
6mm	2.48"	0.66"	0.39"	1.5"	D008206	866-156	**8.78**	D009706	866-689	**8.80**
7mm	2.48"	0.66"	0.43"	1.5"	D008207	866-157	**8.78**	D009707	866-690	**8.80**
8mm	2.48"	0.66"	0.47"	1.5"	D008208	866-158	**8.84**	D009708	866-691	**8.84**
9mm	2.48"	0.66"	0.52"	1.5"	D008209	866-159	**8.84**	D009709	866-692	**8.84**
10mm	2.48"	0.66"	0.58"	1.5"	D008210	866-160	**8.84**	D009710	866-693	**8.84**
11mm	2.48"	0.66"	0.62"	1.5"	D008211	866-161	**8.90**	D009711	866-694	**8.90**
12mm	2.48"	0.70"	0.70"	-	D008212	866-162	**8.90**	D009712	866-695	**8.90**
13mm	2.48"	0.74"	0.74"	-	D008213	866-163	**8.90**	D009713	866-696	**8.90**
14mm	2.48"	0.78"	0.78"	-	D008214	866-164	**8.90**	D009714	866-697	**8.90**
15mm	2.48"	0.86"	0.86"	-	D008215	866-165	**9.00**	D009715	866-698	**9.00**
16mm	2.48"	0.86"	0.86"	-	D008216	866-166	**9.12**	D009716	866-699	**9.12**
17mm	2.48"	0.94"	0.94"	-	D008217	866-167	**9.58**	D009717	866-700	**9.58**
18mm	2.48"	1.02"	1.02"	-	D008218	866-168	**10.20**	D009718	866-701	**10.20**
19mm	2.48"	1.02"	1.02"	-	D008219	866-169	**10.39**	D009719	866-702	**10.39**
20mm	2.48"	1.09"	1.09"	-	D008220	866-170	**11.41**			
21mm	2.48"	1.09"	1.09"	-	D008221	866-171	**12.49**			
22mm	2.48"	1.17"	1.17"	-	D008222	866-172	**12.67**			
23mm	2.48"	1.25"	1.25"	-	D008223	866-173	**13.23**			

Dynamic

Sockets & Attachments 3/8" Drive, cont'd

Standard Impact Sockets

- Meets ANSI standards



Inch

Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
5/16"	1.12	0.74	0.49	0.47	D007310	866-703	**4.91**
3/8"	1.12	0.74	0.54	0.47	D007312	866-704	**4.91**
7/16"	1.18	0.74	0.58	0.47	D007314	866-705	**5.62**
1/2"	1.18	0.74	0.67	0.47	D007316	866-706	**5.62**
9/16"	1.18	0.78	0.78	-	D007318	866-707	**5.80**
5/8"	1.18	0.94	0.94	-	D007320	866-708	**6.28**
11/16"	1.24	0.94	0.94	-	D007322	866-709	**6.45**
3/4"	1.24	1.02	1.02	-	D007324	866-710	**6.75**

Metric

Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
8mm	1.12	0.74	0.49	0.47	D007008	866-711	**5.22**
9mm	1.12	0.74	0.55	0.47	D007009	866-712	**5.22**
10mm	1.12	0.74	0.59	0.47	D007010	866-713	**5.27**
11mm	1.12	0.74	0.67	0.47	D007011	866-714	**5.27**
12mm	1.12	0.74	0.74	-	D007012	866-715	**5.27**
13mm	1.12	0.74	0.74	-	D007013	866-716	**5.27**
14mm	1.12	0.78	0.78	-	D007014	866-717	**5.80**
15mm	1.12	0.86	0.86	-	D007015	866-718	**5.80**
16mm	1.12	0.94	0.94	-	D007016	866-719	**6.34**
17mm	1.12	0.94	0.94	-	D007017	866-720	**6.45**
18mm	1.12	1.00	1.00	-	D007018	866-721	**6.63**
19mm	1.12	1.02	1.02	-	D007019	866-722	**7.05**

Deep Impact Sockets

- Meets ANSI standards



Inch

Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
5/16"	2.48	0.74	0.49	0.51	D007510	866-723	**8.17**
3/8"	2.48	0.74	0.54	0.51	D007512	866-724	**8.53**
7/16"	2.48	0.74	0.58	0.51	D007514	866-725	**8.83**
1/2"	2.48	0.74	0.67	0.51	D007516	866-726	**9.00**
9/16"	2.48	0.78	0.78	-	D007518	866-727	**9.24**
5/8"	2.48	0.94	0.94	-	D007520	866-728	**9.35**
11/16"	2.48	0.94	0.94	-	D007522	866-729	**9.90**
3/4"	2.48	1.02	1.02	-	D007524	861-636	**11.91**

Metric

Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
8mm	2.48	0.74	0.49	0.51	D007208	866-731	**8.29**
9mm	2.48	0.74	0.55	0.51	D007209	866-732	**8.53**
10mm	2.48	0.74	0.59	0.51	D007210	866-733	**8.53**
11mm	2.48	0.74	0.67	0.51	D007211	866-734	**8.76**
12mm	2.48	0.74	0.74	-	D007212	866-735	**8.89**
13mm	2.48	0.74	0.74	-	D007213	866-736	**8.89**
14mm	2.48	0.78	0.78	-	D007214	866-737	**9.24**
15mm	2.48	0.86	0.86	-	D007215	866-738	**9.35**
16mm	2.48	0.94	0.94	-	D007216	866-739	**9.35**
17mm	2.48	0.94	0.94	-	D007217	866-740	**10.01**
18mm	2.48	1.00	1.00	-	D007218	866-741	**10.36**
19mm	2.48	1.02	1.02	-	D007219	866-742	**11.43**



Dynamic

Sockets & Attachments 1/2" Drive

Quick Release Ratchet - Chrome Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
9.33"	45	D012301	866-205	**61.59**

Quick Release Ratchet - Comfort Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
9.76"	72	D012302	866-206	**88.61**

Flex Handle



Length	Dynamic EDP	Code No.	Price $
14.96"	D012800	865-846	**46.64**

Chrome Extensions



Length	Dynamic EDP	Code No.	Price $
5.00"	D012005	866-200	**13.46**
10.00"	D012010	866-201	**19.39**

Chrome Extension With Quick Release



Length	Dynamic EDP	Code No.	Price $
3.00"	D012023	866-202	**19.02**
5.00"	D012025	866-203	**20.91**
10.00"	D012030	866-204	**25.77**

Flex Head Ratchet



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
17.75"	48	D012308	866-207	**78.57**

Sliding T-Handle



Length	Dynamic EDP	Code No.	Price $
9.75"	D012500	866-208	**20.47**

Universal Joint



Length	Dynamic EDP	Code No.	Price $
2.76"	D012600	866-209	**22.58**

Adapters



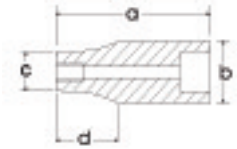
Length	Female	Male	Dynamic EDP	Code No.	Price $
1.42"	1/2"	3/8"	D012701	866-210	**7.29**

Dynamic

Sockets & Attachments 1/2" Drive, cont'd

SAE Standard Chrome Sockets

• Meets ANSI standards

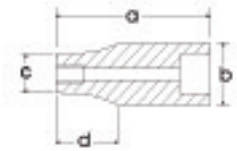




Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
3/8"	1.5	0.86	0.57	0.67	D016312	866-338	**8.05**	D015412	866-743	**7.22**
7/16"	1.5	0.86	0.67	0.67	D016314	866-339	**8.05**	D015414	866-744	**7.13**
1/2"	1.5	0.86	0.73	0.67	D016316	866-340	**8.32**	D015416	866-745	**7.13**
9/16"	1.5	0.86	0.81	0.67	D016318	866-341	**8.32**	D015418	866-746	**7.13**
5/8"	1.5	0.86	0.86	-	D016320	866-342	**8.39**	D015420	866-747	**7.84**
11/16"	1.5	0.94	0.94	-	D016322	866-343	**8.39**	D015422	866-748	**8.46**
3/4"	1.5	1.02	1.02	-	D016324	866-344	**8.90**	D015424	866-749	**9.01**
13/16"	1.5	1.09	1.09	-	D016326	866-345	**9.81**	D015426	866-750	**9.33**
7/8"	1.5	1.17	1.17	-	D016328	866-346	**10.09**	D015428	866-751	**10.12**
15/16"	1.57	1.25	1.25	-	D016330	866-347	**10.32**	D015430	866-752	**10.66**
1"	1.65	1.33	1.33	-	D016332	866-348	**10.49**	D015432	866-753	**11.21**
1-1/16"	1.65	1.41	1.41	-	D016334	866-349	**11.76**	D015434	866-754	**12.24**
1-1/8"	1.69	1.49	1.49	-	D016336	866-350	**11.85**	D015436	866-755	**13.48**
1-3/16"	1.73	1.57	1.57	-	D016338	866-351	**13.12**	D015438	866-756	**14.58**
1-1/4"	1.73	1.65	1.65	-	D016340	866-352	**13.12**	D015440	866-757	**15.05**
1-5/16"	1.73	1.72	1.72	-	D016342	866-353	**13.44**	D015442	866-758	**15.30**

Metric Standard Chrome Sockets

• Meets ANSI standards





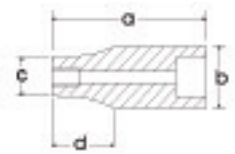
Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
10mm	1.50	0.86	0.59	0.67	D016010	866-292	**7.47**	D015110	866-759	**7.22**
11mm	1.50	0.86	0.64	0.67	D016011	866-293	**7.47**	D015111	866-760	**7.13**
12mm	1.50	0.86	0.69	0.67	D016012	866-294	**7.47**	D015112	866-761	**7.13**
13mm	1.50	0.86	0.74	0.67	D016013	866-295	**7.75**	D015113	866-762	**7.13**
14mm	1.50	0.86	0.8	0.67	D016014	866-296	**7.75**	D015114	866-763	**7.13**
15mm	1.50	0.86	0.83	0.67	D016015	866-297	**7.75**	D015115	866-764	**7.76**
16mm	1.50	0.86	0.86	-	D016016	866-298	**7.75**	D015116	866-765	**7.84**
17mm	1.50	0.94	0.94	-	D016017	866-299	**7.75**	D015117	866-766	**8.46**
18mm	1.50	1.02	1.02	-	D016018	866-300	**8.27**	D015118	866-767	**9.01**
19mm	1.50	1.02	1.02	-	D016019	866-301	**8.27**	D015119	866-768	**9.01**
20mm	1.50	1.09	1.09	-	D016020	866-302	**8.84**	D015120	866-769	**9.48**
21mm	1.50	1.09	1.09	-	D016021	866-303	**9.63**	D015121	866-770	**9.33**
22mm	1.50	1.17	1.17	-	D016022	866-304	**10.03**	D015122	866-771	**10.12**
23mm	1.57	1.25	1.25	-	D016023	866-305	**10.95**	D015123	866-772	**10.66**
24mm	1.57	1.25	1.25	-	D016024	866-306	**10.95**	D015124	866-773	**10.66**
25mm	1.57	1.33	1.33	-	D016025	866-307	**11.18**	D015125	866-774	**11.77**
26mm	1.65	1.33	1.33	-	D016026	866-308	**11.64**	D015126	866-775	**11.21**
27mm	1.65	1.41	1.41	-	D016027	866-309	**13.40**	D015127	866-776	**12.24**
28mm	1.69	1.49	1.49	-	D016028	866-310	**13.57**	D015128	866-777	**13.48**
29mm	1.69	1.49	1.49	-	D016029	866-311	**14.03**			
30mm	1.73	1.57	1.57	-	D016030	866-312	**14.71**	D015130	866-779	**14.58**
31mm	1.73	1.57	1.57	-	D016031	866-313	**14.83**			
32mm	1.73	1.65	1.65	-	D016032	866-314	**14.95**	D015132	866-781	**15.05**

Dynamic

Sockets & Attachments 1/2" Drive, cont'd

SAE Deep Chrome Sockets

• Meets ANSI standards

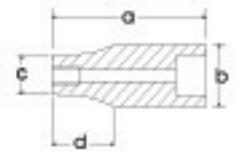




Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
3/8"	3.03	0.86	0.52	1.81	D016512	866-354	**10.56**	D015612	866-782	**11.60**
7/16"	3.03	0.86	0.57	1.81	D016514	866-355	**12.95**	D015614	866-783	**11.60**
1/2"	3.03	0.86	0.67	1.81	D016516	866-356	**12.95**	D015616	866-784	**11.53**
9/16"	3.03	0.86	0.73	1.81	D016518	866-357	**12.95**	D015618	866-785	**11.30**
5/8"	3.03	0.86	0.81	1.81	D016520	866-358	**12.95**	D015620	866-786	**11.53**
11/16"	3.03	0.86	0.86	-	D016522	866-359	**13.40**	D015622	866-787	**12.31**
3/4"	3.03	0.94	0.94	-	D016524	866-360	**14.25**	D015624	866-788	**13.33**
13/16"	3.03	1.02	1.02	-	D016526	866-361	**15.22**	D015626	866-789	**13.33**
7/8"	3.03	1.09	1.09	-	D016528	866-362	**16.41**	D015628	866-790	**14.58**
15/16"	3.03	1.17	1.17	-	D016530	866-363	**18.20**	D015630	866-791	**15.45**
1"	3.03	1.25	1.25	-	D016532	866-364	**21.27**	D015632	866-792	**18.67**
1-1/16"	3.03	1.33	1.33	-	D016534	866-365	**21.66**	D015634	866-793	**18.74**
1-1/8"	3.03	1.41	1.41	-	D016536	866-366	**22.30**	D015636	866-794	**22.43**
1-3/16"	3.03	1.49	1.49	-	D016538	866-367	**22.98**	D015638	866-795	**23.05**
1-1/4"	3.03	1.65	1.65	-	D016540	866-368	**24.75**	D015640	866-796	**23.92**
1-5/16"	3.03	1.72	1.72	-	D016542	866-369	**25.46**	D015642	866-797	**24.15**

Metric Deep Chrome Sockets

• Meets ANSI standards





Size	O.A.L. (a)	Drive End (b)	Hex End (c)	Taper Length (d)	Dynamic EDP	6-point Code No.	Price $	Dynamic EDP	12-point Code No.	Price $
10mm	3.03	0.86	0.59	1.81	D016210	866-315	**12.95**	D015710	866-798	**11.60**
11mm	3.03	0.86	0.64	1.81	D016211	866-316	**12.96**	D015711	866-799	**11.60**
12mm	3.03	0.86	0.69	1.81	D016212	866-317	**12.95**	D015712	866-800	**11.53**
13mm	3.03	0.86	0.74	1.81	D016213	866-318	**12.95**	D015713	866-801	**11.53**
14mm	3.03	0.86	0.8	1.81	D016214	866-319	**12.95**	D015714	866-802	**11.30**
15mm	3.03	0.86	0.83	1.81	D016215	866-320	**12.95**	D015715	866-803	**11.53**
16mm	3.03	0.86	0.86	-	D016216	866-321	**12.95**	D015716	866-804	**11.53**
17mm	3.03	0.94	0.94	-	D016217	866-322	**13.00**	D015717	866-805	**12.31**
18mm	3.03	1.02	1.02	-	D016218	866-323	**13.80**	D015718	866-806	**13.33**
19mm	3.03	1.02	1.02	-	D016219	866-324	**13.86**	D015719	866-807	**13.33**
20mm	3.03	1.09	1.09	-	D016220	866-325	**14.77**	D015720	866-808	**13.80**
21mm	3.03	1.09	1.09	-	D016221	866-326	**15.80**	D015721	866-809	**13.33**
22mm	3.03	1.17	1.17	-	D016222	866-327	**17.51**	D015722	866-810	**14.58**
23mm	3.03	1.25	1.25	-	D016223	866-328	**18.54**	D015723	866-811	**15.45**
24mm	3.03	1.25	1.25	-	D016224	866-329	**18.54**	D015724	866-812	**15.45**
25mm	3.03	1.33	1.33	-	D016225	866-330	**22.46**	D015725	866-813	**19.44**
26mm	3.03	1.33	1.33	-	D016226	866-331	**22.81**	D015726	866-814	**18.67**
27mm	3.03	1.41	1.41	-	D016227	866-332	**23.38**	D015727	866-815	**18.74**
28mm	3.03	1.49	1.49	-	D016228	866-333	**25.48**			
29mm	3.03	1.49	1.49	-	D016229	866-334	**25.48**			
30mm	3.03	1.57	1.57	-	D016230	866-335	**26.19**			
31mm	3.03	1.57	1.57	-	D016231	866-336	**27.17**			
32mm	3.03	1.65	1.65	-	D016232	866-337	**27.17**			

Dynamic

Sockets & Attachments 1/2" Drive, cont'd

SAE Standard Impact Sockets

• Meets ANSI standards



Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
3/8"	1.50	0.86	0.67	0.35	D014312	866-256	**8.29**
7/16"	1.50	0.86	0.71	0.35	D014314	866-257	**8.29**
1/2"	1.50	0.86	0.79	0.35	D014316	866-258	**8.53**
9/16"	1.50	0.94	0.87	0.35	D014318	866-259	**8.53**
5/8"	1.50	0.94	0.94	-	D014320	866-260	**8.58**
11/16"	1.50	1.02	1.02	-	D014322	866-261	**9.54**
3/4"	1.57	1.09	1.09	-	D014324	866-262	**9.54**
13/16"	1.57	1.17	1.17	-	D014326	866-263	**10.48**
7/8"	1.65	1.25	1.25	-	D014328	866-264	**11.72**
15/16"	1.73	1.33	1.33	-	D014330	866-265	**13.14**
1"	1.73	1.41	1.41	-	D014332	866-266	**13.56**
1-1/16"	1.81	1.49	1.49	-	D014334	866-267	**19.07**
1-1/8"	1.81	1.50	1.57	0.55	D014336	866-268	**19.84**
1-3/16"	1.81	1.50	1.65	0.55	D014338	866-269	**20.13**
1-1/4"	1.81	1.50	1.72	0.55	D014340	866-270	**21.26**
1-5/16"	1.81	1.50	1.76	0.63	D014342	866-271	**21.43**
1-3/8"	1.97	1.50	1.88	0.63	D014344	866-272	**21.66**
1-7/16"	1.97	1.50	1.96	0.63	D014346	865-818	**21.91**
1-1/2"	1.97	1.50	2.04	0.63	D014348	866-816	**22.49**

Metric Standard Impact Sockets

• Meets ANSI standards



Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
8mm	1.50	0.86	0.55	0.35	D014008	866-817	**7.70**
9mm	1.50	0.86	0.59	0.35	D014009	866-818	**7.94**
10mm	1.50	0.86	0.67	0.35	D014010	866-819	**8.29**
11mm	1.50	0.86	0.71	0.35	D014011	866-820	**8.29**
12mm	1.50	0.86	0.75	0.35	D014012	866-821	**8.53**
13mm	1.50	0.86	0.79	0.35	D014013	866-822	**8.53**
14mm	1.50	0.94	0.87	0.35	D014014	866-823	**8.53**
15mm	1.50	0.94	0.94	-	D014015	866-824	**9.18**
16mm	1.50	0.94	0.94	-	D014016	866-825	**9.18**
17mm	1.50	1.02	1.02	-	D014017	866-826	**9.18**
18mm	1.50	1.02	1.02	-	D014018	866-827	**9.47**
19mm	1.57	1.09	1.09	-	D014019	866-828	**9.47**
20mm	1.57	1.17	1.17	-	D014020	866-829	**10.84**
21mm	1.57	1.17	1.17	-	D014021	866-830	**11.43**
22mm	1.65	1.25	1.25	-	D014022	866-831	**11.43**
23mm	1.65	1.25	1.25	-	D014023	866-832	**12.85**
24mm	1.73	1.33	1.33	-	D014024	866-833	**13.02**
25mm	1.73	1.37	1.37	-	D014025	866-834	**13.37**
26mm	1.73	1.41	1.41	-	D014026	866-835	**13.98**
27mm	1.81	1.49	1.49	-	D014027	866-836	**14.98**
28mm	1.81	1.50	1.57	0.55	D014028	866-837	**17.18**
29mm	1.81	1.50	1.57	0.55	D014029	866-838	**18.66**
30mm	1.81	1.50	1.65	0.55	D014030	866-839	**18.66**
31mm	1.81	1.50	1.65	0.55	D014031	866-840	**20.13**
32mm	1.81	1.50	1.72	0.55	D014032	866-841	**21.26**
36mm	1.97	1.50	1.96	0.63	D014036	866-845	**21.55**

SAE Deep Impact Sockets

• Meets ANSI standards



Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
3/8"	3.07	0.86	0.67	0.63	D014512	866-275	**13.26**
7/16"	3.07	0.86	0.71	0.63	D014514	866-276	**13.56**
1/2"	3.07	0.94	0.79	0.63	D014516	866-277	**13.98**
9/16"	3.07	0.94	0.88	0.63	D014518	866-278	**14.46**
5/8"	3.07	0.94	0.94	-	D014520	866-279	**14.81**
11/16"	3.07	1.02	1.02	-	D014522	866-280	**15.40**
3/4"	3.07	1.09	1.09	-	D014524	866-281	**16.29**
13/16"	3.07	1.17	1.17	-	D014526	866-282	**16.87**
7/8"	3.07	1.25	1.25	-	D014528	866-283	**17.47**
15/16"	3.07	1.33	1.33	-	D014530	866-284	**19.25**
1"	3.07	1.41	1.41	-	D014532	866-285	**20.79**
1-1/16"	3.07	1.49	1.49	-	D014534	866-286	**27.78**
1-1/8"	3.07	1.50	1.57	0.55	D014536	866-287	**30.15**
1-3/16"	3.07	1.50	1.65	0.55	D014538	866-288	**30.90**
1-1/4"	3.07	1.50	1.72	0.55	D014540	866-289	**31.85**
1-5/16"	3.07	1.50	1.76	0.63	D014542	866-290	**32.34**
1-3/8"	3.07	1.50	1.88	0.63	D014544	866-291	**32.57**

Metric Deep Impact Sockets

• Meets ANSI standards



Size	O.A.L. (in)	Drive End (in)	Hex End (in)	Taper Length (in)	Dynamic EDP	Code No.	Price $
8mm	3.07	0.86	0.55	0.63	D014208	866-846	**13.02**
9mm	3.07	0.86	0.59	0.63	D014209	866-847	**13.02**
10mm	3.07	0.86	0.67	0.63	D014210	866-848	**13.51**
11mm	3.07	0.86	0.71	0.63	D014211	866-849	**13.51**
12mm	3.07	0.86	0.75	0.63	D014212	866-850	**13.98**
13mm	3.07	0.94	0.79	0.63	D014213	866-851	**13.98**
14mm	3.07	0.94	0.87	0.63	D014214	866-852	**14.46**
15mm	3.07	0.94	0.94	-	D014215	866-853	**14.81**
16mm	3.07	0.94	0.94	-	D014216	866-854	**15.04**
17mm	3.07	1.02	1.02	-	D014217	866-855	**15.34**
18mm	3.07	1.02	1.02	-	D014218	866-856	**15.46**
19mm	3.07	1.09	1.09	-	D014219	866-857	**15.57**
20mm	3.07	1.17	1.17	-	D014220	866-858	**16.58**
21mm	3.07	1.17	1.17	-	D014221	866-859	**17.93**
22mm	3.07	1.25	1.25	-	D014222	866-860	**18.19**
23mm	3.07	1.25	1.25	-	D014223	866-861	**18.36**
24mm	3.07	1.33	1.33	-	D014224	866-862	**18.66**
27mm	3.07	1.49	1.49	-	D014227	866-863	**18.95**
30mm	3.07	1.50	1.65	0.55	D014230	866-864	**19.30**
36mm	3.07	1.50	1.96	0.63	D014236	866-865	**19.54**

Dynamic

Sockets & Attachments 1/2" Drive, cont'd

SAE Hex Head Sockets - Standard Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
1/4"	2.44	0.94	0.86	D013058	866-219	**14.10**
5/16"	2.44	0.94	0.86	D013060	866-220	**14.10**
3/8"	2.44	0.94	0.86	D013062	866-221	**14.10**
7/16"	2.44	0.94	0.94	D013064	866-222	**14.10**
1/2"	2.44	0.94	0.94	D013066	866-223	**14.10**
9/16"	2.44	0.94	0.94	D013068	866-224	**14.10**
5/8"	2.44	0.94	1.02	D013070	866-225	**14.10**
3/4"	2.44	0.94	1.02	D013074	866-226	**14.10**

Metric Hex Head Sockets - Standard Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
6mm	2.44	0.94	0.86	D013006	866-212	**14.10**
8mm	2.44	0.94	0.86	D013008	866-213	**14.10**
10mm	2.44	0.94	0.86	D013010	866-214	**14.10**
12mm	2.44	0.94	0.94	D013012	866-215	**14.10**
14mm	2.44	0.94	0.94	D013014	866-216	**14.10**
17mm	2.44	0.94	1.02	D013017	866-217	**14.10**
19mm	2.44	0.94	1.02	D013019	866-218	**14.10**

SAE Hex Head Sockets - Long Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
1/4"	3.94	2.44	0.86	D013458	866-241	**16.88**
5/16"	3.94	2.44	0.86	D013460	866-242	**16.88**
3/8"	3.94	2.44	0.86	D013462	866-243	**16.88**
7/16"	3.94	2.44	0.94	D013464	866-244	**16.88**
1/2"	3.94	2.44	0.94	D013466	866-245	**16.88**
9/16"	3.94	2.44	0.94	D013468	866-246	**16.88**
5/8"	3.94	2.44	1.02	D013470	866-247	**16.88**
3/4"	3.94	2.44	1.02	D013474	866-248	**16.88**

Metric Hex Head Sockets - Long Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
6mm	3.94	2.44	0.86	D013406	866-234	**16.88**
8mm	3.94	2.44	0.86	D013408	866-235	**16.88**
10mm	3.94	2.44	0.86	D013410	866-236	**16.88**
12mm	3.94	2.44	0.94	D013412	866-237	**16.88**
14mm	3.94	2.44	0.94	D013414	866-238	**16.88**
17mm	3.94	2.44	1.02	D013417	866-239	**16.88**
19mm	3.94	2.44	1.02	D013419	866-240	**16.88**

Torx® Head Sockets - Standard Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
T20	2.44	0.94	0.86	D013320	866-227	**14.65**
T25	2.44	0.94	0.86	D013325	866-228	**14.65**
T27	2.44	0.94	0.86	D013327	866-229	**14.65**
T30	2.44	0.94	0.86	D013330	866-230	**14.65**
T40	2.44	0.94	0.86	D013340	866-231	**14.65**
T45	2.44	0.94	0.86	D013345	866-232	**14.65**
T50	2.44	0.94	0.86	D013350	866-233	**14.65**

Torx® Head Sockets - Long Length

- Meets ANSI standards



Size	Overall Length	Bit Length	Drive End Width	Dynamic EDP	Code No.	Price $
T20	3.94	2.44	0.86	D013720	866-249	**17.44**
T25	3.94	2.44	0.86	D013725	866-250	**17.44**
T27	3.94	2.44	0.86	D013727	866-251	**17.44**
T30	3.94	2.44	0.86	D013730	866-252	**17.44**
T40	3.94	2.44	0.86	D013740	866-253	**17.44**
T45	3.94	2.44	0.86	D013745	866-254	**17.44**
T50	3.94	2.44	0.86	D013750	866-255	**17.44**

Dynamic

Sockets & Attachments 3/4" Drive

21pc 12 Point Standard SAE Set

Set contents:
- 16 Regular SAE Sockets: 7/8, 15/16, 1", 1-1/16, 1-1/8, 1-3/16, 1-1/14, 1-5/16, 1-3/8, 1-7/16, 1-5/8, 1-3/4, 1-13/16, 1-7/8, 2"
- 3 Extensions: 4", 8", 16"
- Flex handle
- 24 tooth ratchet
- Blow mold case





Description	Dynamic EDP	Code No.	Price $
21pc 12 Point Standard SAE Set	D023000	866-866	**604.63**

20pc 12 Point Standard Metric Set

Set contents:
- 15 Regular Metric Sockets: 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 35, 36mm
- 3 Extensions: 4", 8", 16"
- Flex handle
- 24 tooth ratchet
- Blow mold case





Description	Dynamic EDP	Code No.	Price $
20pc 12 Point Standard SAE Set	D023001	866-867	**598.46**

Ratchet - Chrome Handle



Length	No. of Teeth	Dynamic EDP	Code No.	Price $
19.69"	24	D019301	866-868	**179.04**

Dynamic

14pc SAE Combination Wrench Set

Set contents:
- 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1", 1-1/16", 1-1/8", 1-1/4"
- Canvas roll





Description	Dynamic EDP	Code No.	Price $
14pc SAE Combination Wrench Set	D074201	865-897	**263.16**

19pc Metric Combination Wrench Set

Set contents:
- 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24mm
- Canvas roll





Description	Dynamic EDP	Code No.	Price $
19pc Metric Combination Wrench Set	D074203	865-898	**238.78**

12pc SAE Combination Wrench Set - Contractor Series

Set contents:
- 1/4, 5/16, 3/8", 7/16", 1/2", 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16"
- Satin Finish
- Canvas roll





Contractor Series - A superior alternative to raised panel wrenches



Description	Dynamic EDP	Code No.	Price $
12pc SAE Contractor Combination Wrench Set	D074222	866-869	**96.47**

16pc SAE Combination Wrench Set - Contractor Series

Set contents:
- 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", 1-1/16, 1-1/8, 1-1/4
- Satin Finish
- Canvas roll





Contractor Series - A superior alternative to raised panel wrenches



Description	Dynamic EDP	Code No.	Price $
16pc SAE Contractor Combination Wrench Set	D074221	865-827	**175.01**

Dynamic

19pc Metric Contractor Combination Wrench Set

Set contents:
- 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24mm
- Satin Finish
- Canvas roll





Contractor Series - A superior alternative to raised panel wrenches



Description	Dynamic EDP	Code No.	Price $
19pc Metric Contractor Combination Wrench Set	D074223	865-983	176.32

Combination Wrenches

- Mirror chrome finish
- Meets ANSI standards



Inch

Size	O.A.L. (in)	Head Width (in)	Head Thickness (in)	Box Width (in)	Box Thickness (in)	Dynamic EDP	Code No.	Price $
1/4"	5.04	0.54	0.17	0.41	0.18	D074008	866-870	7.29
5/16"	5.83	0.74	0.19	0.5	0.22	D074010	866-871	8.44
3/8"	6.06	0.81	0.23	0.61	0.32	D074012	866-872	9.26
7/16"	6.57	0.91	0.27	0.7	0.33	D074014	866-026	10.42
1/2"	7.01	1.04	0.28	0.8	0.35	D074016	866-025	11.84
9/16"	7.48	1.14	0.3	0.87	0.38	D074018	866-022	13.28
5/8"	8.07	1.28	0.33	0.96	0.42	D074020	866-873	14.81
11/16"	8.86	1.43	0.35	1.05	0.43	D074022	866-874	16.56
3/4"	9.76	1.52	0.36	1.11	0.44	D074024	866-024	19.52
13/16"	10.63	1.67	0.39	1.2	0.49	D074026	866-875	21.60
7/8"	11.5	1.83	0.41	1.31	0.51	D074028	866-876	24.78
15/16"	12.36	1.91	0.43	1.39	0.55	D074030	866-877	27.85
1"	13.23	1.98	0.45	1.44	0.57	D074032	866-582	30.65
1-1/16"	14.13	2.11	0.48	1.51	0.61	D074034	866-878	36.40
1-1/8"	15.35	2.25	0.51	1.7	0.62	D074036	866-023	44.52
1-1/4"	16.73	2.44	0.51	1.78	0.65	D074040	866-583	49.19

Metric

Size	O.A.L. (in)	Head Width (in)	Head Thickness (in)	Box Width (in)	Box Thickness (in)	Dynamic EDP	Code No.	Price $
6mm	5.04	0.54	0.17	0.41	0.18	D074106	866-879	6.69
7mm	5.43	0.60	0.18	0.46	0.20	D074107	866-880	6.91
8mm	5.83	0.74	0.19	0.50	0.22	D074108	866-881	7.62
9mm	6.06	0.81	0.23	0.61	0.32	D074109	866-882	8.44
10mm	6.38	0.85	0.24	0.57	0.33	D074110	866-033	8.73
11mm	6.57	0.91	0.27	0.70	0.33	D074111	866-883	9.38
12mm	6.85	1.01	0.27	0.72	0.31	D074112	866-884	9.81
13mm	7.01	1.04	0.28	0.80	0.35	D074113	866-885	10.26
14mm	7.48	1.14	0.30	0.87	0.38	D074114	866-886	11.46
15mm	8.07	1.28	0.33	0.96	0.42	D074115	866-887	13.21
16mm	8.07	1.28	0.33	0.96	0.42	D074116	866-888	14.86
17mm	8.86	1.43	0.35	1.05	0.43	D074117	866-584	16.46
18mm	9.76	1.52	0.36	1.11	0.44	D074118	866-889	18.80
19mm	9.76	1.52	0.36	1.11	0.44	D074119	866-585	20.29
20mm	10.63	1.67	0.39	1.20	0.49	D074120	866-890	21.60
21mm	10.63	1.67	0.39	1.20	0.49	D074121	866-891	23.14
22mm	11.50	1.83	0.41	1.31	0.51	D074122	866-892	24.01
23mm	12.36	1.91	0.43	1.39	0.55	D074123	866-893	27.20
24mm	12.36	1.91	0.43	1.39	0.55	D074124	866-894	27.36
25mm	13.23	1.98	0.45	1.44	0.57	D074125	866-586	27.96
26mm	13.23	1.98	0.45	1.44	0.57	D074126	866-895	28.63
27mm	14.13	2.11	0.48	1.51	0.61	D074127	866-896	32.89
28mm	15.35	2.25	0.51	1.70	0.62	D074128	866-897	37.50
29mm	15.35	2.25	0.51	1.70	0.62	D074129	866-898	38.49
30mm	15.35	2.25	0.51	1.70	0.62	D074130	866-587	40.02
32mm	16.73	2.44	0.51	1.78	0.65	D074132	866-900	46.17

Dynamic

Combination Wrenches - Contractor Series

- Satin finish
- Meets ANSI standards





Contractor Series - A superior alternative to raised panel wrenches

Inch

Size	O.A.L. (in)	Head Width (in)	Head Thickness (in)	Box Width (in)	Box Thickness (in)	Dynamic EDP	Code No.	Price $
1/4"	5.08	0.60	0.17	0.42	0.23	D074308	866-464	5.94
5/16"	5.59	0.73	0.19	0.51	0.26	D074310	866-465	5.94
3/8"	6.34	0.82	0.20	0.61	0.29	D074312	866-466	6.44
7/16"	6.61	0.91	0.23	0.68	0.31	D074314	866-467	6.86
1/2"	7.09	1.04	0.25	0.76	0.34	D074316	866-468	7.60
9/16"	7.60	1.06	0.25	0.79	0.34	D074318	866-469	8.75
5/8"	8.15	1.29	0.31	0.91	0.36	D074320	866-470	10.19
11/16"	8.94	1.35	0.31	0.96	0.41	D074322	866-471	11.41
3/4"	9.84	1.54	0.37	1.09	0.45	D074324	866-472	13.54
13/16"	10.67	1.71	0.39	1.21	0.50	D074326	866-473	14.92
7/8"	11.61	1.80	0.40	1.29	0.53	D074328	866-474	19.01
15/16"	12.48	1.95	0.41	1.36	0.56	D074330	866-475	22.57
1"	13.35	2.03	0.45	1.44	0.59	D074332	866-476	26.20
1-1/16"	14.25	2.18	0.48	1.52	0.62	D074334	866-477	30.17
1-1/8"	15.51	2.30	0.50	1.67	0.65	D074336	866-478	33.74
1-1/4"	16.89	2.56	0.53	1.80	0.71	D074340	866-479	40.08
1-5/16"	18.54	2.80	0.61	1.95	0.75	D074342	866-480	43.37
1-3/8"	18.54	2.80	0.61	1.95	0.75	D074344	866-481	48.36
1-7/16"	20.08	2.99	0.65	2.17	0.83	D074346	866-482	54.41
1-1/2"	20.08	2.99	0.65	2.17	0.83	D074348	866-483	55.30
1-5/8"	21.65	3.27	0.69	2.36	0.75	D074350	866-901	84.84
1-11/16"	21.65	3.27	0.69	2.36	0.75	D074352	866-902	86.52
1-3/4"	24.13	3.39	0.81	2.40	0.75	D074354	866-903	87.78
1-13/16"	24.13	3.39	0.81	2.40	0.75	D074356	866-904	94.50
1-7/8"	25.63	3.78	0.94	2.87	0.75	D074358	866-905	110.49
2"	25.63	3.78	0.94	2.87	0.75	D074360	866-906	123.33
2-1/8"	28.50	4.45	1.22	3.23	0.92	D074362	866-907	244.62
2-1/4"	28.50	4.45	1.22	3.23	0.92	D074364	866-908	272.04
2-3/8"	29.25	4.69	1.28	3.68	1.00	D074366	866-909	292.81
2-1/2"	29.25	4.69	1.28	3.68	1.00	D074368	866-910	302.40

Metric

Size	O.A.L. (in)	Head Width (in)	Head Thickness (in)	Box Width (in)	Box Thickness (in)	Dynamic EDP	Code No.	Price $
6mm	5.08	0.60	0.17	0.42	0.23	D074406	866-484	5.00
7mm	5.31	0.64	0.18	0.46	0.24	D074407	866-485	5.06
8mm	5.59	0.73	0.19	0.51	0.26	D074408	866-486	5.83
9mm	6.10	0.76	0.19	0.54	0.26	D074409	866-487	6.52
10mm	6.34	0.82	0.20	0.61	0.29	D074410	866-488	6.75
11mm	6.61	0.91	0.23	0.68	0.31	D074411	866-489	7.14
12mm	6.85	0.94	0.23	0.70	0.32	D074412	866-490	7.48
13mm	7.09	1.04	0.25	0.76	0.34	D074413	866-491	8.25
14mm	7.60	1.06	0.25	0.79	0.34	D074414	866-492	8.75
15mm	7.87	1.21	0.28	0.89	0.35	D074415	866-493	9.50
16mm	8.15	1.29	0.31	0.91	0.36	D074416	866-494	11.24
17mm	8.94	1.35	0.31	0.96	0.41	D074417	866-495	12.04
18mm	9.41	1.48	0.34	1.05	0.44	D074418	866-496	13.43
19mm	9.84	1.54	0.37	1.09	0.45	D074419	866-497	14.16
20mm	10.20	1.60	0.37	1.13	0.47	D074420	866-498	14.81
21mm	10.67	1.71	0.39	1.21	0.50	D074421	866-499	16.18
22mm	11.61	1.80	0.40	1.29	0.53	D074422	866-500	18.84
23mm	12.48	1.95	0.41	1.36	0.56	D074423	866-501	20.38
24mm	12.48	1.95	0.41	1.36	0.56	D074424	866-502	22.41
25mm	13.35	2.03	0.45	1.44	0.59	D074425	866-503	25.84
26mm	13.35	2.03	0.45	1.44	0.59	D074426	866-504	25.85
27mm	14.25	2.18	0.48	1.52	0.62	D074427	866-505	31.09
28mm	15.51	2.30	0.50	1.67	0.65	D074428	866-506	34.54
29mm	15.51	2.30	0.50	1.67	0.65	D074429	866-507	34.54
30mm	15.51	2.30	0.50	1.67	0.65	D074430	866-508	34.54
32mm	16.89	2.56	0.53	1.80	0.71	D074432	866-509	39.79

Dynamic

Adjustable Wrenches

- Drop forged
- Meets ANSI standards



Size	Max Jaw Opening	Dynamic EDP	Code No.	Price $
4"	0.6	D072004	866-457	**14.91**
6"	0.8	D072006	866-458	**15.88**
8"	1.0	D072008	866-031	**21.03**
10"	1.2	D072010	865-899	**27.23**
12"	1.4	D072012	866-111	**37.64**
15"	1.7	D072015	866-058	**59.89**
18"	2.1	D072018	866-463	**103.17**

Aluminum Pipe Wrenches

- Meets ANSI standards



Size	Max Jaw Opening	Dynamic EDP	Code No.	Price $
14"	2	D080014	866-034	**75.52**
18"	2.5	D080018	866-911	**79.38**
24"	3	D080024	866-912	**125.73**
36"	5	D080036	866-027	**248.35**
48"	6	D080048	866-913	**396.95**

Torque Wrenches

- Each torque wrench is factory calibrated within tolerance limits of ±4% clockwise
- Factory certificate of calibration included
- Quick release mechanism makes socket removal easy
- Lock ring prevents accidental change of torque setting
- Durable aluminum handle features an easy to grip diamond knurl surface
- Dual scale SAE/Metric
- Blow molded plastic case for convenient storage
- Increments: 1lb / 1.4Nm
- 32 teeth
- Fixed head style



Square Drive	Capacity ft.lb	Capacity Nm	Length	Dynamic EDP	Code No.	Price $
3/8"	20-100	33.9-128.8	17"	D086001	866-914	**231.20**
1/2"	30-250	48-332	24"	D086002	866-915	**319.92**

Dynamic

Torque Multiplier - 1/2"F - 3/4"M

- Maximum Input Torque: 220ft.lb. / 300Nm
- Maximum Output Torque: 1100ft.lb. / 1500Nm
- Accuracy: ±5%
- Includes blow mold case
- No Anti-Backlash



Input Drive	Output Drive	Torque Ratio	Length	Dynamic EDP	Code No.	Price $
1/2"F	3/4"M	5:1	6.37"	D086101	866-916	**1,143.58**

Torque Multiplier - 1/2"F - 1"M

- Maximum Input Torque: 126ft.lb / 173Nm
- Maximum Output Torque: 3300ft.lb. / 4500Nm
- Accuracy: ±5%
- Includes blow mold case
- With Anti-Backlash



Input Drive	Output Drive	Torque Ratio	Length	Dynamic EDP	Code No.	Price $
1/2"F	1"M	26:1	9.25"	D086102	866-917	**3,333.91**

5pc Plier Set - Comfort Handle

Set contents:
- 8" Linesman Pliers
- 7" Diagonal Cutting Pliers
- 8" Long Nose Pliers
- 8" Bent Nose Pliers
- 8" Slip Joint Pliers
- Plastic Tray



Description	Dynamic EDP	Code No.	Price $
5pc Plier Set	D055201	865-961	**47.26**

Diagonal Cutting Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
6"	1.00	0.43	D055038	866-918	**15.11**
7"	1.00	0.43	D055000	865-886	**21.44**
7"	1.00	0.43	D055500**	866-919	**32.89**

** High leverage design

Long Nose Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
6"	1.93	0.35	D055001	865-979	**15.11**
8"	2.99	0.37	D055002	866-381	**18.39**
8"	2.60	0.37	D055502**	866-920	**35.75**
11"	3.23	0.39	D055003	866-921	**24.36**

** High leverage design

Bent Nose Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
6"	1.73	0.35	D055004	866-547	**16.61**
8"	2.85	0.37	D055005	866-382	**20.29**
11"	2.80	0.39	D055006	866-922	**23.58**

Linesman Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
7"	1.50	0.39	D055013	866-923	**18.16**
8"	1.61	0.43	D055014	866-386	**23.51**
8"	1.61	0.43	D055514**	866-924	**35.75**

** High leverage design

Slip Joint Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
6"	1.59	0.39	D055007	866-925	**14.99**
8"	2.05	0.41	D055008	866-383	**19.13**
10"	2.24	0.46	D055009	866-926	**23.51**

Groove Joint Pliers - Comfort Handle

- Meets ANSI standards



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
7-1/2"	1.69	0.39	D055010	865-890	**18.39**
9-1/2"	2.03	0.44	D055011	865-891	**20.11**
12"	2.50	0.47	D055012	865-885	**28.64**

Wire Stripper/Cutter - Comfort Handle

- Meets ANSI standards
- Strips 8-20 AWG solid wire and 10-22 AWG stranded wire
- Serrated jaws to pull, bend, and loop wire

Warning: Handles are not insulated and not designed to protect the user against electrical shock



O.A.L.	Jaw Length	Jaw Thickness	Dynamic EDP	Code No.	Price $
6”	0.79”	0.43	D095001	866-516	**25.83**

Locking Pliers - Curved Jaws

- The narrow, large opening curved jaws provide firm grip on all round shapes



O.A.L.	Jaw Opening	Dynamic EDP	Code No.	Price $
7”	1.50”	D055304	866-579	**18.91**
10”	1.88”	D055305	866-388	**19.76**

Locking Pliers - Curved Jaws With Wire Cutter

- The functionality of regular curved jaws with the added convenience of a wire cutter



O.A.L.	Jaw Opening	Dynamic EDP	Code No.	Price $
7”	1.50”	D055302	866-105	**20.19**
10”	1.88”	D055303	866-387	**21.61**













CABINETS & CHESTS

Machinists' & Mechanics' Chests	N2
Chest Bases	N2-3
Top Chests	N3-4
Chest Riser	N4
Heavy Duty Workstation	N4
Roller Cabinets	N5-10
Utility Carts	N10
Tool Boxes	N10-11
Parts Cabinets	N12
End Mill Dispenser Cabinets	N12
Drill Dispenser Cabinets	N12

SOWA
METALWORKING SOLUTIONS

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KENNEDY

Machinists' Chest - Model 520

7 Drawer – Drawers and top compartment felt lined. Front panel covers drawers, stores in base. Has top carry handle.
- 6 drawer dividers



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
20-1/8	8-1/2	13-5/8	28	Brown	609-601	**432.30**

Machinists' Chest - Model 526

8 Drawer – Felt lined drawers and tool compartment. Self storing drop front panel and rugged side handles
- 6 drawer dividers



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-3/4	8-1/2	13-5/8	36	Brown	609-602	**547.30**

Machinists' Chest - Model 52611

11 Drawer – Drawers and top compartment felt lined. Front panel covers drawers.
- 3 drawer dividers
- Side handles



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-3/4	8-1/2	18	47	Brown	609-615	**688.20**

Machinists' Chest - Model 3611

11 Drawer – Drawers and top compartment wool felt lined. Unlined handbook drawer locks separately. Felt covered bottom glides protect drop front panel from scratches.
- Chrome side handles
- 6 adjustable drawer dividers
- Wrinkle finish



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-1/8	12	18-7/8	69	Brown	609-830	**1,181.20**

Machinists' Chest - Model 620

3 Drawer – Drawers and top compartment wool felt lined. Front panel conceals, locks drawers.
- Top carry handle
- Includes 4 adjustable drawer dividers



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
20-1/8	8-1/2	13-5/8	25	Brown	609-603	**355.60**

KENNEDY

Mechanics' Chest - Model 263

3 Drawer
- Fits on 27" and 29" wide Roller Cabinets
- Lift-out tote tray with socket set divider included
- Friction drawer slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-1/8	12-1/8	14-3/4	44	Red	609-112	**572.90**

Mechanics' Chest - Model 266

6 Drawer
- Fits on 27" and 29" wide Roller Cabinets
- Lift-out tote tray with socket set divider included
- Friction drawer slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-1/8	12-1/8	14-3/4	52	Red	609-113	**688.20**

Mechanics' Chest - Model 360

10 Drawer
- Fits on 27" and 29" wide Roller Cabinets
- Lift-out tote tray with socket set divider included
- Friction drawer slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-1/8	12-1/8	18-7/8	68	Brown	609-635	**980.20**

Chest Base - Model 5150

2 Drawer
- Fits under models 526, 52611, and 3611 machinists' chests



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-3/4	12-1/2	9-1/2	28	Brown	609-114	**268.60**

KENNEDY

Chest Bases - Models MC-22 & MC-28

2 Drawer Chest Base MC-22 – Fits under model 520 and 620 machinists' chests.
- Also fits any 27" or 29" roller cabinet
- Has wool felt lined top drawer and side handles



609-604

2 Drawer Chest Base MC-28 – Fits under model 526 and 52611 machinists' chests.
- Also fits any 27" or 29" roller cabinet
- Has wool felt lined top drawer and side handles



609-605

Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
21-5/8	9-5/8	7-13/16	20	Brown	609-604	**248.20**
28-1/8	9-5/8	7-13/16	23	Brown	609-605	**268.60**

GRAY TOOLS

26" PRO+ Top Chest - 6 Drawer

PRO+ Series
6 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	16"	16.3"	72	93106	866-613	**583.93**

26" PRO+ Top Chest - 9 Drawer

PRO+ Series
9 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	21"	106	93109	866-612	**745.25**

26" PRO+ Top Chest - 12 Drawer

PRO+ Series
12 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	21"	120	93120	861-746	**880.32**

GRAY TOOLS

42" PRO+ Top Chest - 9 Drawer

PRO+ Series
9 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
42"	19"	23.5"	168	93119	861-747	**1,300.79**

26" PRO+ Intermediate Chest - 3 Drawer

PRO+ Series
3 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	13.6"	55	93503	861-748	**432.89**

26" Top Chest - 6 Drawer

Marquis Series
6 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	16"	19"	86	99806SB	865-031	**712.24**

26" Top Chest - 8 Drawer

Marquis Series
8 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	16"	19-1/4"	94	99808SB	865-208	**840.79**

33-1/2" Top Chest - 5 Drawer

Marquis Series
5 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
33-1/2"	19-1/8"	19-1/4"	127	99105SB	865-043	**1,262.09**

GRAY TOOLS

41-1/2" Top Chest - 7 Drawer

Marquis Series
7 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
41-1/2"	18-1/2"	23-3/4"	182	99107SB	865-488	**1,548.68**

41-1/2" Top Chest - 8 Drawer

Marquis Series
8 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
41-1/2"	18-1/2"	20-1/2"	155	99108SB	865-041	**1,604.16**

53-3/8" Top Chest - 8 Drawer

Marquis Series
8 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
53-3/8"	24"	19-3/4"	264	99508SB	861-745	**2,968.80**

Dynamic

28" Top Chest - 8 Drawers

8 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
28"	18"	20"	99	D069202	866-092	**658.39**

Dynamic

28" Top Chest - 9 Drawers

9 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
28"	18"	20"	103	D069208	866-626	**714.92**

42" Top Chest - 8 Drawers

8 Drawer
- Includes lock & key, and drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
42"	18"	18"	129	D069204	866-089	**801.46**

KENNEDY

Chest Riser - Model 2600

Add storage and work surface to your roller cabinet. Use with 263, 266 and 360 chests, or 2602, 2603 and 2604 chest bases



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
26-5/8	12-1/2	11-3/4	9	Brown	609-645	**117.40**

Kennedy Heavy Duty Workstations

- Unassembled
- Adjustable feet
- Tough durable grey wrinkle finish
- 5 drawer models have two shelves on the left hand side

54" Model
- Dimensions: 54"W x 20"D x 34-1/2"H
- Drawers: 16-9/16"W x 16-1/2"D x 3-3/16"H



Description	Weight (lb)	Code No.	Price $
54" work station with steel top 5 drawer	159	609-840	**865.80**
54" work station with steel top 10 drawer	216	609-842	**1,759.90**

KENNEDY

Roller Cabinet - Model 175C

5 Drawer
- Black wrinkle finish



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
27	18	35	113	Black	609-115	**751.60**

Roller Cabinet - Model 21040

5 Drawer – Top drawer activates locking mechanism.
- Includes side handle, four 3" swivel casters, cylinder lock, 2 keys
- Ball Bearing Slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
21"	13-5/8	32-13/16	70	Brown	609-664	**895.10**

Roller Cabinet - Model 273

3 Drawer – Swing down panel conceals, locks bottom compartment
- Includes side handle, four 5" casters, cylinder lock, 2 keys



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
27	18	35	99	Brown	609-665	**895.50**

Roller Cabinets - Models 275(X) & 295(X)

5 Drawer – Swing down panel conceals, locks bottom compartment.
- Includes side handle, four 5" casters, cylinder lock, 2 keys
- Brown wrinkle finish
- Models 275 & 295 have Friction Drawer Slides
- Models 275X & 295X have Ball-Bearing Drawer Slides



Model	Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Code No.	Price $
275	27	18	35	110	609-670	**1,069.00**
275X	27	18	35	115	609-116	**1,105.10**
295	29	20	35	128	609-685	**1,176.30**
295X	29	20	35	133	609-117	**1,202.80**

KENNEDY

Roller Cabinets - Models 277(X) & 297(X)

7 Drawer – Swing down panel conceals, locks bottom compartment.
- Includes side handle, four 5" casters, cylinder lock, 2 keys
- Brown wrinkle finish
- Models 277 & 297 have Friction Drawer Slides
- Models 277X & 297X have Ball-Bearing Drawer Slides



Model	Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Code No.	Price $
277	27	18	35	127	609-675	**1,241.60**
277X	27	18	35	134	609-118	**1,324.80**
297	29	20	35	146	609-690	**1,307.40**
297X	29	20	35	153	609-119	**1,382.50**

Roller Cabinet - Model 310X

10 Drawer
- 5" x 2" Roller Bearing Casters hold up to 350lbs each
- High security tubular locking system
- Ball-Bearing drawer slides
- Tubular push handle included



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
39-3/8	18	34	180	Brown	609-120	**1,839.20**

Roller Cabinet - Model 315X

15 Drawer
- 5" x 2" Roller Bearing Casters hold up to 350lbs each
- High security tubular locking system
- Ball-Bearing drawer slides
- Tubular push handle included



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
39-3/8	18	39	230	Red	609-121	**2,244.40**

Roller Cabinet - Model 376X

6 Drawer – Just the cabinet to fill the needs of those who want workbench height and plenty of tool storage space.
- Four 5" casters, side handle
- Swing down panel conceals storage compartment
- Ball bearing slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
27	18	39	131	Red	609-695	**1,291.90**

KENNEDY

Roller Cabinet - Model 378XB

8 Drawer – Top drawer activates locking mechanism.
- Includes side handle, four 5" swivel casters, cylinder lock, 2 keys
- Ball bearing slides



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
27	18	39	146	Brown	609-699	**1,408.10**

Roller Cabinet - Model 4804

4 Drawer – Pad-lockable doors protect 4 drawer cabinet and interior shelves.



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
48	26	35-7/8	345	Brown	609-702	**3,696.10**

Roller Cabinet - Model 6012E

12 Drawer – With ball bearing slides on all drawers.



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
60-7/8	32	35-7/8	510	Brown	609-703	**5,921.50**

Roller Cabinet - Model 6012S

12 Drawer – With ball bearing slides on all drawers.



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
60-7/8	32	35-7/8	500	Brown	609-701	**5,844.80**

Roller Cabinet - Model 2907MP

7 Drawer
- Heavy duty, non-slip drawer liners & full width aluminum drawer pulls
- Large 6"x2" roller bearing heavy duty casters
- Ball bearing drawer slides
- Coated MDF work surface



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
29	20	40-1/8	198	Red	609-122	**2,408.60**

KENNEDY

Roller Cabinet - Model 10492

13 Drawer
- MDF work surface & wide top drawer for added storage
- 5"x2" roller bearing casters hold up to 350lbs each



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
39-3/8	18	39-1/8	220	Black	609-123	**2,171.60**

Roller Cabinet - Model 4400MP

10 Drawer
- Heavy duty, non-slip drawer liners & full width aluminum drawer pulls
- Large 6"x2" roller bearing heavy duty casters
- 10" center wheel axle adds strength and stability
- Ball bearing drawer slides
- Coated MDF work surface



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
43-3/4	20	37-3/4	316	Red	609-124	**3,772.80**

Roller Cabinet - Model 5300MP

12 Drawer
- Ball bearing drawer slides
- Heavy duty, non-slip drawer liners & full width aluminum drawer pulls
- Large 6"x2" roller bearing heavy duty casters
- 10" center wheel axle adds strength and stability
- Coated MDF work surface



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
53	18	41-3/4	335	Blue	609-125	**3,440.30**

Side Cabinet - Model 205X

5 Drawer
- Ball-bearing slides
- Fits models 295(X), 297(X), 4410, and 4400MP
- Hangs on either side of your roller cabinet
- Metal thickness: Body -18 ga., Drawers - 20 ga.



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Colour	Code No.	Price $
13-5/8	20	29	102	Brown	609-126	**768.10**

KENNEDY

Replacement Lock & Key Sets

To ensure receipt of proper lock, please compare your present lock with photos below.

- Roller cabinets manufactured before July, 1986 use lock number 80843 or 80402

Standard Cylinder Lock/Key Sets



Lock & Ket Set No.	Description	Code No.	Price $
80840	Machinists' and Mechanics' Chests	609-832	**22.90**
80843	Chest Base Models MC22 and MC28	609-852	**22.90**
80844	Chest Base Models 2602, 2603, 2604, 2902, Drill, Tap and End Mill Dispensers 5101, 5103, 5302 and 27", 29" and 34" Roller Cabinets	609-834	**22.90**

Tubular Key High Security Lock Sets


80403


80401


80402

Lock & Ket Set No.	Description	Code No.	Price $
80401	Machinists' and Mechanics' Chests Replaces Standard Lock No. 80840	609-854	**37.30**
80402	Chest Base Models MC22 and MC28 Replaces Standard Lock No. 80843	609-856	**37.30**
80403	Chest Base Models 2602, 2603, 2604, 2902, Drill, Tap and End Mill Dispensers 5101, 5103, 5302 and 27", 29" and 34" Roller Cabinets Replaces Standard Lock No. 80844	609-858	**37.30**

STM

5 Drawer Roller Cabinet

- Ball bearing slides with Quick Disconnect
- Heavy duty 4"x1" casters
- Double wall construction
- Electro-powder coating to resist scratches and solvents
- 100mm top mat



Model	Dimensions (mm)	Weight (kg)	Code No.	Price $
VTC-23	570Wx345Dx650H	34	326-530	**1,282.40**

GRAY TOOLS

26" PRO+ Roller Cabinet - 4 Drawers

PRO+ Series
4 Drawer

- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	36"	116	93204	861-749	**872.21**

26" PRO+ Roller Cabinet - 5 Drawers

PRO+ Series
5 Drawer

- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	36"	120	93250	866-615	**951.35**

26" PRO+ Roller Cabinet - 7 Drawers

PRO+ Series
7 Drawer

- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	42"	155	93270	861-750	**1,078.17**

26" PRO+ Roller Cabinet - 11 Drawers

PRO+ Series
11 Drawer

- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26"	19"	42"	165	93211	866-614	**1,207.08**

42" PRO+ Roller Cabinet - 12 Drawers

PRO+ Series
12 Drawer

- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
42"	19"	43.5"	247	93212	861-647	**1,818.17**

42" PRO+ Roller Cabinet - 15 Drawers

PRO+ Series
15 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
42"	19"	43.5"	262	93215	861-677	**1,902.82**

14" PRO+ Right Side Rider - 8 Drawers

PRO+ Series
8 Drawer
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
14"	19"	36.5"	100	93508	861-751	**855.01**

19" PRO+ Right Side Rider - 8 Drawers

PRO+ Series
8 Drawer
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
19"	19"	36.5"	117	93408	861-672	**909.78**

19" PRO+ Left Side Rider - 8 Drawers

PRO+ Series
8 Drawer
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Ggray EDP	Code No.	Price $
19"	19"	36.5"	117	93418	861-678	**909.78**

26-1/2" Roller Cabinet - 4 Drawers

PRO Series
4 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26-1/2"	18"	34-1/2"	155	97204	865-005	**485.46**

26-1/2" Roller Cabinet - 11 Drawers

PRO Series
11 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26-1/2"	18"	42-1/2"	155	97211	865-003	**843.76**

26-1/2" Roller Cabinet - 7 Drawers

Marquis Series
7 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26-1/2"	18"	39-1/8"	145	99507SB	865-033	**1,129.89**

26-1/2" Roller Cabinet - 9 Drawers

Marquis Series
9 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
26-1/2"	18"	39-1/8"	150	99509SB	865-402	**1,217.23**

34" Roller Cabinet - 6 Drawers

Marquis Series
6 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
34"	19-1/2"	39-1/8"	220	99206SB	865-248	**1,593.85**

34" Roller Cabinet - 8 Drawers

Marquis Series
8 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
34"	19-1/2"	39-1/8"	235	99208SB	865-075	**2,037.99**

42" Roller Cabinet - 10 Drawers

Marquis Series
10 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
42"	19"	40"	295	99210SB	865-321	**2,918.12**

42" Roller Cabinet - 13 Drawers

Marquis Series
13 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
42"	19"	40"	305	99213SB	865-249	**2,938.14**

53-3/8" Roller Cabinet - 9 Drawers

Marquis Series
9 Drawer
- 2 swivel/brake, 2 swivel, 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
53-3/8"	24"	39-1/2"	435	99209SB	861-752	**4,514.79**

53-3/8" Roller Cabinet - 13 Drawers

Marquis Series
13 Drawer
- 2 swivel/brake, 2 swivel, 2 fixed casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
53-3/8"	24"	39-1/2"	455	99113SB	861-753	**5,109.55**

40-11/16" Roller Cabinet - 12 Drawers

XL Series
11 Drawer
- 2 swivel / 2 fixed casters
- Includes lock & key,drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
40-11/16"	18"	42-1/2"	245	92212	865-799	**2,116.89**

28" Roller Cabinet - 7 Drawers

7 Drawer
- 2 swivel / 2 fixed 5"x2" casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
28"	18"	40"	129	D069201	866-095	**784.37**

28" Roller Cabinet - 10 Drawers

10 Drawer
- 2 swivel / 2 fixed 5"x2" casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
28"	18"	43.25"	163	D069206	866-623	**951.33**

42" Roller Cabinet - 12 Drawers

12 Drawer
- 2 swivel / 2 fixed 5"x2" casters
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
42"	18"	41"	220	D069203	866-063	**1,299.74**

36" Roller Cabinet - 8 Drawers

8 Drawer
- 2 swivel / 2 fixed 5"x2" casters
- Includes lock & key, drawer liner kit and top mat
- Sides open to allow for extra storage



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
36"	18"	39.33"	195	D069207	866-627	**1,141.97**

16" Side Rider - 6 Drawers

6 Drawer
- Can be installed on the right or left
- Includes lock & key, drawer liner kit and top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
18"	18"	33.75"	77	D069205	866-090	**467.88**

52" Industrial Cart - 12 Drawers

12 Drawer
- 4 swivel / 2 fixed 5"x2" casters
- Includes lock & key, drawer liner kit and PVC top mat



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
52.5"	31.64"	40.25"	378	D069209	866-628	**2,270.63**

2 Tray Utility Cart

- 2 swivel / 2 fixed 4"x1" casters
- Optional middle tray available



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
30"	16"	36"	36	D069101	866-629	**260.91**
Optional Middle Tray						
30"	16"	3"		D069103	866-630	**69.32**

3 Drawer Utility Cart

- 2 swivel / 2 fixed 4"x1" casters
- Includes lock & key, drawer liner kit and work top



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
27"	18.5"	36"	50	D069102	865-940	**527.45**

KENNEDY

Professional Tool Boxes - Models K20/K24

- Includes lift-out tray with socket set divider
- Brown wrinkle finish



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Model	Code No.	Price $
20-1/8"	8-5/8"	9-3/4"	13	K20	609-608	**181.10**
24-1/8"	8-5/8"	9-3/4"	14.5	K24	609-614	**207.40**

Cantilever Tool Boxes - Models 1018/1022

- Create compartments in trays with movable/removable partitions and divider sets
- One tray has socket set divider
- Brown wrinkle finish



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Model	Code No.	Price $
18-1/8	10-1/6	12-5/8	18.3	1018	609-760	**196.20**
22-1/8	10	12-5/8	18.3	1022	609-127	**259.40**

Dynamic

3 Drawer Hand Box with Ball Bearing Slides

- Includes drawer liner kit



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
20"	10"	12"	28	D069001	865-919	**207.31**

19" Hip Roof Tool Box

- Includes tote tray



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Dynamic EDP	Code No.	Price $
19"	7"	7.5"	9	D069002	866-631	**50.69**

GRAY TOOLS

16" Plastic Hand Box

- Includes tote tray

Tools not included



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
16"	8-3/8"	8"	2.7	PR-16E	866-545	**35.97**

19" Plastic Hand Box

- Includes tote tray

Tools not included



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
19"	9-1/2"	9-1/2"	4.5	PR-19E	865-575	**187.64**

23" Plastic Hand Box

- Includes tote tray

Tools not included



Width (in.)	Depth (in.)	Height (in.)	Weight (lb)	Gray EDP	Code No.	Price $
23"	10-1/2"	11"	5.5	PR-23E	865-380	**223.56**

STM

Tool Boxes

- ABS plastic
- VTB-102 has two levered trays
- VTB-901 has one removable tray



VTB-102

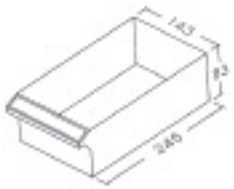


VTB-901

Model	Dimensions (mm)	Code No.	Price $
VTB-102	420W x 235D x 180H	326-546	**83.90**
VTB-901	378W x 182D x 144H	326-547	**32.80**

Parts Cabinets

- Steel plate cover with Zinc.
- Drawer material: GPS

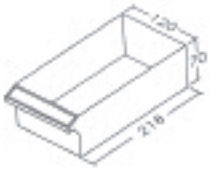




VA6-212H



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	326-534	**395.80**
VA6-330H	533	264	937	30	25.3	326-536	**720.80**
VA7-324P	440	222	642	24	15.5	326-538	**452.20**
VA7-448P	586	222	937	48	27.5	326-540	**692.40**
VA1-525	586	222	350	25	10.0	326-542	**523.40**
VA1-575	586	222	937	75	32.3	326-544	**967.80**

End Mill Dispenser Cabinets



Description	Case No.	Code No.	Price $
Two flute single and double end to 1/16 to 1"	CZD10	113-905	**837.80**
Four flute single and double end to 1/16 to 1"	CZD11	113-906	**837.80**
Two and four flute single and double end to 1/8 to 1" x 8ths	CZD12	113-907	**211.60**

Drill Dispenser Cabinets



Description	Case No.	Code No.	Price $
Steel Cabinet holds 1/16-1/2 x 64ths Jobber Drills	13000	113-826	**208.80**
Steel Cabinet holds #1-60 Jobber Drills	13025	113-827	**267.40**

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129	B72-73, B75-76, B78
130	D12-14
133	B2-3, B8
134	B8-9, B22-23
135	D13-15
136	D11, D16-17
137	D18-19
138	B4-6, D10-11, D15
139	D15-16
140	C22-24, C30, D9, D15, D18
141	D5-6, E158
143	B15-16, B18-20, B72, E154
144	B18-19, B48
145	D6, D8-9, E8-9, E11, E14, E16-18, E31-32, E34-35, E38-41, E51, E55-65, E70-79, E87-88, E99, E102, E106, E108-110, E113, E115, E128, E130-133, E136, E142, E155, E161, G114
146	E8-20, E22-36, E38-42, E51-65, E70-79, E83-88, E94-95, E98-108, E110-115, E128, E130-147, E149, E151-153, E155-157, E159-161, E171
147	E8-18, E20-23, E25-36, E39, E41-42, E57, E59-61, E63, E65, E70-72, E76-78, E83-84, E86-87, E94, E98-109, E111-115, E131-136, E138, E140-145, E147, E149-153, E155-156, E159-161, E171
148	E9-20, E22-23, E25-36, E39, E52-55, E60-62, E65, E70-73, E83-88, E98-100, E102-104, E106-111, E114-115, E128-134, E137-141, E145-147, E149-150, E152-153, E155, E157, E159-160, E171

149	E8-9, E11-12, E14-16, E19, E22, E27-30, E32-33, E43-45, E52-54, E83, E87, E99, E108, E130, E143, E176-186
150	D9-10
151	D20-24, G114
153	A5, A15-18, A21-22
154	A31-33
156	E170-174
159	D8
160	D7-8
162	B54-58
163	B54, B56-58
165	D39-48, F51-52, I 14, I 22
170	B7, B46, B74, D2-4
171	B7, B74
172	B66, D4
174	L15-18
180	F89-90
182	D26-38
200	F4-5, F7, F9-17, F21-22, F24-28, F36, F38, F42-43, F45, F51-52, F54-56, F59, F61, F72-73, L18, M4
201	F7, F30, F69
205	F67, F70, F88
215	F36
220	F59, F64
222	F77078
225	F50, F57-58, F60-61, F87
230	F57, F70-71, F83, F86, H8, H11, H17, I 2, I 7, I 10-11, I 13-14
231	F50, F52, F65-71, F87-88, H11, H13-14, H17, H22, I 13, L18, M5-7
240	F79
251	F71, F84-88, H11, H14, H17-18-20, I 5, I 8-11
255	F57, F72-74
300	G108, G112-113
310	K2-6
320	K2
325	G48, I 5, I 7
326	G56, G86, G90, G114-115, H9, H11-13, H16, H19-20, H22, I 2-6, I 12-13, J99, M4, N7, N11-12
327	H3, H8-10
329	H10
331	G43, G45-47
333	H21-29, I 7
334	G38-40, G47
335	G115
336	G48
337	G24-34, G79, G89, G114, I 12
338	G26-30, G36, G80-81
339	G78
354	G82-83
355	G83-85
356	D8, G113
366	G116
370	H12, H14, H17, H19
381	G58-69
382	H3-5, H7, H11
384	G71-74
385	K20
386	K20
388	K18
389	J79-81, J83-89
390	G91-93
391	G92-93, J78, J102
392	K8-9, K11
393	K9-10, K12
394	K13-16
395	J101
397	J79-81, J83, J101
399	J79-81, J83, J85, J101
400	B77, G18-20
401	H11
405	G20
410	G17
420	G10-103, K6
425	G104, I 6, J35
435	J10-11, J14-19, J24-26, J31, J41
436	J36
440	I 6, J22-26-30, J32, J35-36, J39
441	J13, J27-30, J32-35, J37-38, J40, J42, J56-57
442	J43-44, J55-57
443	J12
444	J66-69
445	J25, J29-30, J56, J58, J69
450	J53-54, J58
451	J55-56
455	J39, J43-44
460	J19-20, J45-46
465	J20, J45, J59
467	J19-20, J45-46
468	J31, J59, J73-75
470	G103, K16, K19
474	D20
485	H16, J90-93
491	J95-99, J101
492	J101-102
500	C7, E177, F90-94, G18, G34, H2
505	M6
520	L7-10
521	G4, G6, G14, G22, G41
522	G5-10, G12
531	G4-5, G7-8, G11, G14-15, G17, G22, G35, G37, G41, G44, G51, G76, G80, G88, G101-102
532	G7-9, G11, G15, G17, G23, G35, G37, G42,

	G44, G52, G76, G80, G88, G101-102
534	G10-12, G16, G18, G24, G34, G37, G40, G42, G43, G45, G48, G77-79, G89, G101-102
536	G9-10, G12, G15, G23, G35, G42, G50, G53, G77, G80, G90
604	H34-43
606	F58, F60, F62, F64-65, F68, M2-4, M6
607	H21-29
608	H15, H21-24, H26-31, H33
609	H32-33, N2-7, N11
610	G94-100
612	E163-166, E168-169
619	M8-15
628	F37
629	C21, F20, F22, F26, F37,F39, F59, F66, M3
630	F20, F22, F26
631	F27
632	F5, F24-25, F35
633	F8, F24
634	F8
635	L3-6, L11-12
656	J95-97
658	J100
659	I 15
665	I 17-22
710	F4-6, F8
711	F4, F8, F10, F13-14, F16
712	F9, F12
713	F9, F15
714	F10, F12-13, F16
715	F11, F16
716	F14, F17, F20, F22
718	F15
720	F17-19, F21
721	F73
722	F73
723	F73
724	F20
728	F90
729	F73
730	F24-26, F28, F31-32
731	F28-29
732	F28-31, F53-54
734	F27
735	F27
736	F27
740	F30
740	F30, F34-36
742	F35, F37
746	F39
747	F43-49, F53
748	F54, F59
749	F31, F64, F67
750	F37-38, F40-44, F79
760	F41, F49-50, F57-58, F60-70, F83, F87, F89
762	F55-56
763	F70
764	F79, F81, F89
765	F72
767	F52, F73-74, F76
769	F61, F73-76
790	F5
796	F90-91
840	F5, F7, F9-10, F20, F22, F25-27, F35, F37, F39, F51, F54, F58-60, F62-63, F65-66, F69
841	F20, F22, F27, F35, F37, F55-56
842	F5, F35, F37, F39, F55
843	F24, F37, F54
844	F20, F26, F37, F56
845	F5
846	F5, F35, F54
847	F30, F51, F54-55, F79, F82
848	F7
861	H13, M5, M21, N3-4, N7-9
865	H13-14, M4-6, M8, M11, M15, M18, M22, M25, M27-30, N3-4, N8-11
866	H13-14, M2-5, M13, M15-30, N3-4, N7, N10-11
920	L7, L10-11, L13-14
921	L8, L10-13

NOTES

NOTES

DECIMAL EQUIVALENTS

FOR FRACTIONAL, WIRE GAUGE, LETTER & METRIC (MM) SIZE DRILLS

Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches
0.25	0098	2.00	0787	#14	1820	21/64"	3281	35/64"	5469
0.30	0118	2.05	0807	4.70	1850	8.40	3307	14.00	5512
#80	0135	#46	0810	#13	1850	Q	3320	14.25	5610
0.35	0138	#45	0820	3/16"	1875	8.50	3346	9/16"	5625
#79	0145	2.10	0827	4.80	1890	8.60	3386	14.50	5709
1/64"	0156	2.15	0846	#12	1890	R	3390	37/64"	5781
0.40	0157	#44	0860	#11	1910	8.70	3425	14.75	5807
#78	0160	2.20	0866	4.90	1929	11/32"	3437	15.00	5906
0.45	0177	2.25	0886	#10	1935	8.80	3465	19/32"	5937
#77	0180	#43	0890	#9	1960	S	3480	15.25	6004
0.50	0197	2.30	0905	5.00	1968	8.90	3504	39/64"	6094
#76	0200	2.35	0925	#8	1990	9.00	3543	15.50	6102
#75	0210	#42	0935	5.10	2008	T	3580	15.75	6201
0.55	0217	3/32"	0937	#7	2010	9.10	3583	5/8"	6250
#74	0225	2.40	0945	13/64"	2031	23/64"	3594	16.00	6299
0.60	0236	#41	0960	#6	2040	9.20	3622	16.25	6398
#73	0240	2.45	0965	5.20	2047	9.30	3661	41/64"	6406
#72	0250	#40	0980	#5	2055	U	3680	16.50	6496
0.65	0256	2.50	0984	5.30	2087	9.40	3701	21/32"	6562
#71	0260	#39	0995	#4	2090	9.50	3740	16.75	6594
0.70	0276	2.55	1004	5.40	2126	3/8"	3750	17.00	6693
#70	0280	#38	1015	#3	2130	V	3770	43/64"	6719
#69	0292	2.60	1024	5.50	2165	9.60	3780	17.25	6791
0.75	0295	#37	1040	7/32"	2187	9.70	3819	11/16"	6875
#68	0310	2.65	1043	5.60	2205	9.80	3858	17.50	6890
1/32"	0313	2.70	1063	#2	2210	W	3860	17.75	6988
0.80	0315	#36	1065	5.70	2244	9.90	3898	45/64"	7031
#67	0320	2.75	1083	#1	2280	25/64"	3906	18.00	7087
#66	0330	7/64"	1093	5.80	2283	10.00	3937	18.25	7185
0.85	0335	#35	1100	5.90	2323	X	3970	23/32"	7187
#65	0350	2.80	1102	A	2340	10.10	3976	18.50	7283
0.90	0354	#34	1110	15/64"	2344	10.20	4016	47/64"	7344
#64	0360	2.85	1122	6.00	2362	Y	4040	18.75	7382
#63	0370	#33	1130	B	2380	10.30	4055	19.00	7480
0.95	0374	2.90	1142	6.10	2401	13/32"	4062	3/4"	7500
#62	0380	#32	1160	C	2420	10.40	4094	19.25	7579
#61	0390	2.95	1161	6.20	2441	Z	4130	49/64"	7656
1.00	0394	3.00	1181	D	2460	10.50	4134	19.50	7677
#60	0400	#31	1200	6.30	2480	10.60	4173	19.75	7776
#59	0410	3.10	1220	E- 1/4"	2500	10.70	4213	25/32"	7812
1.05	0413	1/8"	1250	6.40	2520	27/64"	4219	20.00	7874
#58	0420	3.20	1260	6.50	2559	10.80	4252	51/64"	7969
#57	0430	#30	1285	F	2570	10.90	4291	20.25	7972
1.10	0433	3.30	1299	6.60	2598	11.00	4330	20.50	8071
1.15	0453	3.40	1339	G	2610	11.10	4370	13/16"	8125
#56	0465	#29	1360	6.70	2638	7/16"	4375	20.75	8169
3/64"	0469	3.50	1378	17/64"	2656	11.20	4409	21.00	8268
1.20	0472	#28-9/64	1405	H	2660	11.30	4449	53/64"	8281
1.25	0492	3.60	1417	6.80	2677	11.40	4488	21.25	8366
1.30	0512	#27	1440	6.90	2716	11.50	4528	27/32"	8437
#55	0520	3.70	1457	I	2720	29/64"	4531	21.50	8465
1.35	0531	#26	1470	7.00	2756	11.60	4567	21.75	8563
1.40	0550	#25	1495	J	2770	11.70	4606	55/64"	8594
#54	0550	3.80	1496	7.10	2795	11.80	4646	22.00	8661
1.45	0571	#24	1520	K-9/32"	2811	11.90	4685	7/8"	8750
1.50	0591	3.90	1535	7.20	2835	15/32"	4687	22.25	8760
#53	0595	#23	1540	7.30	2874	12.00	4724	22.50	8858
1.55	0610	5/32"	1562	L	2900	12.10	4764	57/64"	8906
1/16"	0625	#22	1570	7.40	2913	12.20	4803	22.75	8957
1.60	0629	4.00	1575	M	2950	12.30	4843	23.00	9055
#52	0635	#21	1590	7.50	2953	31/64"	4843	29/32"	9062
1.65	0650	#20	1610	19/64"	2968	12.40	4882	23.25	9154
1.70	0669	4.10	1614	7.60	2992	12.50	4921	59/64"	9219
#51	0670	4.20	1654	N	3020	12.60	4961	23.50	9252
1.75	0689	#19	1660	7.70	3031	12.70	5000	23.75	9350
#50	0700	4.30	1693	7.80	3071	1/2"	5000	15/16"	9375
1.80	0709	#18	1695	7.90	3110	12.80	5039	24.00	9449
1.85	0730	11/64"	1719	5/16"	3125	12.90	5079	61/64"	9531
#49	0730	#17	1730	8.00	3150	13.00	5118	24.25	9541
1.90	0748	4.40	1732	O	3160	33/64"	5156	24.50	9646
#48	0760	#16	1770	8.10	3189	13.20	5197	31/32"	9688
1.95	0768	4.50	1771	8.20	3228	17/32"	5313	24.75	9744
5/64"	0781	#15	1800	P	3230	13.50	5315	25.00	9843
#47	0785	4.60	1811	8.30	3268	13.80	5433	63/64"	9844
								1"	1 0000

TAP DRILL SIZES

(Drill Sizes Based on Approximate 72% - 77% Full Thread)

TAP SIZE	PITCH FORM	TAP DRILL SIZE	ALT TAP DRILL
UNIFIED TAPS			
0	80 (U)NF	3/64	1.25
1	64 (U)NC	53	1.55
	72 (U)NF	53	1.55
2	56 (U)NC	50	1.85
	64 (U)NF	50	1.90
3	48 (U)NC	47	2.10
	56 (U)NF	45	2.15
4	40 (U)NC	43	2.35
	48 (U)NF	42	2.40
5	40 (U)NC	38	2.65
	44 (U)NF	37	2.70
6	32 (U)NC	36	2.85
	40 (U)NF	33	2.90
8	32 (U)NC	29	3.50
	36 (U)NF	29	3.50
10	24 (U)NC	25	3.90
	32 (U)NF	21	4.10
12	24 (U)NC	16	4.50
	28 (U)NF	14	4.70
1/4	20 (U)NC	7	5.10
	28 (U)NF	3	5.50
5/16	18 (U)NC	F	6.60
	24 (U)NF	I	6.90
3/8	16 (U)NC	5/16	8.00
	24 (U)NF	Q	8.50
7/16	14 (U)NC	U	9.40
	20 (U)NF	25/64	9.90
1/2	13 (U)NC	27/64	10.80
	20 (U)NF	29/64	11.50
9/16	12 (U)NC	31/64	12.20
	18 (U)NF	33/64	12.90
5/8	11 (U)NC	17/32	13.50
	18 (U)NF	37/64	14.50
3/4	10 (U)NC	21/32	16.50
	16 (U)NF	11/16	17.50
7/8	9 (U)NC	49/64	19.50
	14 (U)NF	13/16	20.40
1	8 (U)NC	7/8	22.25
	12 (U)NF	59/64	23.25
	14 (U)NS	15/16	23.50
1-1/8	7 (U)NC	63/64	25.00
	12 (U)NF	1-3/64	26.50
1-1/4	7 (U)NC	1-7/64	28.00
	12 (U)NF	1-11/64	29.50
1-3/8	6 (U)NC	1-7/32	30.75
	12 (U)NF	1-19/64	32.75
1-1/2	6 (U)NC	1-11/32	34.00
	12 (U)NF	1-27/64	36.00
1-3/4	5 (U)NC	1-9/16	39.50
2	4-12 (U)NC	1-25/32	45.00
TAPER PIPE TAPS NPT			
1/16	27 NPT	D	6.30
1/8	27 NPT	R	8.70
1/4	18 NPT	7/16	11.10
3/8	18 NPT	37/64	14.50
1/2	14 NPT	23/32	18.25
3/4	14 NPT	59/64	23.25
1	11-1/2 NPT	1-5/32	29.00
1-1/4	11-1/2 NPT	1-1/2	38.00
1-1/2	11-1/2 NPT	1-47/64	44.00
2	11-1/2 NPT	2-7/32	56.00
2-1/2	8 NPT	2-5/8	67.00
3	8 NPT	3-1/4	82.50
STRAIGHT PIPE TAPS (NPS)			
1/8	27 NPS	S	8.80
1/4	18 NPS	29/64	11.50
3/8	18 NPS	19/32	15.00
1/2	14 NPS	47/64	18.50
3/4	14 NPS	15/16	23.75
1	11-1/2 NPS	1-3/16	30.25
1-1/4	11-1/2 NPS	1-33/64	38.50
1-1/2	11-1/2 NPS	1-3/4	44.50
2	11-1/2 NPS	2-7/32	56.00

TAP SIZE	PITCH FORM	TAP DRILL SIZE	ALT TAP DRILL
I.S.O. METRIC COARSE			
1.6	0.35mm	1.25mm	3/64
1.7	0.35mm	1.35mm	55
1.8	0.35mm	1.45mm	54
2	0.40mm	1.60mm	1/16
2.2	0.45mm	1.75mm	51
2.3	0.40mm	1.90mm	49
2.5	0.45mm	2.05mm	46
2.6	0.45mm	2.15mm	44
3	0.5mm	2.50mm	40
3.5	0.60mm	2.90mm	33
4	0.70mm	3.30mm	30
4.5	0.75mm	3.70mm	27
5	0.80mm	4.20mm	19
5.5	0.90mm	4.60mm	15
6	1.00mm	5.00mm	9
7	1.00mm	6.00mm	15/64
8	1.25mm	6.80mm	H
9	1.25mm	7.80mm	5/16
10	1.50mm	8.50mm	Q
11	1.50mm	9.50mm	3/8
12	1.75mm	10.20mm	Y
14	2.00mm	12.00mm	15/32
16	2.00mm	14.00mm	35/64
18	2.50mm	15.50mm	39/64
20	2.50mm	17.50mm	11/16
22	2.50mm	19.50mm	49/64
24	3.00mm	21.00mm	53/64
27	3.00mm	24.00mm	61/64
30	3.50mm	26.50mm	1-3/64
33	3.50mm	29.50mm	1-5/32
36	4.00mm	32.00mm	1-1/4
39	4.00mm	35.00mm	1-3/8
I.S.O. METRIC FINE			
3	0.35mm	2.65mm	37
4	0.35mm	3.65mm	27
4	0.50mm	3.50mm	29
4.5	0.45mm	4.06mm	21
5	0.50mm	4.50mm	16
5	0.70mm	4.30mm	18
5	0.75mm	4.25mm	18
5.5	0.50mm	5.00mm	9
6	0.50mm	5.50mm	7/32
6	0.75mm	5.25mm	5
7	0.75mm	6.25mm	D
8	0.50mm	7.50mm	M
8	1.00mm	7.00mm	J
9	0.50mm	8.50mm	Q
9	1.00mm	8.00mm	0
10	0.50mm	9.50mm	3/8
10	0.75mm	9.25mm	U
10	1.00mm	9.00mm	T
10	1.25mm	8.75mm	11/32
11	1.00mm	10.00mm	X
12	1.00mm	11.00mm	7/16
12	1.25mm	10.75mm	27/64
12	1.50mm	10.50mm	Z
13	1.50mm	11.50mm	29/64
13	1.75mm	11.25mm	7/16
14	1.25mm	12.75mm	1/2
14	1.50mm	12.50mm	31/64
15	1.50mm	13.50mm	17/32
16	1.00mm	15.00mm	19/32
16	1.25mm	14.75mm	37/64
16	1.50mm	14.50mm	9/16
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	1.00mm	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

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